

SIXTH FIVE YEAR PLAN

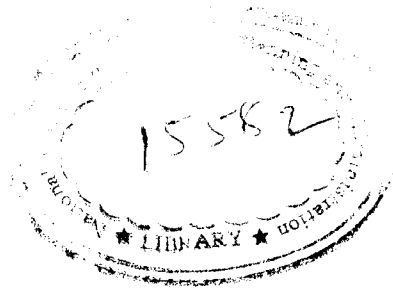
1980—85

NIEPA - DC



15582

GOVERNMENT OF INDIA
PLANNING COMMISSION



FOREWORD

"The day will dawn. Hold thy faith firm"

—TAGORE

Progress in a country of India's size and diversity depends on the participation and full involvement of all sections of the people. This is possible only in democracy. But for democracy to have meaning in our circumstances, it must be supported by socialism which promises economic justice and secularism which gives social equality. This is the frame for our planning.

The Planning Commission is to be congratulated on the manner in which it has worked practically round the clock to bring out the Sixth Plan in a year as we had promised to do. The drawing up of this plan posed special difficulties. We faced a plan gap and a budget gap at a time when the whole world, and India more than other countries, was hard hit by inflation, the continuing rise in the price of petroleum while the price of our raw materials remains static, as well as other political and economic tensions and international confrontations.

In view of the severe financial constrictions and the political expectations, it is not surprising that the Plan should be unsatisfactory to many. However, this is no reason to denigrate it. Planning is more than the putting together of a number of Central and State Government projects. It is a direction. And this the Sixth Plan provides. Once the nation is clear about the path to be followed, the details can be adjusted as we go along.

Let us cast a backward glance. In the last thirty years, through our Plans we have built the foundations of a modern, self-reliant economy. We have achieved self-sufficiency in food, diversified our industrial structure and made significant progress in science and technology. The continuity of the planning process, with its thrusts and checks, has helped us to create and renew national assets and to take up programmes for the amelioration of the weakest strata and the uplift of the most backward regions. Economic growth must be balanced, it must ensure self-reliance, stability and social justice. All sections should be assured that there will be no discrimination. No society can prosper if merit is not given its due.

A developing nation must marshal its scarce resources for a concerted effort to build its capital base in various sectors of the economy to enhance production capabilities and allow larger savings. Increased output and a balanced inter-sectoral allocation of the incremental savings promote further development. So the process goes on.

The progress so far achieved has been steady and substantial, although somewhat slower than envisaged. The very process of

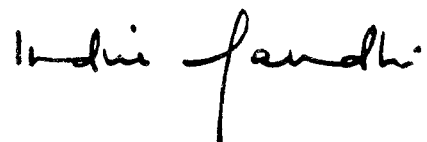
development generates new expectations and makes fresh demands on resources. Our goal of self-reliance was bound to strain our external resources. Also, we were not allowed to concentrate undisturbed on our development endeavour, for there have been frequent challenges to national security. Another factor adding to the complication of our development is the continuous increase in population, primarily owing to the very success of our programmes of public health and epidemic control, as a result of which infant mortality has decreased dramatically and life expectancy risen.

We have resolutely stood up to each new challenge. We have come to a stage where we can confidently assert that development has contributed to strengthening our nation in spite of its regional, linguistic, social and communal diversities. It has consolidated our democracy and is guiding our society towards socialism. We can now speak of an India in which the fruits of growth will reach to the last. This is a stage when the planning process assumes even greater importance.

Five-Year Plans are formulated in the perspective of long-term development. This enables us to raise the national effort to match specific goals and meet critical challenges. Annual Plans give operational meaning to the exercise. Monitoring, review and evaluation procedures help to keep the vessel on the course. The voyage has been longer and rougher than we had imagined, but there is little doubt about the rightness of the course we have charted.

The Sixth Plan envisages a significant augmentation in the rate of growth of the economy with an annual growth rate of over 5 per cent. In this five-year period we expect to see progressive reduction in the incidence of poverty and unemployment and also in regional inequalities. Greater emphasis has been laid on the speedy development of indigenous sources of energy and infra-structural sectors of coal, energy, irrigation and transport. High priority has been given to agriculture and rural development and allied agricultural activities like animal husbandry, dairying, fisheries and also the forestry sector, with accent on development and conservation. Substantial outlays have been allocated for expansion in core sectors and also for cottage, village and small industries as well as for programmes to provide minimum needs.

The measure of a plan is not intention but achievement, not allocation but benefit. We are determined to implement this Plan with steadfastness of purpose. Democratic planning means the harnessing of the people's power and their fullest participation. We sail on stormy seas. But the Indian people have weathered many storms. Their spirit is indomitable and it will prevail. Let us help them to bend their energies with unity and discipline in the great endeavour to reach towards a brighter future.



(INDIRA GANDHI)

SUMMARY OF CONTENTS

OBJECTIVES, RESOURCES AND POLICIES

	PAGE
PREFACE	(xiv)
CHAPTER 1 DEVELOPMENT PERFORMANCE	1
CHAPTER 2 DEVELOPMENT PERSPECTIVE	17
CHAPTER 3 OBJECTIVES AND STRATEGY OF THE SIXTH PLAN	32
CHAPTER 4 PUBLIC SECTOR OUTLAYS	55
CHAPTER 5 RESOURCES FOR THE PLAN	59
CHAPTER 6 BALANCE OF PAYMENTS	70
CHAPTER 7 POLICY FRAMEWORK	76
CHAPTER 8 PLAN IMPLEMENTATION, MONITORING AND EVALUATION	89

PROGRAMMES OF DEVELOPMENT

CHAPTER 9 AGRICULTURE AND ALLIED SECTORS	97
CHAPTER 10 IRRIGATION, COMMAND AREA DEVELOPMENT AND FLOOD CONTROL	147
CHAPTER 11 RURAL DEVELOPMENT AND CO-OPERATION	167
CHAPTER 12 VILLAGE AND SMALL INDUSTRIES	186
CHAPTER 13 MANPOWER AND EMPLOYMENT	203
CHAPTER 14 MINIMUM NEEDS PROGRAMME	222
CHAPTER 15 ENERGY	228
CHAPTER 16 INDUSTRY AND MINERALS	259
CHAPTER 17 TRANSPORT	295
CHAPTER 18 COMMUNICATIONS, INFORMATION AND BROADCASTING	313
CHAPTER 19 SCIENCE AND TECHNOLOGY	318
CHAPTER 20 ENVIRONMENT	343
CHAPTER 21 EDUCATION	352
CHAPTER 22 HEALTH, FAMILY PLANNING AND NUTRITION	366
CHAPTER 23 HOUSING, URBAN, DEVELOPMENT AND WATER SUPPLY	389
CHAPTER 24 LABOUR AND LABOUR WELFARE	402
CHAPTER 25 HILL AREA DEVELOPMENT	413
CHAPTER 26 DEVELOPMENT OF BACKWARD CLASSES	417
CHAPTER 27 WOMEN AND DEVELOPMENT	423
CHAPTER 28 SOCIAL WELFARE	430
APPENDIX—SIXTH FIVE YEAR PLAN—A FRAMEWORK	439

CONTENTS

OBJECTIVES, RESOURCES AND POLICIES

		PAGE
	Preface	(xix)
CHAPTER 1	DEVELOPMENT PERFORMANCE	1
	Growth	1
	Modernisation	3
	Self-reliance	6
	Social justice	7
	Conclusion	9
CHAPTER 2	DEVELOPMENT PERSPECTIVE	17
	Choice of Development Strategy	117
	Alternative Development Scenarios	118
	The Perspective	19
	Demographic Perspective	19
	Size of the Population	19
	Age Structure	19
	Labour Force	20
	Population Policy	20
	Goals Regarding Poverty & Unemployment	21
	Macro-economic Framework	22
	Structure of Demand	22
	Saving and Investment	22
	Structure of Output	23
	Long-term Sectoral Profiles and Policies	25
	Agriculture	26
	Other Sectors	26
	Non-renewable Resources	27
CHAPTER 3	OBJECTIVES AND STRATEGY OF THE SIXTH FIVE YEAR PLAN	32
	Objectives	34
	Macro Dimensions	34
	Aggregate Savings and Investment	34
	Rate and Pattern of Growth	35
	Pattern of Public and Private Investment	37
	Sectoral Growth Profile	38
	Agriculture	40
	Sugar	42
	Cotton Cloth & Yarn	42
	Raw Cotton	42
	Jute Manufactures	43
	Coal	43
	Petroleum Products	44
	Crude Petroleum	44
	Paper & Paper Board	45
	Newsprint	45
	Fertiliser	46
	Inorganic Heavy Chemicals	46
	Man-made Fibres	47
	Cement	48

	Mild Steel	448
	Non-ferrous Metals	449
	Electricity	500
	Railway Traffic	500
	Poverty and Employment	511
	Poverty	511
	Employment	513
CHAPTER 4	PUBLIC SECTOR OUTLAYS	555
CHAPTER 5	RESOURCES FOR THE PLAN	559
	Domestic Saving	559
	Household Saving	660
	Physical Assets	660
	Financial Assets	660
	Financial Liabilities	661
	Private Corporate Saving	661
	Cooperative Saving	661
	Public Sector Saving	661
	Budgetary Saving	662
	Public Enterprises	662
	Distribution between Public and Private Sectors	663
	Resources for the Public Sector Plan	663
	Balance from Current Revenues	664
	Market Borrowings	665
	Small Savings	665
	State Provident Funds	665
	Term Loans from Financial Institutions	665
	Miscellaneous Capital Receipts	666
	Net inflow from Rest of the World	666
	Drawing down of Foreign Exchange Reserves	666
	Additional Resource Mobilisation	666
	Uncovered gap/deficit Financing	667
	Central Assistance to States	668
CHAPTER 6	BALANCE OF PAYMENTS	70
	Exports	70
	Imports	71
	Invisibles	71
	Foreign Aid and Borrowings	72
	Trade and Payment Policies	72
CHAPTER 7	POLICY FRAMEWORK	76
	Growth with Stability	76
	Mobilisation of Resources	77
	Fiscal Policy	77
	Monetary and Credit Policies	78
	Income Policy	78
	Pricing Policy	79
	Public Distribution System	81
	Infrastructure for Public Distribution	82
	Other Improvements in the Public Distribution System	83
	Consumer Protection	83
	Intelligence and Information System, Enforcement and Training	84
	Foreign Trade Policies	84
	Policies for Accelerated Growth in Agriculture	85
	Policies towards Industry in the Private Sector	85
	Regional Disparities	86

	PAGE
CHAPTER 8	
PLAN IMPLEMENTATION, MONITORING AND EVALUATION	89
Implementation of Projects/Schemes	89
Implementation of Rural Development and Employment Programmes	90
Employment	90
Rural Development	91
Agriculture	91
Irrigation	91
Small and Village Industries	91
Special Component Plan for Schedule Castes	91
Tribal Sub-plan	91
Anti-Poverty Programmes	92
District Administration	92
Monitoring of Implementation	92
Machinery for Planning	93
People's Involvement in Planning and Implementation	93
Personnel Policies	94
Programme Evaluation	94
Information System Data-base for Planning	95
Training	96
National Efficiency Drive	96

PROGRAMMES OF DEVELOPMENT

CHAPTER 9		97
AGRICULTURE AND ALLIED SECTORS		97
Indian Agriculture in the Eighties		97
Objectives and Strategy		98
Technology		101
Research and Education		101
Research Infrastructure		101
Agricultural Universities		101
Human Resource Development and Utilisation of R & D Manpower		101
Research Priorities and New Thrusts		102
Areas of inter-Agency Collaboration		102
Dryland Farming		103
Soil and Water Conservation		103
Organic Recycling		104
Biogas Development		104
Inputs and Services		105
Fertilisers and Manures		106
Improved Seeds		106
Plant Protection		107
Implements and Machinery		107
Agricultural Extension and Training		108
Agricultural Credit		109
Storage and Warehousing		110
Agricultural Processing and Marketing		111
Export Marketing		113
Agricultural Statistics		114
Public Policy		114
Land Reforms		114
Price Policy		116
Management of Natural Disasters		116
Programmes for Agricultural Production		119
Crop Production		119
Foodgrains		120
Cotton		121
Jute and Mesta		122
Sugarcane		122

Oilseeds	1 1 1 122
Tobacco	1 1 1 125
Horticulture and Plantation Crops	1 1 1 125
Fruits	1 1 1 125
Cashewnut	1 1 1 125
Cocoa	1 1 1 127
Spices	1 1 1 127
Tea	1 1 1 128
Coffee	1 1 1 128
Rubber	1 1 1 128
Cardamom	1 1 1 128
Programmes for Allied Sectors	1 1 1 129
Animal Husbandry and Dairying	1 1 1 129
Review	1 1 1 129
Objectives	1 1 1 130
Targets of Livestock Production	1 1 1 130
Programmes	1 1 1 131
Cattle and Buffalo Development	1 1 1 131
Poultry Development	1 1 1 131
Sheep and Wool Development	1 1 1 131
Other Livestock	1 1 1 132
Meat Processing	1 1 1 132
Feed and Fodder Development	1 1 1 132
Animal Health Cover	1 1 1 132
Dairy Development	1 1 1 132
Insurance of Livestock and Poultry	1 1 1 133
Fisheries	1 1 1 133
Review	1 1 1 133
Policy and Objectives	1 1 1 134
Target of fish Production	1 1 1 134
Programme Strategy	1 1 1 134
Inland Fisheries	1 1 1 135
Training and Extension	1 1 1 135
Processing and Marketing	1 1 1 135
Forestry	1 1 1 135
Review	1 1 1 135
Objectives	1 1 1 136
Programmes and Policy	1 1 1 136
Conservation	1 1 1 136
Social Forestry	1 1 1 136
Fuel Wood	1 1 1 137
Forest Labour	1 1 1 137
Forest Survey	1 1 1 137
Forest Research	1 1 1 137
People's Participation	1 1 1 137
New Thrusts	1 1 1 137
Agro-forestry programmes	1 1 1 138
Plan Outlays	1 1 1 138
CHAPTER 10 IRRIGATION, COMMAND AREA DEVELOPMENT AND FLOOD CONTROL	14414147
Major and Medium Irrigation	14494949
Review	14494949
Strategy for the Sixth Plan	14494949
Regional Imbalances	155(5)50
Modernisation	15515151
Drainage	15515151
Research	15515151
Training	15515151

Employment	152
Maintenance	152
Programme	152
Minor Irrigation	153
Review	153
Strategy for the Sixth Plan	153
Central Ground Water Development Corporation Programme	155
Command Area Development and Water Management Review	156
Strategy for the Sixth Plan	157
Programmes	158
Water Management	158
Flood Control	158
Review	158
Strategy for the Sixth Plan	159
Programmes	159
Desalination of Sea Water	160
People's Participation	160
CHAPTER 11 RURAL DEVELOPMENT AND COOPERATION	167
Rural Development	167
Review	167
Strategy for the Sixth Plan	169
Resource Development of the Rural Poor	170
Credit for Weaker Section	172
Drought Prone Area Programme	172
Desert Development Programme	173
Outlays for IRDP and Related Programmes	173
National Rural Employment Programme (NREP)	173
Outlays for NREP and Special Employment Programmes	175
Panchayati Raj and Community Development	175
Review	175
Strategy for Sixth Plan	176
Outlays	177
Cooperation	177
Review	177
Strategy for the Sixth Plan	179
Programmes	179
Outlays	182
Special Area Programmes	182
People's Participation	182
CHAPTER 12 VILLAGE AND SMALL INDUSTRIES	186
Review	186
Objectives	188
Targets	188
Outlays and Investment	190
Policy Measures	190
Industry-cum-Area Development Approach	191
Organisational Arrangements at District and Sub-district Level	191
Institutional Finance	191
Appropriate Technology Research and Development and Training	193
Supply of Raw Material	193
Marketing	194
Reservation and Other Measures	195
Development of Ancillaries	195

	P P A P A P A P A G E
Industrial Cooperatives	1 1 1 195
Statistical Data Base	1 1 1 196
Programme	1 1 1 195
Khadi and Village Industries	1 1 1 196
Handloom Industry	1 1 1 197
Sericulture	1 1 1 198
Handicrafts	1 1 1 198
Coir Industry	1 1 1 199
Small Scale Industries	1 1 1 199
Industrial Estates	2 2 2 200
Power Looms	2 2 2 201
Subsidies	2 2 2 201
Monitoring and Evaluation	2 2 2 201
CHAPTER 13 MANPOWER AND EMPLOYMENT	2 2 2 203
Labour force, Unemployment and Employment	2 2 2 203
Concept and Definitions	2 2 2 203
Labour Force	2 2 2 203
Unemployment Estimates	2 2 2 204
Unemployment in 1972-73 and 1977-78	2 2 2 205
Employment Profile	2 2 2 205
Perspectives for the sixth Plan	2 2 2 205
Educated Man Power Employment Situation	2 2 2 206
Employment Policy	2 2 2 207
Policy for Educated Manpower	2 2 2 210
A New Deal for the Self-Employed	2 2 2 210
Policy Measures	2 2 2 210
Training Programmes	2 2 2 211
Credit Facilities	2 2 2 211
Marketing Facilities	2 2 2 211
Guidance	2 2 2 211
Other Measures	2 2 2 211
Decentralized Strategy for Manpower Planning and Employment Generation	2 2 2 212
CHAPTER 14 MINIMUM NEEDS PROGRAMMES	2 2 2 222
Review	2 2 2 222
Programmes	2 2 2 223
Elementary Education	2 2 2 223
Rural Health	2 2 2 224
Rural Water Supply	2 2 2 224
Rural Roads	2 2 2 224
Rural Electrification	2 2 2 225
Housing for Landless Labour Households	2 2 2 225
Environmental Improvement of Urban Slums	2 2 2 225
Nutrition	2 2 2 225
CHAPTER 15 ENERGY	2 2 2 282
The Energy Strategy	2 2 2 282
Pattern of Energy Consumption	2 2 2 282
Energy Resources	2 2 2 289
Future Energy Demand	2 2 2 289
Accelerated Exploitation of Domestic Energy Resources	2 2 2 289
Management of Oil Demand	2 2 2 289
Energy Conservation	2 2 2 289
Pricing of Energy	2 2 2 289
New Energy Sources	2 2 2 289
Animal and Human Energy	2 2 2 289
The Programme	2 2 2 289

	PAGE
Power	232
Review	232
Plan 1980-85	233
Generation	233
Transmission and Distribution	235
Rural Electrification	235
Training	236
Research and Development	236
Organisation and Management	236
Financial Performance	236
Targets and Outlays	236
Coal	237
Review	237
Plan 1980-85	238
Demand	238
Exploration	238
Production	238
Washeries	239
Research and Development	239
Plan Implementation	239
Lignite	240
Petroleum	240
Review	240
Plan 1980-85	241
Demand	241
Exploration	241
Development and Production	242
Refining	242
Lube Oils	243
Optimal Utilisation of Gas	243
Tankage	243
Product Pipelines	243
L P G	243
Other Marketing Schemes	243
Research and Development Programmes	243
New and Renewable Sources of Energy	244
Energy Forestry	244
Biogas	244
Solar Energy	245
Biomass Conversion Technologies	245
Wind Energy	245
Other New Technologies	245
Integrated Rural Energy System	246
Outlay	246
CHAPTER 16 INDUSTRY AND MINERALS	259
Review	259
Strategy for the Sixth Plan	260
Industrial Policy Initiative for the Sixth Plan	261
Investment Programmes and Targets	262
Iron and Steel	262
Mini Steel Plants and Sponge Iron	263
Iron Ore	264
Non-Ferrous Metals	264
Engineering Industry	264
Electronics	265
Fertilizers	265
Pesticides	266

	Petro-Chemicals	226
	Drugs and Pharmaceuticals	226
	Other Organic and Inorganic Chemicals	226
	Textiles	226
	Jute Textiles	226
	Paper and Newsprint	226
	Cement	226
	Sugar	226
	Vegetable Oils and Vanaspati	226
	Leather	270
	Atomic Energy (Industry and Minerals Sector)	270
	Outlays	270
CHAPTER 17	TRANSPORT	295
	Review	295
	Objectives and Policies	296
	Transport and Energy	296
	Integrated Planning within the Transport Sector	296
	Transport and Environment	296
	Pricing Policy	296
	Improvement in Productivity	297
	Backward and Isolated Areas	297
	Urban Transport	297
	Pipeline Transportation	297
	International Traffic and Export Promotion	298
	Transport Coordination	298
	Major Policy Objectives	298
	Railways	298
	Review	298
	Strategy for the Sixth Plan	300
	Outlays and Programmes	301
	Roads	302
	Review	302
	Outlays and Programmes	302
	Road Transport	303
	Inland Water Transport	304
	Major Ports	305
	Minor Ports	306
	Light-Houses and Lightships	306
	Shipping	306
	Civil Aviation	307
	Air India	307
	Indian Airlines	308
	International Airports Authority of India	308
	Civil Aviation Department	308
	Third Level Air Services	308
	Outlays for Civil Aviation Sector	308
	Meteorology	308
	Tourism	309
	Outlays in the Transport and Tourism Sector	310
CHAPTER 18	COMMUNICATIONS, INFORMATION AND BROADCASTING	313
	Communications	313
	Review	313
	Programmes	313
	Postal System	313
	Telecommunications	314

	PAGE
INSAT	314
Indian Telephone Industries Limited (ITI)	315
Hindustan Teleprinters Limited (HTL)	315
Overseas Communication Service (OCS)	315
Monitoring Organisation	315
Outlays	315
Sound Broadcasting, Television and Information Services	315
Sound Broadcasting	316
Television	316
Information Services	316
Outlays	317
CHAPTER 19 SCIENCE AND TECHNOLOGY	318
Approach	318
The Present Position and the Perspective for the Future	318
S and T and Education	320
Basic Research	321
Policy Formulation and Implementation	321
Science and Technology and Rural Development	322
Science and Technology and Human Resource Development	322
S and T in States	324
Technical Cooperation in S & T	324
Programmes	324
Indicative Thrust Areas for S & T	324
Agriculture, Animal Husbandry, Fisheries and Food	325
Forestry	325
Environment and Ecology	325
Irrigation	326
Meteorology	326
Health	326
Education	326
Housing, Urban Development & Construction	326
Energy	326
Petroleum	327
Coal	327
Power	327
Renewable Energy Sources	327
Atomic Energy (R&D)	327
Rural Development	328
Large and Medium Industries	328
Heavy Industries	328
Mining and Minerals	328
Chemical Industries	329
Steel	329
Council of Scientific and Industrial Research	329
Department of Science and Technology	330
Testing and Analytical Facilities	331
Electronics	331
Space, Science and Technology	331
Telecommunication and Broadcasting	332
Shipping and Transport	332
Outlays for S&T	332
CHAPTER 20 ENVIRONMENT	343
Natural Resources and the Environment;	343
Land and Water	343

	PAGE
Soil	344
Forests	344
Other Natural Living Resources	344
Marine Ecosystems	345
Environmental Pollution	346
Water Pollution	346
Air Pollution	346
Land Pollution	347
Noise	347
Human Settlement and the Environment	347
Rural	347
Urban	347
Environmental Impact from Development Projects	348
Administrative and Legislative Arrangements for Environmental Protection	348
Programmes	349
Outlays	351
CHAPTER 21 EDUCATION	352
Review	352
Approach	353
Programmes	354
Early Childhood Education	354
Elementary Education	354
Adult Education	356
Secondary Education	356
Higher Education	357
Youth Development	358
Sports	359
Technical Education	359
Culture	360
Non-Monetary Input to Quality Improvement	360
Outlays	361
CHAPTER 22 HEALTH, FAMILY PLANNING AND NUTRITION	366
Health	366
Review	366
Policies and Strategy of Health Care Programme	367
Rural Health Programme	368
Minimum Needs Programmes	369
Centrally Sponsored Schemes	369
Control of Communicable Diseases	369
Malaria	370
Filaria Control	370
Leprosy	370
Control of Visual Impairment and Blindness	370
Control of Other Diseases	370
Hospital and Dispensaries	371
Medical Education	371
Undergraduate Medical Education	371
Postgraduate Education	371
Improvement of Skills	371
Improvement of Facilities	371
Medical Research	372
Traditional Systems of Medicine	372
And Homoeopathy	372
Drug Control and Prevention of Food Adulteration	372

Prevention of Food Adulteration	373
Health Education	373
Health Information Systems	373
Outlays	373
Family Planning	373
Review	373
Strategy and Programme	375
Involvement of all Ministries Department	375
Integrated Approach and Coordination of Activities	375
Role of Education	375
Extension Education and Motivation and Involvement of officials and Voluntary Agencies	375
Incentives	376
Delivery of Services	376
Maternity and Child Health Care	376
Choice of Methods	376
Research Programmes	376
Staff Motivation	376
Legal Provision	376
Outlays	377
Nutrition	377
Review	378
Objectives	379
Strategy	379
Programmes	380
Special Nutrition Programmes	380
Mid-day Meals Programmes	381
Production and Processing Schemes	381
Processed and Fortified Foods	381
Nutrition Education	381
Research and Evaluation	381
Coordination	381
Outlays	381
CHAPTER 23 HOUSING, URBAN DEVELOPMENT AND WATER SUPPLY	389
Housing	390
Review	390
Objectives	390
Rural Housing	391
Urban Housing	392
Housing and Urban Development Corporation	392
LIC and Other Institutional Support	392
Urban Land Policy	393
Outlays and Targets	393
Urban Development	394
Objectives and Strategy	394
Programmes	396
Outlays	397
Water Supply and Sanitation	397
Rural Water Supply and Sanitation	398
Urban Water Supply and Sanitation	400
Outlays	401
CHAPTER 24 LABOUR AND LABOUR WELFARE	402
Review	402
Objectives and Strategy	402
Workers Participation in Management	404
Trade Unions	405
Social Security and Labour Welfare	405

	PAGE
Safety and Working Conditions	406
Labour Research	406
Physically Handicapped	406
Apprenticeship Training	407
Organisation of Rural Workers	407
Revision of Wages in Agriculture	407
Bonded Labour	408
Child Labour	408
Women Labour	408
Contract Labour	409
Construction Labour	409
Inter-State Migrant Labour	409
Farm Labour	410
Migrant Shepherds & Dairy Cattle Owners	410
Outlays	410
CHAPTER 25 HILL AREA DEVELOPMENT	413
Categorisation of Hill areas	413
Hill States	413
North Eastern Council	413
Hill area in Composite States of the Himalayan and sub-Himalayan Region	414
Western Ghats and Other Hill Areas	414
New Thrusts and Future Direction	414
Land Use Pattern	414
Soil Erosion	414
Forestry	415
Animal Husbandry	415
Conservation and Environment	415
Planning	415
Outlays	416
CHAPTER 26 DEVELOPMENT OF BACKWARD CLASSES	417
Review	417
Objectives and Strategy	418
Sub-Plan for Tribal Areas	419
Special Component Plan for Scheduled Castes	420
Other Programmes for Backward Classes	420
CHAPTER 27 WOMEN AND DEVELOPMENT	423
Review	423
Strategy	424
Education	425
Health	425
Employment	426
Social Welfare	427
CHAPTER 28 SOCIAL WELFARE	430
Review	430
Strategy	432
Programmes	433
Child Welfare	433
Women Welfare	433
Welfare of the Blind and the Handicapped	433
Prohibition	434
Research and Training	435
Outlays	435
APPENDIX : Sixth Five-Year Plan—A Framework	439

P R E F A C E

Soon after its reconstitution in April, 1980, the Planning Commission started work on the Sixth Five Year Plan 1980—85. A number of working groups were set up to do the necessary preparatory work and consultations were held with the Central Ministries and the Consultative Committee of Members of Parliament on Planning. A basic paper entitled "Sixth Five Year Plan 1980—85—A Framework" was presented to the National Development Council on its 34th meeting held on August 30 and 31, 1980. The Council considered this paper and directed the Planning Commission to proceed with preparation of the final draft of the Sixth Plan. Thereafter, the Planning Commission held a series of wide ranging consultations with groups of economists and other social scientists, experts on rural development, eminent economic journalists, representatives of industry and trade, of trade unions, credit institutions, and others. The Framework was also discussed in two meetings of the Parliamentary Consultative Committee of the Ministry of Planning and was circulated to all Members of Parliament and to editors of newspapers for comments and suggestions. Finally, extensive discussions were held with the States and the Union Territories on the State Plans for 1980—85. The Commission also benefited by the useful data collection and analytical work done by the Planning Commission in the past three years.

In the introduction to the Third Five Year Plan, Jawaharlal Nehru said "Planning is a continuous movement towards desired goals". While the precise formulation of Plan objectives adopted in successive plans has varied, the essential goals of Indian Planning have been growth, removal of poverty and achievement of self-reliance. The Commission has kept in view the pledges given to the people in formulating its proposals. Further it has used the consultative mechanism to elicit the views of as wide a cross section of national opinion as possible so as to evolve a broad national consensus on the objectives, strategies and programmes of the Sixth Plan. Its overriding concern has been to give practical shape to the nation's collective will for using all the latent resources and energies of the nation for an effective attack on poverty, unemployment and inequalities.

The final size of the public sector outlay has been fixed at Rs. 97,500 crores at 1979-80 prices. This outlay is in real term 80 per cent higher than the outlay in the Fifth Five Year Plan. The Commission would have liked very much to be in a position to recommend larger outlays in several sectors. However, given the constraint on the size of the Plan, and keeping in view Plan objectives, an initially consistent and feasible

inter-sectoral allocation has been adopted to achieve a growth rate of 5.2 per cent. It should become possible to review these allocations in the mid-Plan period as the combined efforts of the people and Government succeed in raising resources and productivity. While the outlays on all major sectors of the economy will at least be double in nominal terms compared to the Fifth Plan, the growth rate of outlays in rural development and irrigation are even higher. This reflects the very high priority given in the Sixth Plan to the objectives of employment generation and removal of poverty. Similarly, the very high emphasis on investment in the energy sector represents our resolve not to let energy availability become an undue constraint on the growth process. Substantial provisions have been made for the special component plans for Scheduled Castes and for tribal sub-plans. In addition, benefits will accrue to the Scheduled Castes and Scheduled Tribes from the various sectoral programmes.

A substantial increase has been provided in Plan outlays for the special areas programmes in keeping with the Plan objective of reducing regional disparities. In view of the particular problems of the North Eastern Region, a substantial step up in the plans of the constituent units of the Region and of the North Eastern Council is envisaged. These outlays will be in addition to greatly enhanced levels of Central sector investments in the Region.

It has been possible to increase the size of the Sixth Plan over that envisaged in the Framework, partly on account of the determination expressed by some States during the course of final Plan discussions to exceed the estimates of additional resource mobilisation that had originally been envisaged for them. On this basis, the share of States and Union Territories in the Plan is Rs. 50,250 crores, which works out to 51.54 per cent of the total outlay. Determined efforts will have to be made by the Centre and States to realise the target of additional resource mobilisation. This is an essential precondition for successful implementation of the Sixth Plan. This point needs particular emphasis, as a major task of economic policy in the Sixth Plan would be to create the necessary conditions for the mobilisation of resources in a non-inflationary manner. Inflation is the most regressive form of taxation. As the Framework points out, the Sixth Plan is being launched in difficult conditions. Fortunately, the acute inflationary pressures which prevailed in 1979-80 have shown some signs of abatement in 1980-81. However, the situation cannot be said to be completely under control yet and a great deal of ingenuity and imagination, not to speak of resolve, will be needed to devise effective economic policies to reconcile the requirements of growth and stability.

As regards the external environment, it must be recognised that the economy continues to be extremely vulnerable to increases in oil prices and to deterioration in our terms of trade generally. A major task facing the country is to reduce our dependence on energy imports and to promote exports and invisible earnings. This is essential in order to achieve self-

reliance. Self-reliance, as should be obvious, but often is not, does not necessarily mean self-sufficiency in all sectors of the economy. So long as the country is able to pay its way, it cannot be said to be dependent on others. This calls for an all out effort to accelerate the rate of growth of our exports to 9 to 10 per cent as envisaged. We must also rigorously promote import substitution in all those sectors of the economy where we have a comparative advantage.

Meaningful solutions to the problems of poverty, under-employment and unemployment can only be found within the framework of a rapidly expanding economy. To that end, every effort will have to be made to achieve the planned growth rate of 5.2 per cent in the Sixth Plan. We recognise however that even this rate of growth will have to be supplemented by more direct means of reducing the incidence of poverty, especially in the rural areas. Programmes of direct productive benefit to the poor involving the transfer of assets, the provision of inputs, credit, training and services, the generation of wage employment through the National Rural Employment Programme and the provision of social services through the Minimum Needs and other programmes, will be drawn together so that they focus upon the level of the individual household, and raise at least 3000 of the poorest households above the poverty line in each block during the Plan. Necessary changes in the extension and delivery services will be given the highest priority. Simultaneously, every effort will be made to secure voluntary adoption of the small family norm. In the ultimate analysis the success of our efforts in eliminating poverty and unemployment will depend on the extent to which we succeed in reducing the rate of population growth.

It need hardly be emphasised that the success of the Plan depends crucially on the efficiency, quality and texture of implementation. The challenge ahead is to achieve an all round improvement in production and efficiency, not merely in the functioning of the infrastructure or the public sector, but in all segments of national life. We must get the most out of the capital stock and human resources we have developed during the last thirty years. In this context, a special responsibility devolves on that segment of the population which has benefited disproportionately from planned development so far and also on those who have been fortunate enough to enjoy superior access to education and professional skills.

Ultimately, the requisite effort and the required sacrifices will only be made if faith in the basic equity of our economic and social system is maintained, and the task which we set ourselves is bold enough to capture the imagination of our citizens. These considerations have implications both for the distributional objectives we build into our Plans, and for the total size of the resources we mobilise for them. It is to be hoped that the Sixth Plan 1980-85, despite all the constraints it faces, will not be found wanting on either of these criteria. The translation of the promise it holds out into actual performance, however, is something that can only be ensured by all of us collectively. It is only through sustained hardwork,

discipline and self-restraint, particularly on the part of the more privileged sections of our society, a willingness to subordinate narrow sectional loyalties to wider national interests; in short, by recapturing some of the idealism and sense of adventure which inspired our freedom struggle, that we can hope to meet effectively the formidable challenges that lie ahead. Let us join forth and renew our determination to see through, to a successful conclusion, this gigantic enterprise of building a just, prosperous and modern India.



(NARAYAN DATT TIWARI)

Deputy Chairman,
Planning Commission.

NEW DELHI,

January 18, 1981.

PLANNING COMMISSION

INDIRA GANDHI	Chairman
NARAYAN DATT TIWARI	Deputy Chairman
R. VENKATARAMAN	Member
M. S. SWAMINATHAN	Member
MOHAMMED FAZAL	Member
MANMOHAN SINGH	Member-Secretary

DEVELOPMENT PERFORMANCE

India began the process of planned development; nearly thirty years ago with the start of the First Five Year Plan in April, 1951. The central purpose of planning was identified as that of initiating "a process of development which will raise living standards and open out to the people new opportunities for a richer and more varied life" (First Five Year Plan). The manner in which this purpose has been translated into specific objectives has varied from Plan to Plan. However, in a broad sense, the basic objectives of planning in India can be grouped under four heads: growth, modernisation, self-reliance and social justice. In one form or another but possibly with varying emphasis these objectives reflect the views of all sections of the population and represent a national consensus on the aims of planning.

GROWTH

1.2 Between 1950-51 and 1978-79 the underlying trend rate of growth of national income was 3.5 per cent, of agricultural production 2.7 per cent and of industrial production 6.1 per cent. In per capita terms, income has grown at a trend rate of 1.3 per cent, which, after allowing for the rising share of investment in national income, has meant a modest 1.1 per cent per annum rise in per capita consumption.

1.3 The growth of the economy during the planning era has to be judged in the context of the prolonged period of stagnation that preceded Independence. Judging by expert estimates of the national income of undivided India, the trend growth rate between 1900-01 and 1945-46 was 1.2 per cent for national income, about 0.3 per cent for agricultural production and 2.0 per cent for industrial production. One of the most significant achievements of our development policy after Independence has been the fact that this handicap of stagnation was overcome and the process of growth initiated.

1.4 The growth performance of the economy in different plan periods is presented in Annexure 11. These data show that except for the Third Plan where, in the last year of the Plan, the economy was badly hit by a severe drought, the rate of growth of national income has ranged between 3 and 5 per cent which is a significant achievement. However, except in the

First and Fifth Plan, the actual growth rates have been less than the higher targets specified in the Plans:—

Table 1.1
Targetted and Actual Growth Rates

(Percentages)				
Sl. No.	Plan	Target	Actuals	Growth rate for
(a)	(1)	(2)	(3)	(4)
1	First Plan	2.1	3.6	national income
2	Second Plan	4.5	4.0	national income
3	Third Plan	5.6	2.2	national income
4	Fourth Plan	5.7	3.3	net domestic product
5	Fifth Plan	4.4	5.2	gross domestic product.

NOTE :—Targets were generally specified in terms of net national income/product upto the Fifth Plan in which for the first time, targets were specified in terms of gross domestic product.

The shortfall in the growth in national income has of course meant a corresponding shortfall in targetted levels of per capita income.

1.5 The growth of national income depends on a complex interaction of large number of variables, not all of which are amenable to government control. However, it is well known that the quantum of investment and the productivity of this investment, as measured in a simplified model by the capital output ratio, exercise an important influence on the overall growth rate. An approximate and first-order explanation for the gap between target and actual levels of income growth can be found in a comparison of the trends in income and investment. The main conclusion suggested by such a comparison is that shortfalls (or excesses) in income growth are larger than what would follow from the shortfalls (or excesses) in investment. The main reason for this is that realised capital output ratios, particularly during the Third and Fourth Plan periods, have been much higher than anticipated. One further point in the comparison that is worth noting is that total investment targets have, by and large, been met or exceeded in recent plans. However, in the Fifth Plan period, the excess was due largely to higher levels of private sector investment and stock accumulation in the public sector. The

link between investment and income is not a simple one and it operates not merely through the capital-output ratio but also in the reverse direction in that shortfalls in income-generation via their impact on domestic savings can lead to a shortfall in investment.

1.6 The deficiency in investment and the higher capital-output ratios are only the immediate arithmetical explanations for the shortfalls in the growth targets. A further analysis is necessary to identify the factors which would account for the departures from forecasts and targets for these two key magnitudes. Some part of the difference is attributable to a degree of unrealism in the forecasts; but in the case of investment and capital productivity, the explanation lies to a considerable extent in deficiencies in effective implementation of plans.

1.7 The trends in the rates of gross savings and investment are presented in Annexure 1.2. These data bring out the very substantial rise in the rate of gross investment, a rise which came in two spurts: the first during the first decade of planning and the second between 1972-73 and 1978-79 by which time the rate rose to 23.2 per cent. Between 1960-61 and 1972-73 the rate fluctuated around 17 per cent and it is in this period that shortfalls relative to the rates specified in the various plan perspectives are most substantial. The high rate of capital formation that we have now achieved is financed largely by domestic savings. The most buoyant element in domestic savings has been the savings of the household sector; public sector and corporate savings have grown much more slowly than anticipated.

1.8 In a mixed economy, the control of the government on the overall level of investment is limited and what the Plans can regulate more effectively is the level of public investment. According to national account statistics, gross fixed investment in the public sector as a percentage of gross domestic product rose from 2.3 per cent in 1950-51 to 8.5 per cent by the end of the Third Plan. Thereafter the rate declined sharply for several years and started rising only in recent years to reach 9.2 per cent in 1978-79. The level of public investment is determined largely by plan expenditure which has generally exceeded plan provision in nominal terms but fallen short in real terms. The main reason for this is the fact that there is no built-in mechanism to protect public sector resources and investment against inflation.

1.9 The impact of public investment on the overall pace of expansion is profound. In principle, the public sector competes for savings with the private sector so that any expansion of public investment will reduce private investment to some extent. In practice, the modalities for funding investments are so different in the two sectors that such a competition for savings is manifest in only a limited way. In fact, a high level of public investment in infrastructure and key industries is a pre-condition for development in the private sector. Moreover many private enterprises depend on the orders which flow from public activity and their growth and profitability depend directly on the expansion in public sector investment.

1.10 The low rate of public investment (as a percentage of GDP) during the Annual Plans (1966-67 to 1968-69) and the Fourth Plan Period (1969-70 to 1973-74) is probably a consequence of the preoccupation of public policies with short term stabilisation in the wake of acute inflationary pressures in the mid sixties and early seventies, the uncertain outlook for India's external payments as also the slow growth in public sector savings. Apart from budgetary surpluses a major element affecting public saving is the generation of surpluses in public enterprises. It would have been reasonable to expect that, with the passage of time, a growing proportion of the funds required for investment in public sector industry, power, railways, telecommunications, etc. would have been found from the internal resources of the investing enterprises. But this expectation has not been fulfilled and the rate of return in a majority of these enterprises is well below target. The deficiency is partly attributable to the pricing policies of the government but also partly to managerial shortcomings.

1.11 The analysis presented above leads to the conclusion that the deficiency in investment which led to a shortfall in growth targets is a consequence of our inability to ensure adequate growth in public investment. The main reason for this failure appears to lie in the inadequate return from past investment by the public sector in industry, power, irrigation and transport and the shortfall in targetted levels of budgetary savings.

1.12 The impact of the shortfall in the quantum of investment on the growth rate has been compounded by the fact that actual capital-output ratios have turned out to be higher than anticipated, particularly in recent years. The calculation of capital-output ratios is fraught with many statistical hazards because of weather induced fluctuations in output, differential rates of inflation for capital goods and output in general, changing lag patterns, etc. However, an approximate indication of trends is provided by the following estimates for different plan periods:—

Table 1.2
Incremental Gross Capital Output Ratios
(at 1970-71 prices)

Sl. No.	Plan	Period	Capital/output Ratios
(0)	(1)	(2)	(3)
1	First Plan	51-52 to 55-56	3.2
2	Second Plan	56-57 to 60-61	4.1
3	Third Plan	61-62 to 65-66	5.4
4	Annual Plans	66-67 to 68-69	4.9
5	Fourth Plan	69-70 to 73-74	5.7
6	Fifth Plan	74-75 to 78-79	3.9

These estimates suggest a worsening of the capital-output ratios in later plans, though the most recent period shows some improvement over the previous one. A rough sector-wise analysis shows that the deterioration in the ratio in the second half of the planning era is particularly sharp in mining and manufacturing.

1.13 The deterioration in the capital-output ratio and its difference relative to targets can be attributed to a variety of factors. There are some which are a consequence of the very process of development like changes in the composition of investment (e.g. from engineering to chemical industries) and rising real costs in certain sectors like irrigation and mineral development, where the easier opportunities were exploited first. However, there are others which were avoidable of which the most important seems to be the inefficiency in the utilisation of assets. In critical infrastructural sectors like power and railways the gains in efficiency since the mid-sixties have been minimal (except in some years) and there has, in fact, been a decline in efficiency in recent years. In industry also capacity utilisation rates have declined in recent years. One reason for the low levels of capacity utilisation lies in the lack of adequate synchronisation in the implementation of inter-linked projects.

1.14 The growth in national income is determined by trends in agricultural and industrial production which are indicated in the data presented in Annexure 1.1. The growth rates of agriculture achieved during the planning periods are a substantial improvement on historical trends. These growth rates however are averages which conceal substantial year to year variations caused mostly by droughts. The data on incidence of droughts since 1951 presented in Annexure 1.3 suggest some tendency towards a worsening of weather conditions over the years, though with reference to climate, this is too short a period for arriving at conclusions about long-term trends. The very fact that despite this worsening the tempo of agricultural advance has been maintained is, in itself, a major achievement. The principal problems from the point of view of growth are (a) the uneven rate of agricultural progress in various regions leading to considerable regional disparities in the level and pace of development, (b) the wide amplitude of yearly fluctuations in agricultural production, (c) the stagnation in the production of several important crops like pulses and oilseeds, (d) the need for technologies, services and public policies that can help ecologically disadvantaged regions and also promote greater labour absorption and (e) the inadequacy of the institutional framework for enhancing the productivity of small farmers and for producer oriented marketing.

1.15 The five-fold expansion in industrial production over the planning period is very substantial. However, there is a distinct decline in the pace of industrial expansion in the second half of the period. In India, the impetus for industrialisation has had to come from the domestic market. In the first phase of development there were many relatively easy opportunities for import-substitution and industrial pro-

duction could grow faster than the growth in demand. As the easier opportunities were exploited, the low rate of expansion of domestic demand increasingly imposed a constraint which was mitigated only to a limited extent by export markets even though there is evidence that we did not fully exploit the available export potential. Moreover, the pattern of income distribution and the rate of economic growth was such that domestic markets for manufactured consumer goods could not grow very rapidly. In more recent years the difficulties have been further compounded by critical shortages of power and transport facilities.

1.16 The growth of national income and of agricultural and industrial production has tended to fluctuate greatly from year to year as is indicated in the data in Annexure 1.4. The reasons for this variability lie partly in the impact of droughts on agricultural production, power generation and industrial output and the subsequent consequences in the form of inflation and an erosion of public resources. An unstable growth rate affects the average level of performance not just arithmetically but also through the effects of instability on the distribution of income, price expectations, the motivation to invest, innovate and take risks and on the volume of public savings.

1.17 A summary assessment of the growth performance of the Indian economy over the planning period would be that it improved substantially on past performance but was generally less than what was targetted and more unstable than that what is desirable. Some part of the shortfall and much of the instability can be attributed to the weather. But the gap between performance and promise is also due to our inability to maintain public investment at targetted levels and deficiencies in the management and utilisation of assets.

MODERNISATION

1.18 The term 'modernisation' connotes a variety of structural and institutional changes in the framework of economic activity. A shift in the sectoral composition of production, diversification of activities, an advancement of technology and institutional innovations have all been part of the drive to change a feudal and colonial economy into a modern and independent entity.

1.19 The composition of national income has changed steadily over the planning period. The share of mining, manufacturing, construction and productive infrastructure has increased from 18.8 per cent in 1950-51 to 29.9 per cent in 1978-79. The more detailed data presented in Annexure 1.5 show that the shift towards these sectors was most substantial upto the end of the Third Plan period. In the later period the shift away from agriculture is somewhat smaller and accounted for to a greater extent by a rise in the share of the services sector.

1.20 The main component in the drive for structural diversification has been the effort to promote industrial growth and diversification. This effort commenced effectively with the Second Plan which, along

with the Industrial Policy Resolution of 1956, articulated explicitly the objective of rapid industrialisation. Apart from rapid growth, this strategy involved certain other key components viz. a shift in the industrial structure towards industries producing basic materials and capital goods and the growth of the public sector in industry.

1.21 At Independence we inherited an industrial structure that was restricted to a few industries like textiles and sugar. The first steel plant had been set up and there was some limited development of engineering in railway workshops and assembly plants. The drive to diversify this structure, a drive linked to the search for self-reliance, has been the keynote of the industrial strategy of our plans. The extent of change brought about by this drive is indicated in Annexure 1.6. As these data show the relative share in industrial production of the traditional manufacturing sectors like food and textiles has declined and that of new sectors like chemicals and engineering has increased very substantially. In terms of sophistication of technology and the range of goods manufactured an extensive degree of industrial diversification has been achieved.

1.22 The organisation of industry has also undergone a major change with the development of the public sector. Between 1960-61 and 1977-78, the share of the public sector in the value added in mining and organised manufacturing grew from 8.1 per cent to 28.9 per cent. The development of the public sector has been the principal element in our drive for industrial diversification and in industries like steel, non-ferrous metals, petroleum, fertilisers, petrochemicals and heavy engineering, public sector units play a dominant role.

1.23 The industrial policy of the Government accepted the important role of the private sector and an elaborate network of institution has been established to support it and to regulate its activities. A major component of the support system is the network of development banking institutions which have been established to finance private investment in industry. The cumulative disbursements of these institutions amounted to over Rs. 5,000 crores by March, 1979 of which over 80 per cent was disbursed in the last ten years. Apart from these development banks, the government has set up a variety of institutions to assist in the provision of infrastructure, raw material supply, marketing and technology development. Small scale industries and artisans have also been protected through product reservations and fiscal concessions. The regulatory framework for controlling the pattern of private industrial investment was set up in the early years of the planning era with the Industries (Development and Regulation) Act and elaborated later through the Monopolies and Restrictive Trade Practices Act and other measures. The manner in which these regulatory functions have been exercised has been reviewed from time to time and appropriate changes made. The institutional framework for supporting and regulating private industry is by no means perfect. The essential point, however, is that a variety of institutions and agencies have been

established and have succeeded in stimulating the development of new industrial activities, new centres of industry and new entrepreneurs. But their success in these matters is less than what we sought and hence there is a need for adapting and elaborating both the support system and the regulatory framework to suit the fast changing needs of a diversified industrial economy.

1.24 The tasks of modernisation and structural change in agriculture were even more daunting at the start of the planning era. The outmoded land tenure system, the primitive technology of cultivation and lack of an infrastructure for raising productivity proved formidable barriers to agricultural advance. The fact that these barriers have been overcome to an extent is one of the major successes of our planning effort. Zamindari and other intermediary tenure have been almost eliminated. The technology of cultivation has changed substantially with the spread of high-yielding varieties and the extension of irrigation a change which was facilitated by the elaborate network of agricultural research and extension set up during the planning era. One further change of consequence is the establishment of a system of support prices, procurement and public distribution. Significant progress has been made not only in the production of major foodgrains but also in horticultural crops like apples and animal products like eggs, milk and fish.

1.25 Some data on the indicators of modernisation in agriculture are presented in Annexure 1.7. The growth in irrigation is a common feature which runs through the plans though the pace of expansion in recent years is far higher than before. The use of the new technology based on high yielding varieties and fertilisers spread rapidly only after 1965. This difference is reflected in the larger contribution of productivity gain to production growth in the period after 1964-65, the relevant annual growth rates being as follows:

Table 1.3
Growth Rate of Area, Production and Yield

Sl. No.	Item	Foodgrains		Non-foodgrains	
		1949-50 to 1964-65	1964-65 to 1978-79	1949-50 to 1964-65	1964-65 to 1978-79
(0)	(1)	(2)	(3)	(4)	(5)
1	Area	1.4	0.6	2.5	0.8
2	Production	3.0	3.4	3.5	2.6
3	Yield	1.4	2.3	1.0	1.3

The process of technological modernisation in agriculture has, however, just begun. Average yield levels in most regions and farming systems are below what can be attained with known technology. We still

need to extend modern technology to new areas, develop a technology for ecologically handicapped regions and utilise fully our irrigation potential as well as the potential of rainfed areas.

1.26 Several changes have taken place in agricultural credit and marketing. The system of cooperative credit has spread, lessening the dependence of the cultivator on exploitative moneylending and trading practices. Institutional term finance for agriculture has grown with the reorientation of the banking system and the establishment of Land Development Banks, Regional Rural Banks and apex institutions like the Agriculture Refinance and Development Corporation. In agricultural marketing, the dominant role of the Food Corporation of India in foodgrain trade and the growth of marketing and processing cooperatives have helped both farmers and consumers. In the case of milk, cooperatives and urban milk supply schemes have captured a substantial part of the market. These and other changes in the field of credit and marketing have altered the very unequal relationship between the farmer and the trader and, by doing so, have stimulated agricultural progress.

1.27 The foundations of industrial and agricultural advance lie ultimately in the availability and effective use of human skills. All our plans have emphasised the need to develop these skills at all levels from those required at the shop floor or the farm to those required in fundamental research. In agriculture, an integrated system involving research institutes, agricultural universities and an extension machinery has been set up. In industry, there is a network of industrial research laboratories, R&D divisions in major enterprises and consultancy firms for project consultancy and design engineering. At the shop floor level there is no major shortage of industrial skills. The basis for this major advance lies in the rapid expansion of technical education. Thus, between (1950-51 and 1975-76), the number of students in engineering, technological colleges increased from 13 thousand to 286 thousand and in Industrial Training Institutes from 10 thousand to 138 thousand. The same picture holds true for other categories like scientists, doctors and agricultural graduates. In fact, India now has the third largest scientific and technical work force in the world. However, the capacity of the system to absorb fully these skills in productive employment has been less than adequate. Also in pure and applied research advances have been limited except in a few areas like agricultural research, atomic energy and space. At the farm or shop floor level, average productivity levels are below what can be attained with known technology. Human skills are a formidable asset since they last not merely during one working life but because they are transmitted, for generations. If these assets are used effectively, they may well turn out to be one of the most fruitful results of planning.

1.28 The mobilisation of savings and their use in preferred directions is a crucial element in any development effort. Our success in this regard has been dealt with earlier. A significant feature of the savings mechanism has been the growing fungibility of savings as the share of savings accumulated by house-

holds in the form of deposits, shares, debentures, life insurance and pension funds has increased from 10.0 per cent of net savings in 1950-51 to 33.0 per cent in 1978-79. Thus, primitive processes of accumulation in which households and small enterprises invest their savings directly in their own activities or in currency hoards have given way to more complex forms in which, through financial intermediaries and capital markets, households savings can be channelled into a much wider variety of activities.

1.29 There is one qualification, however, to this picture of a deepening of financial structure. The market for corporate issues continues to remain very narrow. Net household savings in the form of corporate shares and debentures which amounted to 8.0 per cent of savings in 1950-51 have tended to stagnate even in nominal terms and, in 1977-78, when they were well above the trend, they amounted to only 2.1 per cent of net savings. Since the share of corporate savings in total savings has also tended to decline, it has become increasingly difficult to maintain the tempo of development in the private corporate sector though the deficiency has been covered to a considerable degree by the growth of development banking which was mentioned earlier.

1.30 The pattern of utilisation of savings has been influenced by several innovations like the development banks for industry and agriculture and the system of cooperative credit. A major change in the functioning of capital markets was effected through the nationalisation of banks in 1969 after which there has been a substantial increase in bank lending to agriculturists, artisans, small industrialists and transport operators and others whose access to bank credit was hitherto severely limited.

1.31 Planning implies state intervention in economic matters which involves not just a few big projects but also a large number of small works and programmes directed at individuals. At Independence we inherited a patchy administrative structure oriented towards maintenance of law and order and revenue administration. Over the planning period an elaborate development administration has been built up from the village, through the block and district to the secretariat level. Though there are deficiencies in this structure in terms of motivation, probity and efficiency, it at least provides a point of contact between the government and the household or the enterprise. A further change has been introduced by the establishment of panchayati raj which, in many states, plays an important role in development administration.

1.32 Over thirty years of planning the structure of the Indian economy, the technology of production in agriculture and industry and the institution framework within which economic activities are conducted have changed substantially. The bedrock on which these changes are based lies in the tremendous growth in human skills and, because of this firm base, the forces of modernisation and technological advance are firmly entrenched in all sectors of the economy even though the pace of diffusion varies from one sector to another and from one region to another. The major problems

at present lie not in any lack of institutions or persons for the tasks at hand but in their effectiveness and in some parts of the institutional framework there is a mismatch between form and function which needs to be corrected.

SELF-RELIANCE

1.33 The objective of self-reliance as articulated in our plans has several dimensions of which the most important ones are a reduction in the dependence on foreign aid, diversification of domestic production and a consequential reduction in imports for certain critical commodities and the promotion of exports to enable us to pay for imports from our own resources.

1.34 The possibility of foreign exchange becoming a constraint in promoting development has been recognised in our plans. The First Plan pointed out that in the early stages of development a deterioration in the balance of payments was inevitable as the increase in the rate of investment would necessitate imports of machinery and other producer goods which, to start with, could not be met from domestic supplies. These balance of payments problems could be met by the use of reserves (if an excess of such reserves was available), inflows of external finance and, in the longer term, by adjustments in the pattern of foreign trade via import substitution and export promotion. Each of these methods has played a role in the management of the balance of payments during the planning era.

1.35 In the first two plans the balance of payments gap was financed to a large extent by a drawing down of the sterling balances accumulated in the pre-independence period. The contribution of external assistance to the financing of imports is presented in Annexure 1.8. The percentage of imports financed by net aid was only 4.9 per cent in the First Plan but rose to 26.9 per cent in the Second Plan. The very rapid reduction in reserves led to a foreign exchange crisis in 1957-58 after which the dependence on external assistance increased substantially. The percentage of imports financed by net aid rose to 37.5 per cent in the Third Plan and the Annual Plan period (1966-67 to 1968-69). Thereafter there has been a steady decline and in the Fifth Plan, net aid financed 12.8 per cent of imports.

1.36 The extent to which net aid contributed to plan finance in different plan periods is also indicated in Annexure 1.8. These data show that net aid as a percentage of plan expenditure rose from 9.1 per cent in the First Plan to 33.9 per cent in the Annual Plan period (1966-67 to 1968-69) and thereafter declined to around 9.0 per cent in the Fifth Plan.

1.37 The inflow of external assistance carries with it a debt service obligation in subsequent years which has to be discharged from foreign exchange earnings. The burden of debt service as a percentage of exports rose from less than 1 per cent in the First Plan to a peak of 27 per cent in the Fourth Plan; thereafter, because of the rapid rise in export earnings, the percentage declined to 15.4 per cent in 1978-79.

1.38 The dependence on external assistance has to be judged against the objectives specified in the plans. The need to reduce dependence on external assistance was articulated for the first time in the Third Plan. The Fourth Plan specified the objective as the reduction of net aid by half over the plan period and its speedy elimination thereafter. In fact the average annual level of net aid during the Fourth Plan period was less than half of what it was in the Annual Plan period (1966-67 to 1968-69). Since then, faced with a steep increase in import prices of petroleum products and other commodities, in absolute terms the quantum of net aid increased during the first two years of the Fifth Plan but it declined once again to roughly what it was in the Fourth Plan by 1978-79.

1.39 The management of foreign trade during the planning era has been dominated, by the drive for self-reliance and import substitution in critical areas. Some data in this regard are presented in Annexure 1.9. These data show both the increase in import dependence with the acceleration of growth and the subsequent decline as domestic production was built up. A particularly noteworthy feature of the drive for import substitution has been the development of machinery manufacture within the country. Today the bulk of the equipment required for industrial and infrastructural development is produced within the country. In fact, self-reliance in this sector goes further. We have also built up capacity for project consultancy, design engineering and project implementation to a level at which we are in a position to export these services. In many ways this is one of the most fruitful consequences of the drive for self-reliance.

1.40 The performance of the economy with regard to export promotion is indicated in Annexure 1.10. In the first three plan periods export growth was very low. To a certain extent this can be attributed to the lack of coherent domestic policies since even in traditional exports our share in world exports declined. But it must be noted that this was not a period of rapid growth in exports from developing countries and India's export growth rate was comparable to that of other developing countries. The real difference between India and other countries is evident after 1965 when, right upto the middle of the Fourth Plan, we could not profit from the boom in world trade. Export growth since 1971 has been much more impressive and during the Fifth Plan India's exports grew nearly as rapidly as those of the countries classified as fast growing exporters of manufactures. One further feature of the growth in exports over this later period has been the diversification in terms of commodities and foreign markets.

1.41 The objective of self-reliance articulated our desire to ensure a more equal relationship with the world economy and to reduce our vulnerability to international pressures and disturbances. This has been achieved to a substantial extent. One example of this is our ability to cope with shortfalls in food production. The drought of the mid-sixties necessitated substantial imports of foodgrains and that too on concessional terms, the drought of the early seventies required imports but this time these imports

were from the open market and did not come in the form of food aid; the latest drought of 1979, however, could be managed without further foodgrain imports. Another example of the success of self-reliance lies in the fact that the tempo of investment in critical sectors like power could be maintained in the Fifth Plan despite the balance of payments burden of the oil price increase because of the limited dependence on imports for equipment supplies. In fact it could be said that the most significant achievement of the planning period has been the fact that the Indian economy today has achieved a greater degree of resilience to cope with disturbances in the international economy.

1.42 The improvement in our capacity to weather international shocks has to be seen in the context of the very rapid deterioration in recent years in the international environment within which we have to function. The prices that we pay for our imports of petroleum products, fertilisers, machinery and other products have increased much more rapidly during the latter half of the seventies than the prices of our exports. Between 1974-75 and 1978-79 the total net loss because of this differential movement in prices may have been of the order of Rs. 5,000 to 5,500 crores. As a percentage of national income, the loss may have amounted to an average of about 1.5 per cent per annum. At the same time it is true that during this period the growth in export earnings and remittances helped not merely to pay for the much higher import bill but to accumulate a substantial volume of foreign exchange reserves. Apart from international inflation we have also had to cope with sudden shortages in availability of critical items, necessary trends and growing protectionism in developed countries.

SOCIAL JUSTICE

1.43 The objective of social justice as articulated in the plans has two major dimensions. The first dimension is an improvement in the living standards of the poorest groups in society and the second is a reduction in inequalities in asset distribution. For about three decades, a variety of instruments ranging from direct attacks on poverty and asset inequality to more indirect fiscal measures, have been used to pursue these ends. An assessment of the extent to which these ends have been attained is given in what follows.

1.44 There has been an improvement in the quality of life over the planning period. Between 1950-51 and 1978-79 per capita private consumption has grown by 46 per cent. The distribution of private consumption also shows some improvement in the share of the poorest groups. The relevant figures for the share of the poorest 30 per cent in consumer expenditure being as follows:

Table 1.4

Share of the Poorest 30 per cent in consumer expenditure		(Percentage)	
Sl. No.	Sector	1958-59	1977-78
(o)	(1)	(2)	(3)
1	Rural	13.1	15.0
2	Urban	13.2	13.6

(Details in Annexure 1.11)

1.45 The improvement in consumption expenditure of the poorest in rural areas, though significant, has not been large enough to lead to any substantial reduction in the percentage of population below the poverty line. In 1972-73, this was 54 per cent in rural areas and 41 per cent in urban areas. The corresponding figures for 1977-78 are 51 per cent and 38 per cent. Various analysis of the movement of the poverty percentage over a longer time period do not show a significant upward or downward trend. The broad picture is that of an increase upto the mid-sixties, when consumption standards were badly affected by two severe droughts and a decline thereafter.

1.46 Poverty percentages are based on the definitions of a norm that takes nutritional requirements into account and all persons below the norm are classified as poor. A more direct estimate of nutritional inadequacy for 1971-72 based on a calorie norm of 2300 calories and a protein norm of 57 grams shows that the percentage of population suffering from either calorie or protein deficiency (or both) was 28.8 per cent in rural areas and 32.6 per cent in urban areas. These figures, though lower than the poverty percentages, are high enough to provide cause for concern.

1.47 Trends in the level and distribution of private consumption expenditure do not reflect the improvements in living standards brought about by public expenditure on social services. In the field of health the programme to control communicable diseases particularly small-pox and malaria and the gradual extension of health care facilities to rural areas through rural hospitals, primary health centres and dispensaries has led to a significant improvement in the expectation of life at birth from 32 in 1951 to 46 for men and 45 for women in 1971. In education, enrolment in elementary education (Classes I-VIII) has gone up from 32 per cent in 1950-51 to 68 per cent in 1979-80. At this level of enrolment it is clear that a very substantial proportion of elementary school students must be from the disadvantaged groups in society though the rate of enrolment for these groups remains well below the average. The access of the poor to secondary and higher education has also improved with

the extension of scholarships for weaker sections and better geographical spread of institutions. Yet the illiteracy rate remains large (65.5 per cent in 1971 excluding the 0-4 age group) and the quality of the schooling provided needs substantial improvement. Besides these two major social services, public expenditure has provided water supply and other municipal services in urban slums and in villages, house sites for the poor in rural areas and supplementary nutrition for vulnerable mothers and children, all of which benefit the poor but do not necessarily show up in the data on consumption expenditure.

1.48 An individual obtains an income from the ownership of assets and from employment. The limited impact of the Plans on the well being of the poor sections of the population is a consequence of our inability to restructure the distribution of assets and to provide a sufficiency of employment for a growing work force.

1.49 According to the all India debt and investment survey the distribution of assets in rural areas, where the bulk of the population lives, was as follows:

Table 1.5
Distribution of Assets in Rural Areas

(Percentage)

Sl. No.	Percentage share in assets of		1961	1971
(0)	(1)	(2)	(3)	(4)
1	Lowest	10%	0.1	0.1
2	Lower	30%	2.5	2.0
3	Top	30%	79.0	81.9
4	Top	10%	51.4	51.0

These figures bring out the very low level of asset holdings of the poorest 30 per cent in rural areas. They also show that there has not been any major change in the structure of asset ownership in rural areas during the sixties. In fact if 'poor' households are defined as those with less than Rs. 1000 of assets in 1961 or, to allow for inflation, Rs. 2500 in 1971, the percentage of such households increased from 30 per cent in 1961 to 35 per cent in 1971. The bulk of the assets of these 'poor' households consist only of their huts, some household goods and some livestock.

1.50 The principal productive asset in rural areas is land which in 1976-77 was distributed as follows:

Table 1.6
Distribution of land

(Percentages)

Sl. No.	Operational holdings of	Number	Area operated
(0)	(1)	(2)	(3)
1	Less than 2 hectares	72.6	23.5
2	2—10 hectares	24.4	50.2
3	Over 10 hectares	3.0	26.3

Small and marginal farmers who constitute over 70 per cent of the landholders operate barely 24 per cent of the land. The very substantial improvement in agricultural productivity brought about by irrigation and the new seed-fertilizers technology improve directly the earning power of agricultural land and only indirectly that of agricultural labour. Hence agricultural growth by itself may not solve the problem of poverty. It is, therefore, necessary to adopt positive measures combining a mix of employment generation, diversification of occupations, land reforms, reorientation of the credit systems and massive public investment in rural infrastructure so as to ensure that the fruits of economic progress are more equitably distributed in rural areas.

1.51 The programme of land reforms instituted right at the beginning of the planning period was meant to redistribute this primary resource. The first phase of this programme which involved the abolition of zamindari and intermediary tenures has been, to a large extent, successfully implemented. The later phases of land reform involved elements like tenancy reforms, protection of share-croppers, land ceiling and land consolidation. The pace of implementation of these measures particularly of ceiling legislation has been slow and full of loopholes so that their impact on the structure of land holdings has been minimal. The land reform programme is by no means complete and has to be pursued further if we are to tackle effectively the problems of poverty and inequality.

1.52 Trends in the ownership of assets in urban areas are less fully known. The principal instruments used to influence the distribution of assets other than land are essentially fiscal in character e.g. progressive taxation of income and wealth and the preferential treatment of poorer sections in the provision of credit. The extent to which progressive taxation has helped to check inequalities has been limited by tax evasion which creates the further problem of black money and ostentatious consumption. The one direct measure to control the distribution of assets in urban areas viz. the Urban Land Ceiling Act has faced

major difficulties in implementation. In an indirect way the growth of the public sector in industry and the nationalisation of almost the entire financial system have probably helped to restrict the number of people at the very top of the income distribution.

1.53 The limited success in redistributing assets may not have mattered as much for poverty reduction had employment increased at a faster rate. Such a growth in employment would have increased incomes both by reducing idle time and by exerting an upward pressure on wages. However, the pace of generation of employment opportunities seems to have lagged behind the growth in the labour force.

Thus the Rural Labour Enquiry has shown that between 1964-65 and 1974-75, the number of days for which employment was available for rural labourers declined by 10 per cent for men, 7.5 per cent for women and 5 per cent for children. The data on average earnings from these enquiries when corrected for inflation also show a decline. In urban areas the figures for the number of persons on the live register provide some indication of the trend. These figures show an increase from 1.6 million in 1960 to 12.7 million in 1978, an increase that is attributable partly to changes in coverage but which nevertheless reflects a substantial deterioration in the availability of employment. Direct data on unemployment from the National Sample Survey are unfortunately not comparable over time. However, the latest available data for 1977-78 show the following person-day unemployment:

Table 1.7

Rates of unemployment by Daily Status

(Percentage of labour force)

Sl. No.	Category	Rural	Urban
(0)	(1)	(2)	(3)
1	Male	7.1	9.4
2	Female	9.2	14.6

The average over all categories is 8.2 per cent which in terms of absolute numbers means that on a typical day about 21 million persons are seeking and available for work but unable to find it. A major challenge of the decade that lies ahead is the speedy expansion and diversification of opportunities for productive employment.

1.54 Problems of poverty and unemployment have been greatly aggravated by the rapid expansion in population and labour force. Poor households are often above average in size. This, at least partly, accounts for the low level of consumption and the incidence of unemployment. A lower family size in these households and the consequential reduction in the growth rate of population would have made it easier to move closer to the plan objectives of removing poverty and unemployment.

1.55 The search for social justice has one further dimension that has been articulated in our plans; the desire to reduce regional imbalances. At Independence we inherited an economy where industry and modern agriculture had developed only in a few pockets. The deliberate policy of industrial dispersal that we have followed has led to the development of some new industrial centres situated away from the older centres situated like Bombay, Calcutta and Ahmedabad, but the degree of success achieved is limited since even in 1971 around 27.5 per cent of the employment in manufacturing was concentrated in 9 towns. In agriculture the lack of diffusion of the new seed-fertiliser technology has probably accentuated regional imbalances and in 1977-78 the value of agricultural output per head of rural population ranged between Rs. 888 in Rajasthan and Rs. 3561 in Punjab. These imbalances in the pace of agricultural and industrial advance are reflected in the large differences between states in the percentage of population below the national poverty line. The data for 1977-78 given in Annexure 1.12 show a range from 15 per cent in Punjab to 66 per cent in Orissa. The geographical spread of industry and modern agriculture is undoubtedly better now than at the start of the planning era but it is clear that we have a long way to go in this task of reducing regional imbalances.

1.56 A simple summary assessment is not possible about the extent to which plan objectives with regard to social justice have been attained. There are no specific quantified targets against which performance can be compared since what the plans indicate is a direction of movement, not a specific goal. The evidence presented above suggests that the most that can be claimed is that there has been no perverse movement, no worsening of inequalities or in the incidence of poverty. In fact, in some respects a degree of progress has been achieved. But, on balance, the pace of movement is much slower than what is acceptable or possible within the framework of the plans and a greater degree of redistributive bias has to be built into our development effort.

CONCLUSION

1.57 In the eighties, the economy is faced with a formidable task of maintaining and accelerating the tempo of economic growth in face of a sharp deterioration in the international environment. The ever rising prices and highly uncertain supply of imported energy can disrupt the implementation of development plans. Nevertheless, the fact that the economy now enjoys the advantages of a high savings rate, a developed skill base and a substantial degree of self-reliance provides a valuable cushion to absorb external shocks. If these advantages are to be turned to good account, we need to learn certain important lessons from our past experience.

1.58 With regard to growth and modernisation the first lesson is that we must mobilise resources to maintain and increase the tempo of investment and protect the size of the Plan both against inflation and external disturbances. The second is the paramount need to improve efficiency in key infrastructural and industrial sectors. The third is that we must reduce

the variability of the growth rate and ensure that weather abnormalities and inflation do not lead to undue cutbacks in public or private investment. The fourth is the need to extend the agricultural revolution to all areas and farming systems and in particular to ensure that the incomes of the poor are raised in the process of agricultural development. The fifth is the need to ensure a vigorous expansion in exports and a rapid increase in domestic production of oil, steel, fertilisers and vegetable oils so as to restrain growth of imports in order to maintain viability of our external payments. Sixth, we must develop effective domestic substitutes for imported energy so that our dependence on imported oil is contained within reasonable limits. Finally, there is urgent need to revitalise the family planning programme so as to bring about a substantial decline in the birth rate through the voluntary adoption of the small family norm. Success on all these points is essential if the overall rate of growth is to be raised, as it must be, well above the levels reached in the past.

1.59 As far as self-reliance is concerned the economy today is in a stronger position than at the start of the planning era. Dependence on external finance has been substantially reduced and in many areas of production, a high degree of import substitution achieved. But there are many unfinished tasks in this area, particularly in the field of energy and technology. The world economy is in a much more disturbed state since the mid seventies than at any time in the past three decades and there is an atmosphere of confrontation rather than cooperation in international economic relations. In this situation the objective of self-reliance needs to be pursued with continuous vigour. However, self-reliance can no longer take the form of indiscriminate import substitution. There is a continuous need to replace imports in critical areas where there are sudden and sharp changes in prices and availability. But, as the complexity of the economy grows, import requirements will also increase and in order to finance these, export earnings will have to be stepped up substan-

tially. In the eighties, export promotion is as much a part of the drive for self-reliance as efficient import substitution.

1.60 With regard to social justice, what we have achieved is far short of what we aimed at. After three decades of planned development large segments of the population have yet to share in the benefits of progress or participate in the process of development. From the Fourth Plan, several programmes for assisting backward areas and weaker sections have been in force. Yet, judging by the statistics on asset distribution, employment and consumption the impact seems to be limited. What is needed is a more effective implementation of asset transfer measures such as land reforms, more equitable distribution of credit and a coordinated effort that enables the poor to join the mainstream of economic activity and provides them with an opportunity for advancement. This will require firstly, an improvement in their productivity and earning power in their existing activity, secondly, supplementary employment in new activities to use up any spare labour time and thirdly, training, credit and support systems to assist them in both their existing and new activities.

1.61 Growth, modernisation, self reliance and social justice are not independent objectives. They are linked in that success with respect to any one makes it easier to achieve the others. The sustained growth of the past thirty years and the very considerable diversification of our economic structure that has taken place during this period constitute positive national assets for launching a more direct attack on poverty and under-development in the Sixth Plan. However, the enormity of the task should not be underestimated, particularly in view of a sharp deterioration in the external environment. The nation will have to mobilise all its latent energies for a more vigorous pursuit of cherished national objectives of accelerated growth, greater social justice and a modern self reliant economy.

II

Annexure 1.1

Growth Performance in the Plans

(Percentage)

Sl. No.	Name	First Plan 1951-52 to 55-56	Second Plan 1956-57 to 60-61	Third Plan 1961-62 to 65-66	Annual Plans 1966-67 to 68-69	Fourth Plan 1969-70 to 73-74	Fifth Plan* 1974-75 to 78-79	1950-51 to 1978-79
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Annual Growth rates</i>								
1	National income	3.6	4.0	2.2	4.0	3.3	5.4**	3.5
2	Agricultural Production	4.1	4.0	(-)-1.4	6.2	2.9	4.2	2.7
3	Industrial Production	7.3	6.6	9.0	2.0	4.7	5.9	6.1
4	Per Capita Consumption	1.7	1.8	0.1	2.0	0.4	2.3	1.1
5	Gross Fixed Investment	3.0	5.8	8.7	1.5	3.1	6.6	5.5

Note:— Col. 8 gives the trend rate calculated from a semilog regression. All other columns give compound growth rates between the base year before the Plan and the last year of the Plan.

*For the time period originally envisaged for the Fifth Plan.

**This is the growth rate for net national product (national income). The growth rate of gross domestic product over this period was 5.2 per cent as referred to in Table 1.1.

Annexure 1.2

Resource Mobilisation

(Percentage)

Sl. No.	Item	Pre-plan 1950-51	End of First Plan 55-56	End of Second Plan 60-61	End of Third Plan 65-66	End of Annual Plan 68-69	End of Fourth Plan 73-74	End of Fifth Plan 78-79*
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<i>Percentage of GDP at current market prices</i>								
1	Gross capital formation	10.0	14.3	16.9	18.2	15.4	20.0	23.7
2	Gross domestic saving	10.2	13.9	13.5	15.6	14.1	19.3	23.9
<i>Share in net domestic saving (Percentage)</i>								
3	Household saving in financial assets other than currency and claims on the government	10.0	15.3	19.1	31.1	20.5	28.3	32.9
4	Public Sector saving	18.9	10.6	23.3	23.1	17.3	12.9	19.0
5	Private Corporate cooperative sector saving	6.8	6.2	8.8	3.9	2.6	5.7	2.8

*The figures given are for the originally envisaged terminal year of the Fifth Plan.

Annexure 1.3

Distribution of Rainfall Divisions According to Scanty or Deficient Rainfall—1951 to 1976

Sl. No	Item	1951-55	1956-60	1961-65	1966-70	1971-76
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	No. of Divisions without a single deficient/scanty year	21	22	15	11	5
2	No. of Divisions with one deficient/scanty year	11	7	16	18	16
3	No. of Divisions with two deficient/scanty years	3	6	4	3	10
4	No. of Divisions with three deficient/scanty years . . . . .	..	..	..	3	4

Annexure 1.4

Frequency Distribution of Annual Growth Rates 1951-52 to 1978-79

Sl. No.	Range	National Income	Agricultural Production	Industrial Production*
(0)	(1)	(2)	(3)	(4)
1	-10% or Less . . . . .	..	1	..
2	-10% to -5%	1	3	..
3	-5% to -2%	1	2	..
4	-2% to 0%	1	4	2
5	0% to +2%	6	4	3
6	+2% to +5%	6	2	4
7	+5% to +10%	13	6	15
8	+10% or More . . . . .	..	6	3

*For Calendar years from 1952 to 1978.

Annexure 1.5

Composition of Gross Domestic Product (at 1970-71 prices)

Sl. No.	Sector	(Percentages)						
		Pre-plan 1950-51	End of first Plan 55-56	End of Second Plan 60-61	End of Third Plan 65-66	End of Annual Plan 68-69	End of Fourth Plan 73-74	End of Fifth Plan 78-79**
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Agriculture and allied sectors	58.9	57.3	54.2	45.6 (49.9)	46.3	45.2	41.6
2	Mining, Manufacturing and construction	14.9	15.9	17.7	22.0 (20.0)	21.2	21.6	22.5
3	Electricity, Gas, Water supply, transport, Storage and Communication	3.9	4.2	4.9	6.1 (5.4)	6.4	6.8	7.4
4	Services	22.3	22.6	23.2	26.3 (24.5)	26.1	26.4	28.5
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Figures in brackets are for 1964-65 which may present a more correct picture since agricultural output in 1965-66 was badly affected by the drought.

**The figures given are for the originally envisaged terminal year of the Fifth Plan.

Annexure 1.6

Industrial Structure

Sl. No.	Sector	Weights in the Index of Industrial Production*			Value added in registered manufacturing	
		1956	1960	1970	1970-71	1977-78
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	Food	15.7	14.2	9.5	9.3	9.9
2	Textiles	47.0	31.9	21.5	20.1	19.4
3	Rubber, Chemical and Petroleum	11.7	12.9	18.2	17.3	19.9
4	Non-metallic minerals	2.8	4.5	4.1	4.0	4.1
5	Basic metals	10.4	8.7	10.9	9.9	10.2
6	Engineering	8.3	19.7	25.9	24.9	25.9
7	All others	4.1	8.1	9.9	14.5	10.6
	TOTAL	100.0	100.0	100.0	100.0	100.0

*Excluding mining and quarrying and electricity.

Annexure 1.7

Technological Change in Agriculture

Sl. No.	Item	Pre-Plan 1950-51	End of First Plan 55-56	End of Second Plan 60-61	End of Third Plan 65-66	66-67	67-68	68-69	End of Fourth Plan 73-74	End of Fifth Plan 78-79*
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Percentage of gross irrigated area to gross sown area	17.1	17.4	18.3	19.9	20.8	20.3	22.2	23.7	28.0
2	Fertiliser consumption (kg/ha)	0.5	0.9	1.6	5.1	7.0	9.4	11.0	16.7	299.5
3	Percentage of Rice and Wheat area under HYV									
	(a) Rice	..	..	..	..	2.5	4.9	7.3	26.1	41.8
	(b) Wheat	..	..	..	..	4.2	19.6	30.0	59.2	71.1
4	Average yield									
	(a) Rice (qtl/ha)	6.7	8.7	10.1	8.6	8.6	10.3	10.8	11.5	113.3
	(b) Wheat (qtl/ha)	6.6	7.1	8.5	8.3	8.9	11.0	11.7	11.7	155.7

*The figures given are for the originally envisaged terminal year of the Fifth Plan.

Annexure 1.8

Gross and net aid by Plan Periods

(Rs. crores)

Sl. No.	Period	Utilisation of External Assistance	Amortisation and Interest payment	Net Aid	Net Aid as % of Plan Expenditure	Net Aid as % of Imports
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	First Plan 51-52 to 55-56	201.7	23.8	177.9	9.1	4.9
2	Second Plan 56-57 to 60-61	1430.4	119.4	1311.0	28.1	26.9
3	Third Plan 61-62 to 65-66	2867.7	542.6	2325.1	27.2	37.5
4	Annual Plans 66-67 to 68-69	3229.6	982.5	2247.1	33.9	37.5
5	Fourth Plan 69-70 to 73-74	4183.7	2445.0	1738.7	11.2	17.6
6	Fifth Plan 74-75 to 78-79	7309.5	3770.4	3539.1	8.9*	12.8

*On actual expenditure for the first four years, anticipated expenditure for 1978-79.

Annexure 1.9

Import Substitution

(Percentage share of imports in indigenous supplies)

Sl. No.	Item	Pre-Plan 50-51	End of First Plan 55-56	End of Second Plan 60-61	End of Third Plan 65-66	End of Annual Plans 68-69	End of Fourth Plan 73-74	77-78
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Foodgrains	5.9	1.7	4.7	9.5	5.6	4.3	0.2
2	Iron & Steel	23.2	39.9	35.7	16.7	9.3	18.5	1.1
3	Machinery*	68.9	41.0	40.7	27.8	24.6	17.0	15.3
4	Petroleum@	92.5	93.8	94.6	76.6	66.2	70.8	63.1
5	Nitrogenous fertilisers	72.5+	39.8	80.3	58.3	60.9	38.3	27.5

*Imports as a percentage of machinery component of gross investment.

@On calendar year basis.

+For 1951-52.

Annexure 1.10

Growth in Exports

(Annual growth rate in values at current dollars)

(Percentage)

Sl. No.	Region	First Plan 1951-56	Second Plan 1956-61	Third Plan 1961-66	Annual Plans 1966-69	Fourth Plan 1969-74	Fifth Plan 1974-79*
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	India	1.8	0.7	4.8	1.5	10.7	17.3
2	All developing countries of which	5.1	2.8	5.9	6.2	20.3	21.6
3	(a) Major Petroleum exporters	12.3	5.3	6.6	7.9	24.3	27.2
	(b) Fast growing exporters of manufactures	Nil	1.0	5.5	7.0	24.7	19.4
4	All countries	9.1	6.4	7.8	8.6	19.2	17.4

Note:—These compound growth rates are based on an end-to-end comparison of calendar year data reported in 'Handbook on International Trade and Development Statistics, UNCTAD, 1979'.

*For the time period originally envisaged for the Fifth Plan.

Annexure 1.11

Distribution of Household Consumer Expenditure

(Percentages)

Sl. No.	Category	1958-59	1961-62	1965-66	1970-71	1972-73	1977-78
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
RURAL							
1	Bottom 30 percent	13.1	14.7	15.1	15.4	15.4	15.0
2	Middle 40 percent	34.3	33.2	34.3	35.1	33.7	33.1
3	Top 30 percent	52.6	52.1	50.6	49.5	50.9	51.9
URBAN							
4	Bottom 30 percent	13.2	12.9	13.6	13.7	13.8	13.6
5	Middle 40 percent	31.7	31.4	31.9	31.8	31.9	32.4
6	Top 30 percent	55.1	55.7	54.5	54.5	54.3	54.0

Annexure 1.12

Percentage of population below the poverty line by States separately for rural and urban areas, in 1977-78

Sl. No.	State/U.T.	Rural	Urban	Combined
(0)	(1)	(2)	(3)	(4)
1	Andhra Pradesh	43.89	35.68	42.18
2	Assam	52.65	37.37	51.10
3	Bihar	58.91	46.07	57.49
4	Gujarat	43.20	29.02	39.04
5	Haryana	23.25	31.74	24.84
6	Himachal Pradesh	28.12	16.56	27.23
7	Jammu & Kashmir	32.75	39.33	34.06
8	Karnataka	49.88	43.97	48.34
9	Kerala	46.00	51.44	46.95
10	Madhya Pradesh	59.82	48.09	57.73
11	Maharashtra	55.85	31.62	47.71
12	Manipur	30.54	25.48	29.71
13	Meghalaya	53.87	18.16	48.03
14	Nagaland	N.A.	4.11	4.11
15	Orissa	68.97	42.19	66.40
16	Punjab	11.87	24.66	15.13
17	Rajasthan	33.75	33.80	33.76
18	Tamil Nadu	55.68	44.79	52.12
19	Tripura	64.28	26.34	59.73
20	Uttar Pradesh	50.23	49.24	50.09
21	West Bengal	58.94	34.71	52.54
22	All Union Territories	34.32	17.96	21.69
All India (weighted)		50.82	38.19	48.13

Note: 1. The above estimates are derived by using the all-India poverty line of Rs. 65 per capita per month in 1977-78 prices corresponding to minimum daily calorie requirement of 2400 per person in rural areas and the poverty line of Rs. 75 per month corresponding to daily calorie requirement of 2100 in urban areas.

2. These results are based on the provisional and quick tabulation of the National Sample Survey (NSSO) on household consumer expenditure of 32nd round (July, 1977 to June, 1978).

3. The difference between the aggregate all-India private consumption expenditure estimated by the Central Statistical Organisation in their National Accounts Statistics and that derived from the NSSO data has been adjusted prorata among the different States and Union Territories in the absence of any other information which could be used to allocate this difference among the States and Union Territories.

DEVELOPMENT PERSPECTIVE 1979-80 TO 1994-95

The basic task of economic planning in India is to bring about a structural transformation of the economy so as to achieve a high and sustained rate of growth, a progressive improvement in the standard of living of the masses leading to the eradication of poverty and unemployment and provide the material base for a self-reliant socialist economy. During the thirty years of planned development, which we have now completed, impressive progress has been made in agriculture, industry, science and technology, health and education, and in the development of the infrastructure for a wide range of services. However, as has been pointed out in Chapter 1, the progress achieved has fallen short of objective needs and expectations. In formulating the objectives and priorities of the Sixth Plan, we have to take note both of past achievements and shortcomings as well as new developments in the domestic economy and in the international economic environment. While the basic objectives of planning remain unchanged, priorities, programmes and targets must be set out after a careful evaluation of needs, constraints and potentialities.

CHOICE OF DEVELOPMENT STRATEGY

2.2 Development by its very nature is a long term process of structural adaptation, which in turn derives its significance from the basic objectives a nation sets for itself. The scope for structural changes is admittedly limited in the short run but it increases as one extends the time horizon for planning. In the absence of a proper long term perspective there is a danger that short term and even medium term plans and economic policies may be excessively preoccupied with pressing contemporary events, thereby relegating the task of structural reforms to the background. In the process, the available growth potential may not be fully realised. Because of discontinuities and long time lags between investment and the resulting increase in output, the needs for perspective planning in specific terms is particularly strong in the development of infrastructure like power, transport and communications, scientific research, technical education as well as in sectors like major irrigation, coal and steel where there are large gestation lags often extending beyond the period of any single five year plan. In particular, in the present situation, there is an imperative need to have a carefully worked out perspective plan for the energy sector. In all such cases, a perspective plan which takes into account important intersectoral linkages

greatly facilitates the task of taking consistent, timely and efficient decisions regarding the allocation of scarce resources in the framework of medium-term five year plans. At the same time, it has to be recognised that the future is inherently uncertain and the events of recent years, particularly the growing uncertainty of supply and prices of imported oil, have rendered the task of long term economic forecasting all the more difficult. Therefore, while the use of perspective planning as a valuable guide in framing policies and programmes in the medium term is obvious, the perspective itself needs to be updated and reviewed periodically in the light of changing conditions.

2.3 The Sixth Plan has been formulated against the background of a perspective covering a period of 15 years from 1980-81 to 1994-95. This development perspective visualises accelerated progress towards the removal of poverty, generation of gainful employment and technological and economic self-reliance. The strategy to attain these goals has been chosen after considering a variety of feasible alternative development profiles with their attendant costs and benefits. Experience shows that a substantial acceleration in the overall rate of growth of our economy, as measured by the growth of gross domestic product in real terms, is an essential condition for the realisation of these objectives. However, there is also convincing evidence which points to the limited effectiveness of "trickle down" effect. Therefore, consistent with our overall social and economic objectives, public policies will have to acquire a sharper redistribution focus in raising the share of the poorer sections in national income and consumption and in the utilisation of public services. Thus specific action programmes like the national rural employment programme and other anti-poverty schemes meant for selected target groups of population are essential components of a strategy designed to assist in the removal of unemployment and poverty.

In selecting the growth path we have to consider the trade off between a faster growth in the medium term with the consequence that the growth might slow down later on and conversely, somewhat slower growth now to permit faster growth later. Although at any given time, meaningful investment choices are limited by the fact that ongoing projects absorb a substantial proportion of available investible funds, there is always some choice at the margin in the sense that the mix of new projects can be altered in favour

of quick maturing and directly productive projects. However, in so far as such a choice leads to less investment in long gestation infrastructure projects, the long term growth rate may be adversely affected even though the short term prospects may improve.

2.4 While exploring the merits of alternative development strategies with the help of a dynamic intertemporal input-output model, it has been observed that the public sector investment plays an important role in influencing the overall growth of the economy. This is also corroborated empirically by our analysis of the past given in Chapter 1. As the public sector invests a major part of its available resources in irrigation, basic industries and infrastructure development which have extensive forward and backward linkages, the growth of the rest of the economy gets closely linked to the growth of the public sector. Thus the exploration of alternative development scenarios boils down largely to a choice among alternative investment allocations in the public sector.

ALTERNATIVE DEVELOPMENT SCENARIOS

2.5 Several alternative development scenarios have been considered in order to see how best the objectives specified in the development perspective can be realised. However, because of the constraint of domestic and foreign exchange resources and the range of possible technological choices, the number of alternatives has been narrowed. Among these were (a) the alternative of a growth rate of 6 per cent in the post-Sixth Plan period which could be achieved provided the Sixth Plan growth rate was kept down to 5 per cent per annum or even less and (b) a somewhat higher growth rate in the Sixth Plan and a slightly lower growth rate in the period beyond. It was found that given the initial capacity constraints, especially in sectors with relatively long gestation such as major irrigation, power, transport and steel, any growth rate during the Sixth Plan above 5.2 per cent or so would not be feasible; at the same time a growth rate of lower than 5.2 per cent or so would not even cover the basic minimum time bound programmes for fulfilling the economic and social objectives in agricultural and rural sectors including generation of employment. Thus the choice converged to a growth rate of 5.2 per cent in the Sixth Plan period and 5.5 per cent in the subsequent ten year period. This choice is consistent with the results derived from projections of the long term demand pattern and implications of the goal of self-reliance. The possibility of raising the targetted growth rate to 6 per cent in the post Sixth Plan period will be explored depending on the progress of the economy and the international environment.

2.6 A large number of social and economic indicators have been used in selecting the development strategy for the Sixth Plan and the decade thereafter. Some of these indicators belong to conventional national income aggregates like gross domestic product (GDP), consumption, saving and investment, employment, per capita income and consumption.

Others fall in the category of specific social welfare indicators like the number of people below the poverty line, per capita consumption basket, life expectancy etc. The principal indicators for the preferred alternative are shown in Table 2.1.

Table 2.1
Selected Economic and Social Indicators 1979-80 to 1994-95

(Values are in 1979-80 prices)

Sl. No.	Item	1979-80	1984-85	1994-95
(0)	(1)	(2)	(3)	(4)
1	Gross Domestic Product (Rs. crores at 1979-80 prices)	97051	125050	2213600
		..	(5.2)	(5.5)
2	Saving as percent of GDP at market prices	21.24	24.48	27.52
3	Investment as percent of GDP at market prices	21.76	25.11	26.92
4	Population (millions)	654.1	717.2	843.0
		..	(1.86)	(1.63)
5	Per Capita GDP (Rs.)	1484	1744	2534
		..	(3.28)	(3.81)
6	Per capita monthly consumption (Rs.)	95.62	109.67	1151.98
		..	(2.79)	(3.32)
7	Percentage of people below poverty line	48.44	30.00	8.74
8	Employment (million standard person years)	151	185	248
9	Monthly per capita consumption of foodgrains (kgs.)	12.95	14.32	15.50
		..	(2.03)	(0.80)
10	Monthly per capita consumption of sugar(kgs.)	0.68	0.79	1.15
		..	(3.00)	(3.82)
11	Monthly per capita consumption of clothing (metres)	0.85	0.92	1.41
		..	(1.60)	(4.36)
12	Monthly per capita Generation of Electricity (Kwh)	14.27	22.19	339.05
		..	(9.23)	(55.81)
13	Value added in Education per capita (Rs.)	20.32	24.72	336.60
		..	(4.00)	(44.00)
14	Life expectancy (years)	M 52.6 F 51.6	55.1 54.3	60.1 59.8

NOTE : Figures in brackets represent annual compound growth rates.

Treatment of Uncertainties

2.7 Planning for medium and long term has to reckon with certain inherent uncertainties. There are two principal sources of such uncertainty the weather and the international environment. Weather induced fluctuations in agricultural production and hydel generation can throw plan calculations out of gear. Fortunately, with the spread of irrigation and thermal power the impact of adverse weather conditions can be reduced. With regard to uncertainties in the international economic environment, several alternative scenarios were experimented with, on varying assumptions about the terms of trade mainly to take account of prospective oil price increases. These calculations show that even a small rise in oil prices *vis-a-vis* what has been assumed in the Plan will significantly reduce the growth of the economy below target levels; it will also adversely effect the level of consumption of the poor people. A rapid increase in the domestic production of oil and alternate energy sources and a reduction in the rate of growth of consumption of petroleum products are essential for

safeguarding the integrity of our development plans in the face of these uncertainties.

THE PERSPECTIVE

2.8 The different growth scenarios emerging from alternative strategies of development should be assessed in the light of the long-term socio-economic needs and aspirations of the country. In this respect, the long-term demographic profile exercises an important influence on the growth of demand for goods and services and for employment.

DEMOGRAPHIC PERSPECTIVE

Size of the population

2.9 The demographic profile for the perspective period is based on the population projections made by the Expert Committee under the Chairmanship of the Registrar General of India. These projections, along with their underlying assumptions are given in Table 2.2.

Table 2.2
Assumptions underlying Population Projections 1971-96

Period	Popula- tion at the end of the period (Million)	General Fertility Rate		Average expecta- tion of life at birth (Years)		Birth Rate	Death Rate	Growth Rate
		Decline compared to the previous quinquen- nium(%)	Absolute level	Male	Female			
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1971-76	609	9	175	50.1	48.8	36.6	15.2	21.4
1976-81	672	12	154	52.6	51.6	32.9	13.2	19.7
1981-86	735	14	133	55.1	54.3	29.5	11.6	17.9
1986-91	799	12	117	57.6	57.1	27.0	10.4	16.6
1991-96	864	9	106	60.1	59.8	25.0	9.4	15.6

Notes: 1. The projection relate to the mid-year of the period, except otherwise stated.

2. The projections for the period 1971-86 were made in 1978 and for 1986-96 in 1980. Based on the Census of 1981, these projections are likely to undergo revision.

3. General fertility rate, birth rate, death rate and growth rate are per thousand of population.

2.10 According to these projections, population will grow from 659 million in 1980 to 722 million in 1985, 786 million in 1990 and 864 million in 1996. The growth rate of population is expected to decelerate in successive quinquennia consequent to the declining birth rate. The annual average rate of growth in population has been projected at 1.79 per cent during 1981-86, 1.66 per cent during 1986-91 and 1.56 per cent during 1991-96.

Age Structure

2.11 A feature of the population with high growth rates in the initial periods is the relatively high proportion of younger people (below 15 years of age) in these periods. However, due to the expected decline in fertility and mortality, the age structure of the population is expected to have an increasing proportion of people above 15 years of age, as shown in Table 2.3.

Table 2.3
Age Structure of the Population 1980-96
(as on 1st March)
(Per cent of total population)

Age Group	1980	1985	1990	1996
(0)	(1)	(2)	(3)	(4)
0-4	14.08	12.91	11.96	11.18
5-14	25.59	24.33	22.78	21.32
15-59	54.85	56.92	58.94	60.59
60 Plus	5.48	5.84	6.32	6.91
Total	100.0	100.0	100.0	100.0

2.12 The progressive decline in the proportion of 0-14 age group from 39.67 per cent of the total population in 1980 to 32.50 per cent in 1996 is expected to bring down the dependency ratio* from 0.66 to 0.48 during the same period.

2.13 The rising trend in urbanisation witnessed in the last two decades is expected to continue over the perspective period. The urban population, which is estimated at 144 million in 1980, is expected to increase to 166 million in 1985 and 189 million in 1990 and 220.73 million in 1996 as shown in Table 2.4.

Table 2.4
Urban Population Projections 1980-96
(as on 1st March)

Sl. No.	Year	Population (Million)		Urban population as percentage of total population
		Urban	Total	
(0)	(1)	(2)	(3)	(4)
1	1980	143.81	659.39	21.81
2	1985	165.65	722.42	22.93
3	1990	189.36	786.05	24.09
4	1996	220.73	869.00	25.40

Labour Force

2.14 The projections of labour force (usual status)** by age, sex and place of residence upto 1995

*The ratio of numbers in the age group 0-14 to the rest of the population.

**According to this concept, the activity status of a person (whether or not in labour force) is determined with reference to the preceding 365 days : NSS 32nd Round (1977-78).

are given in Table 2.6. These projections are based on the results of the 32nd round of the National Sample Survey on employment. It is estimated that about 251 million persons in the age-group above 15 years were in the labour force (usual status) out of the estimated total population of 659 million in 1980; the figure is expected to rise to 285 million in 1985 and 359 million in 1995. In other words, the labour force is expected to grow at the rate of 2.54 per cent per annum during 1980-85 and 2.33 per cent during 1985-95 as against the rate of growth of population of 1.79 per cent during 1981-86 and 1.63 per cent during 1986-96. The estimated addition of 108 million persons to the labour force over the period 1980-95 combined with the backlog of unemployment/underemployment would prove to be the most important challenge to our development strategy during the perspective period.

Population Policy

2.15 The Plan envisages the long term goal of reducing the Net Reproduction Rate to unity by 1995 for the country as a whole. This is possible only by reducing the birth rate to 21 per thousand of population, death rate to 9 and increasing the proportion of couples protected by family planning to about 60 per cent. In the light of the demographic profile presented earlier in this Chapter, it is expected that the proportion of women in the reproductive age group 15-44 to the total female population would show a continuous rise as shown in Table 2.5.

Table 2.5
Women in the Reproductive Age Group 1980-1996
(as on 1st March)

Year	(Millions)		
	Total female population	Women in the age group 15-44	Percentage of reproductive age group to total
(0)	(1)	(2)	(3)
1980	318.22	142.38	44.74
1985	349.05	162.09	46.44
1990	380.20	182.34	47.96
1996	418.33	205.78	49.19

2.16 The implication of the above demographic profile is that the birth rate is likely to show rising trend even if the age-specific fertility rates remain static. This situation calls for an effective strategy for fertility control in order that the longterm goal of population stabilisation is realised. The family planning programme has to be reactivated by education and persuasion of people, avoiding any form of coercion. The small family norm has to be built into the social and cultural ethos of the people. A multi-pronged but integrated approach comprising

education and employment, particularly of women, eradication of poverty, maternal and child care services including immunisation, prophylaxis and nutrition, building up of health care facilities in the rural areas with due attention to control of communicable diseases, promotive and preventive health, water supply and sanitation etc. is called for. Family Planning services and supplies have to be made available on an extended scale through the health infrastructure in the country and all existing channels of communication including governmental extension machinery, voluntary organisations, youth organisations, women's organisations, village opinion leaders etc. will have to be fully mobilised for promoting the widespread acceptance of family planning methods.

2.17 A national consensus is essential on the importance of the family planning programme in the present context of the growing pressures on the basic life support systems and the country's economic well-being. Social pressures against early marriages and large sized families should be built up. Further research into simple, safe and cheap methods of contraception is also necessary. All the Plan projections of reduction of poverty and unemployment will go wrong if success is not achieved in containing the growth of population.

2.18 The details of the strategy and programmes are discussed in Chapter 22 on 'Health, Family Planning and Nutrition'.

GOALS REGARDING POVERTY AND UNEMPLOYMENT

2.19 Economic development during the last nearly three decades has led to a perceptible increase in the average per capita income which rose from Rs. 466 in 1950-51 to Rs. 730 in 1978-79 at 1970-71 prices. In spite of this, the incidence of poverty in the country is high. So far, it has not been possible to make a major dent on poverty on account of the inadequate rate of growth of the economy, uneven distribution of income and consumption as well as high rate of growth of population. The reduction in

poverty should, therefore, receive the highest priority in our development strategy.

2.20 A detailed discussion of poverty, under-employment and the problem of employment generation is given in subsequent Chapters of this document. From a general study of the problem, it has been observed that within the possible range of growth rates in gross domestic product for the Sixth Plan and the perspective period (1985—1995), a substantial reduction in poverty can be achieved only if there is a determined effort at a significant redistribution of income and consumption in favour of the poorer sections of the population. It is, therefore, necessary that the growth strategy should aim at a significant redistribution of income and consumption, so that the percentage of population below the poverty line reduces to 30 in 1984-85 and to less than 10 by 1994-95.

2.21 The labour force over the last decade has risen significantly faster than the number of gainfully employed. Between 1979-80 and 1994-95, the additions to labour force would be nearly 108 million of which 34 million would be during 1980—85 (Table 2.6 col. 7). This implies a labour force increase of about 2.4 per cent per annum which is much higher than the population growth rate. It also reflects the fact that the population stock is becoming younger with increased productive potential requiring the creation of new jobs at an increasing rate. Our analysis shows that within the feasible range of growth of between 5 and 5.5 per cent per annum in gross domestic product, any significant reduction of unemployment and under-employment will require a choice of appropriate composition of sectors and techniques which generate more employment without affecting adversely the growth in productivity; since there are limits to securing additional employment through this method, it will also be necessary to adopt specific employment generation schemes. A carefully balanced growth scenario as projected in the Sixth Plan will result in a net increase in employment, measured in standard person years, which is significantly higher than the growth of labour force, *i.e.*, by 3.4 per cent per annum as against a labour force growth of about 2.4 per cent per annum.

Table 2.6

Labour Force Projections by age, sex and place of residence using NSS 32 Round (usual status) participation rates for the years 1978, 1980, 1985, 1990 and 1995 (as on 1st March)

(Million)

Year		5+			15+			15-59		
		Males	Females	Total	Males	Females	Total	Males	Females	Total
(0)		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1978	Rural	142.78	63.80	206.58	133.97	58.01	191.98	124.33	55.88	180.21
	Urban	39.44	9.38	48.82	38.45	8.76	47.21	36.86	8.45	45.31
	Total	182.22	73.18	255.40	172.42	66.77	239.19	161.19	64.33	225.52
1980	Rural	149.24	66.68	215.92	140.22	60.75	200.97	130.04	58.51	188.55
	Urban	42.08	10.05	52.13	41.04	9.40	50.44	39.34	9.06	48.40
	Total	191.32	76.73	268.05	181.26	70.15	251.41	169.38	67.57	236.95
1985	Rural	166.22	74.35	240.57	156.92	68.26	225.18	145.16	65.66	210.82
	Urban	49.72	12.00	61.72	48.59	11.30	59.89	46.51	10.89	57.40
	Total	215.94	86.35	302.29	205.51	79.56	285.07	191.67	76.55	268.22
1990	Rural	183.90	82.17	266.07	174.55	76.04	250.59	160.92	73.01	233.93
	Urban	58.54	14.24	72.78	57.34	13.48	70.82	54.77	12.97	67.74
	Total	242.44	96.41	338.85	231.89	89.52	321.41	215.69	85.98	301.67
1995	Rural	201.60	89.94	291.54	192.25	83.84	276.09	176.49	80.27	256.76
	Urban	68.30	16.66	84.96	67.03	15.86	82.89	63.87	15.21	79.08
	Total	269.90	106.60	376.50	259.28	99.70	358.98	240.36	95.48	335.84

Table 2.7

Structure of Gross National Expenditure

(Percentage of gross national expenditure)

Sl. No.	Item	1979-80	1984-85	1994-95
(0)	(1)	(2)	(3)	(4)
1	Consumption	79.0	75.6	72.6
	(i) Public	10.7	11.5	12.9
	(ii) Private	68.3	64.1	59.7
2	Capital formation	21.5	25.0	26.8
3	Net exports of goods and services plus net factor income receipts from abroad	(-)-0.5	(-)-0.6	0.6
4	Gross National Expenditure	100.0	100.0	100.0

MACRO-ECONOMIC FRAMEWORK

Structure of Demand

2.22 The development strategy envisaged in the Sixth Plan calls for a change in the existing structure of demand in favour of investment and social consumption. This necessarily involves a corresponding decline in the share of aggregate private consumption. The envisaged changes in the structure of demand are given in Table 2.7. Detailed estimates of sectoral disposable income, consumption and saving for 1979-80, 1984-85 and 1994-95 are presented in Annexure 2.1, 2.2 and 2.3 respectively.

Saving and Investment

2.23 The rate of capital formation has been projected to increase from 21.5 per cent of GNP estimated for 1979-80 to 25.0 per cent in 1984-85 and 26.8 per cent in 1994-95. With the rate of investment stabilising at around 27 per cent beyond 1984-85, the economy is expected to have a solid base for a sustained growth of the order of 5.5 per cent per annum in GDP over the subsequent 10 years. The economy is also expected to achieve a modest surplus in balance of payments by 1994-95.

2.24 Expansion of social services is one of the effective ways to achieve a significant improvement in the standard of living of the poorer sections of the

population. For this purpose, public consumption has been projected to increase from 10.7 per cent of GNP in 1979-80 to 11.5 per cent in 1984-85 and 12.9 per cent by 1994-95. At the same time, efforts would be intensified to improve the efficiency and quality of social services and evolve more effective delivery systems so that maximum benefit accrues to the poorer people from public expenditure on these services.

2.25 The rise in the share of domestic capital formation as well as that of public consumption, together

with the projected improvement in export earnings, implies a decline in the share of private consumption in gross national expenditure. In spite of this decline in the share, private consumption expenditure is expected to grow at an annual average rate of nearly 4.7 per cent during the period 1980-85 and 5.0 per cent during the perspective period 1985-95. The projected overall growth in private consumption is consistent with a faster rate of growth in the private consumption of the poorest section of the population as shown in Table 2.8.

Table 2.8

Improvement in the share of the bottom 30 per cent of the population in Total Private Consumption Expenditure

Sl. No	Item	Unit	1979-80	1984-85	1994-95
(0)	(1)	(2)	(3)	(4)	(5)
1	Total private consumption expenditure	Rs. crores at 1979-80 prices	75053	94386	153745
2	Share of bottom 30 per cent of the population	percent	13.7	16.7	17.3
3	Mid-year population	Million	654.1	717.2	843.0
4	Per capita annual consumption expenditure ¹⁾	Rupees at 1979-80 prices ¹⁾			
	(i) Aggregate		1147	1316	1824
	(ii) Bottom 30 percent		523	734	1051
5	Annual average growth in per capita consumption expenditure	percent			
	(i) Aggregate . . . . .		..	2.79	3.32
	(ii) Bottom 30 percent . . . . .		..	7.01	3.66

2.26 The increase in the rate of capital formation signifies a restraint on consumption expenditure in order to augment domestic saving. The rate of saving has been projected to increase from 21 per cent of GNP in 1979-80 to around 24.4 per cent in 1984-85 and 27.4 per cent in 1994-95. The projected growth in domestic saving is to be achieved through a rise in the ratio of saving to disposable income of both public and private sectors.

2.27 The saving strategy for the perspective period envisages a rising rate in public saving corresponding to a rising share in the disposable income of the public sector. The policy of stepping up the rate of public saving would help in channelling resources into higher priority investment. This would also enable the public sector to improve its share in total domestic saving. Taking the economy as a whole, the projected rise in the rate of saving indicates a marginal rate of saving of the order of 33.7 per cent during the period 1980-85 and around 31.6 per cent over the perspective period (1985-95).

Structure of Output

2.28 The change in the structure of output envisaged for the perspective period derives its rationale from the contemplated changes in the structure of demand discussed earlier. In fact, the pattern of output has to move in step with the structure of demand in order to avoid imbalances in the perspective period.

2.29 Detailed exercises have been carried out for delineating the output structure for the perspective period under assumptions of alternative growth scenarios and also taking into account the emerging and contemplated technological changes. The results of these exercises have helped develop an internally consistent sectoral pattern of output reflecting the priorities for the perspective period and corresponding to a rate of growth of 5.2 per cent in the Sixth Plan period and 5.5 per cent over the perspective period (1985-95). The projected sectoral rates of growth of gross value of output and gross value added for the periods 1980-85 and 1985-95 by broad groups of sectors are presented in Table 2.9.

Table 2.9

**Projected Sectoral Annual Rates of Growth in Terms of Gross Value of Output and Gross Value Added
at Factor Cost : 1979-80 to 1994-95**

(Per cent per annum compound)

Sl. No.	Sector	Value of Output		Value Added	
		1984-85	1994-95	1984-85	1994-95
		1979-80	1984-85	1979-80	1984-85
(0)	(1)	(2)	(3)	(4)	(5)
1	Agriculture	5.20*	3.75	3.83	3.32
2	Mining & Manufacturing	7.76	6.62	6.90	6.56
	(i) Mining	11.50	6.49	11.25	6.45
	(ii) Manufacturing	7.62	6.62	6.50	6.57
3	Electricity, Gas and Water Supply	11.25	7.06	7.15	7.00
4	Construction	7.10	7.05	5.10	7.00
5	Transport	6.70	6.41	5.46	6.38
6	Services	6.00	6.28	5.44	6.25
	Total :			5.20	5.50

*However, the effective growth rate is about 4% per annum, if the performance during the unusual drought year of 1979-80 is adjusted to its trend value.

2.30. The varying rates of growth in different sectors reflect the changes in the rates of growth of total final and intermediate demand for the output of different sectors which are themselves influenced by factors like degree of import dependence, relative changes in the composition of final demand, inter-industry relationships, etc. The rates of growth projected for the different sectors are also expected to bring about a structural change in the economy as reflected in the composition of gross domestic product at factor cost over the perspective period. The projected structural changes are presented in Table 2.10. As is evident, the share of infrastructure and social services is projected to rise from 45.28 per cent in 1979-80 to 45.88 per cent in 1984-85 and 49.84 per cent in 1994-95. These structural changes are not only in tune with what one would expect in the course of the development process, but also in line with the experience of many industrialised nations.

Table 2.10

Sectoral Composition of Gross Value Added at Factor Cost : 1979-80, 1984-85 and 1994-95

(Per cent)

Sl. No.	Sector	1979-80	1984-85	1994-95
		(2)	(3)	(4)
(0)	(1)	(2)	(3)	(4)
1	Agriculture	35.13	32.90	26.71
2	Mining & Manufacturing	19.59	21.22	23.45
	(a) Mining	1.52	2.01	2.20
	(b) Manufacturing	18.07	19.21	21.25
3	Electricity, Gas and water supply	1.71	1.88	2.16
4	Construction	5.07	5.05	5.81
5	Transport	4.89	4.95	5.38
6	Services	33.61	34.00	36.49
	Total :	100.00	100.00	100.00

LONG TERM SECTORAL PROFILES AND POLICIES

2.31 The inter-temporal growth profile of the sectors presented in Table 2.11 is also influenced by the expected/desired behaviour of certain macro-variables.

- (i) The rate of growth of investment of 9.3 per cent per annum which is considered feasible on the basis of savings/foreign borrowings capabilities of the economy in the Sixth Plan is expected to stabilise at around 6.5 per cent during the perspective period (1985—95).

Therefore, the commodities whose demand is largely influenced by investment related activities in the economy exhibit a flattening of the growth rate in the inter-temporal growth profile.

- (ii) Similarly, the long term strategy should aim at a sustained growth of exports over a longer time horizon to build in the desired safety margin in the long term balance of payments position of the economy. Therefore, exports are projected to grow at 9 per cent during the Sixth Plan and 7 per cent during the next ten years (1985—95).

Table 2.11

Projections of Output of Principal Commodities and Services : 1984-85 and 1994-95

No.	Commodity	Unit	1979-80	1984-85	1994-95
(0)	(1)	(2)	(3)	(4)	(5)
1	Foodgrains	Mill. tonnes	109	149 to 154	205
2	Sugarcane	Mill. tonnes	128	200 to 215	300
3	Jute & Mesta	Lakh bales (180 Kgs. each)	80.3	91	125
4	Cotton	Lakh bales (170 Kgs. each)	77	92	135
5	Oil seeds (5 major)	Lakh tonnes	81	110	165 to 170
6	Coal	Mill. tonnes	103.96	165	325
7	Lignite	Mill. tonnes	3.12	8	20
8	Iron ore and Concentrates	Mill. tonnes	39	60	82
9	Cloth	Mill. metres	10435	13030	21200
10	Paper & Paper Board	Thou. tonnes	1050	1500	3000
11	L.L. Polyethylene	Thou. tonnes	71.3	100	425
12	H.D. Polyethylene	Thou. tonnes	25.4	27	175
13	Polypropylene	Thou. tonnes	13.4	27	90
14	PVC	Thou. tonnes	49.9	128	450
15	Nitrogenous Fertilizers (N)	Thou. tonnes	2226	4200	9700
16	Phosphatic Fertilizers (P ₂ O ₅)	Thou. tonnes	757	1400	3600
17	Cement	Mill. tonnes	17.68	34 to 34.5	65
18	Salable Steel (Plain Carbon)	Mill. tonnes	7.38	11.51	20.8
19	Aluminium	Thou. tonnes	192	300	700
20	Copper-Refined	Thou. tonnes	18.8	45	75
21	Zinc	Thou. tonnes	52.65	85	160
22	Lead	Thou. tonnes	11.4	25	50
23	Electricity Generation	Bill. Kwh.	112	191	395
24	Railways—Originating Traffic	Mill. tonnes	217.8	309	560

- (ii) The growth rate of population is projected to decline to 1.56 per cent per annum during 1991—96 as against 1.79 per cent during 1981—86. Thus, in the case of private consumption goods, with a relatively stable output growth rate, *per capita* consumption would be increased.

Agriculture

2.32 The gross cropped area in agriculture is estimated to have increased from 165.8 million hectares in 1970-71 to 168 million hectares in 1979-80. It is anticipated that the gross cropped area will increase to 179.7 million hectares by 1984-85 and 188 million hectares by 1994-95.

2.33 The scope for bringing additional area under cultivation is very limited. However, it is possible to increase gross cropped area through multiple cropping, for which the extension of irrigation facilities and adequate energy supply are major prerequisites. The gross irrigated area has increased from 38.19 million hectares in 1970-71 to 50 million hectares in 1979-80 according to land utilisation statistics. It is estimated that an ultimate irrigation potential of the order of 113 million hectares could be created by the year 2000 A.D., of which 58 million hectares would be through major and medium irrigation sources and 55 million hectares through minor irrigation sources, including 40 million hectares from ground water sources. This implies that a long term average growth rate of about 4.2 per cent per annum in gross irrigated area is necessary to exploit the estimated irrigation potential by the turn of the century. In the light of this scenario, the Sixth Plan envisages that the gross irrigated area would increase to 64 million hectares in 1984-85. It is further expected to increase to 97.3 million hectares by 1994-95. In other words nearly 51.76 per cent of the gross cropped area is likely to be irrigated by 1994-95 as against 29.76 per cent estimated for 1979-80. The attainment of the above irrigation potential through conjunctive use of ground and surface water is thus crucial to sustained long-term growth in agriculture. In this context, it is essential to find an early solution to inter-State river disputes which are hampering work on long gestation irrigation projects.

2.34 In making the long term agricultural output projections (Table 2.11) it has been assumed that the existing ratio of area under foodgrains to gross cropped area of 75 per cent would get slightly reduced in order to permit the expansion of the area under commercial crops. Further, it has also been assumed that a significant portion of the incremental gross irrigated area would be devoted to pulses, oilseeds and other crops currently in short supply.

2.35 The output growth rate of foodgrains, sugarcane and oilseeds in the perspective period (1985—95) would be higher than the 1980—85 growth rate based on the trend estimates of 1979-80. For example, in the case of foodgrains, while the 1980—85 growth rate based on 1979-80 actuals is 6.5 per cent per annum, the trend estimate for 1979-80 indicates a growth rate of 3.1 per cent, which rises to 3.2 per cent during

the perspective period (1985—95). The growth rate of raw cotton output will rise from 3.6 per cent during 1980—85 to 4.0 per cent during 1985—95. In view of the substitution of jute goods by synthetic packaging in overseas markets and consistent with the prospects of exports of jute goods, the growth of production of jute and mesta is estimated at 3 per cent per annum during 1980—95.

Other Sectors

2.36 The off-take of fertilizers in 1979-80 was low because of the drought and therefore, a high growth rate in fertilizer consumption (12.8 per cent per annum) is targetted during the Sixth Plan. Growth in demand over the perspective period (1985—95) is linked with the expansion of irrigated area, which is targetted to grow at 4.3 per cent during 1985—95 as against 5.1 per cent during 1980—85. Nitrogenous fertilizers output will rise from 4.2 million tonnes in 1984-85 to 9.7 million tonnes in 1994-95, and that of phosphatic fertilizers from 1.4 million tonnes to 3.6 million tonnes. However, the demand for potassic fertilizers will be met through imports.

2.37 The growth rate in domestic demand for cloth is expected to rise from 4.3 per cent during 1980—85 to 5.0 per cent during 1985—95. This reflects the projected improvement in income distribution in the society. The growth rate of consumption of paper and paper board will be maintained around 7 per cent during the Sixth Plan and the perspective period (1985—95).

2.38 Consistent with the rate of growth of capital formation over the perspective period (1985—95) the growth in consumption of steel and cement during the perspective period (1985—95) will be about 6.3 per cent. Growth in output of non-ferrous metals will be 7.4 per cent per annum during 1985—95 as against 10.8 per cent during 1980—85. The higher growth rate in the Sixth Plan is also due to the fact that the output of aluminium and copper had declined by 10.2 and 18.1 per cent, respectively, in 1979-80.

2.39 A high growth in consumption (10 to 25 per cent) is projected for the Sixth Plan in respect of the plastics group of commodities (PVC, Polyethylene Polypropylene etc.); this is mainly due to the substitution by these materials of conventional materials like wood, leather and metals. Over the perspective period (1985—95), the growth in consumption of the plastics group of commodities is expected to stabilise at 10 to 12 per cent. This is also consistent with the strategy of restraining the demand for petroleum products.

2.40 Given the past erratic behaviour of iron or exports, and also due to slow growth of world steel output it will not be prudent to take credit for ever increasing iron ore exports in determining the long term balance of payments profile of the economy. Since exports account for about 60 per cent of domestic iron ore production, these considerations are reflected in the relatively lower output growth rate over the perspective period.

2.41 In the past three decades of planned development in India, the elasticity of commercial energy consumption to GDP has been around 1.8, which is very high in comparison to the developed countries. The sectoral growth profile for the perspective period (1985-95) outlined in earlier sections of this chapter seeks to arrest further acceleration in the growth rate of consumption of commercial energy in the economy. Growth rate of all principal forms of commercial energy is projected to decline considerably in the perspective period as shown in Table 2.12.

Table 2.12

**Growth in Consumption of Commercial Energy :
1980-85 and 1985-95**

(Per cent per annum
compound)

Form of Energy	Growth in Consumption	
	1984-85	1994-95
	1979-80	1984-85
(0)	(1)	(2)
Petroleum products	9.1	5.8
Coal	9.8	7.0
Electricity	11.3	7.5

2.42 Consistent with the growth in consuming sectors (steel, power, cement, etc.) and also to fulfil the need for increasing the share of indigenous energy in total energy consumption, the output of coal will have to be raised from 165 million tonnes in 1984-85 to 325 million tonnes in 1994-95. This would be supplemented further by raising lignite production from 8 million tonnes to 20 million tonnes during the perspective period (1985-95).

2.43 While the policy of substituting other fuels for petroleum as a source of energy in transport and other sectors will be pursued, a large scale shift away from the petroleum based energy and the use of petroleum products in non-energy applications (such as fertilizers, petro-chemicals, etc.) does not appear to be feasible in the perspective period. However, in the perspective period (1985-95), the growth in demand for petroleum products will have to be brought down substantially below 9 per cent per annum estimated for the Sixth Plan period. Indeed, in the light of newly emerging trends, it will be prudent to restrict the growth of petroleum products to a lower rate even in the Sixth Plan. Effective measures will need to be adopted in this direction.

2.44 Electricity generation will need to be raised from 191 billion units in 1984-85 to 395 billion units in 1994-95 to meet the energy requirements for the projected levels of industrial production and the requirements of the other sectors. The projec-

tion provides for an increase in the share of electricity in rail transport to restrict the growth in consumption of petroleum products. As against the overall GDP growth rate of 5.5 per cent, electricity generation would grow at around 7.5 per cent per annum during the perspective period (1985-95). In view of the higher capital intensity of electricity, it is necessary to adopt effective measures to curb the rate of growth on consumption and in particular to prevent its wasteful use.

2.45 Considering the energy efficiency in long distance rail transportation of bulk commodities, vis-à-vis, road transport, and also the technological possibilities of utilising domestic energy in this mode of transport, the share of Railways in overall transport will be increased during the perspective period. Railway goods carrying capacity will need to be augmented to 560 million tonnes by 1994-95.

NON-RENEWABLE RESOURCES

2.46 The estimates of recoverable reserves for major minerals are tabulated in Table 2.13. The likely depletion by 1994-95 at contemplated rates of exploitation is also shown. The balance life of the reserves remaining at the end of the period, assuming 1994-95 consumption levels, would be less than 100 years in the case of seven minerals viz. ores of copper, zinc and lead; manganese ore, chromite, prime coking coal and crude oil. The position in regard to crude oil is very critical. Therefore, two-pronged action, viz., intensification of exploration for oil for establishing additional reserves and measures to curb consumption of petroleum products through their substitution by alternate fuels is called for to meet the situation.

2.47 With the right approach and strategy of mineral exploration by judicious, application of human material and financial resources at our command, the known mineral base can be made to expand. The known reserve of the various minerals is restricted mainly to exposed deposits at limited depths in mineral belts and areas that had a long tradition of mining and smelting in the ancient and medieval times and which have been mapped on 1 : 10,000 or larger scales. Further, deposits hidden from view and at depths, particularly in virgin areas, are likely to be discovered. Detailed mineral surveys and prospecting efforts would, therefore, have to be intensified by employing modern exploration and drilling techniques to expand the known mineral base in the perspective period. Improved mining techniques and development of technology to utilise low grade ores and fines in respect of several minerals will enable substantial additions to known reserves. A rise in mineral prices will enable the exploitation of certain deposits which were considered uneconomical at one time and this process also will improve the reserves position. New mineral resources could be found with the application of modern technology in the Himalayan and off-shore regions, under the alluvial plains of the North and Coastal areas and the great mass of Deccan trap volcanic effusive rocks covering large chunks of the Peninsular shield.

2.48 The growth rate in consumption of less abundant minerals, in the meanwhile, would need to be regulated commensurate with the known reserves at any point of time. At the same time, the processes of extraction and beneficiation will have to be made progressively more efficient. And whenever foreign exchange availability, relative prices and the foreign supply position permit, relatively larger import and

a lower rate of depletion would be preferred. Research and development efforts will have to be made to reduce the norms of consumption of materials, recycling of scrap and waste by developing better and more efficient technologies and materials management. Development of substitute materials (derived from renewable resources, wherever possible, would be encouraged.

Table 2.13

Balance life of known Mineral Reserves at 1994-95 Consumption levels implicit in Long Term Production, Export and Import Projections

Sl. No.	Mineral	Estimated recoverable reserve in 1979	Depletion 1979-95	Balance life after 1994-95
(0)	(1)	(2)	(3)	(4)
		(Million tonnes)		(Years)
1	Non-coking coal	37,000	2,640	126
2	Prime Coking Coal	2,700	330	74
3	Iron ore-Haematite	9,300	936	111
4	Bauxite	1,900	62	245
5	Limestone	53,000	1,020	519
6	Manganese ore	75	34	14
7	Chromite	24	6.5	29
8	Copper	3.20	0.77	32
9	Zinc	6.00	1.22	38
10	Lead	2.25	0.42	37
11	Crude Oil	361	336	1

Notes :

- (i) Recoverable reserves have been broadly estimated on the basis of prevailing ratios to in situ reserves.
- (ii) For coal, seams of thickness of 1.2 metres and above and at depth upto 600 metres have been considered.
- (iii) In the case of copper, lead and zinc, the figures are in terms of recoverable metal from ores.
- (iv) Recoverable reserves for crude oil are as on 1-1-1980.
- (v) Balance life is at 1994-95 depletion rates.

Annexure 2.1

Macro-Economic Estimates of Disposable Income, Consumption and Saving: 1979-80

(Rs. crores at current prices)

Sl. No.	Source/Destination	Gross Domestic Product	Income from abroad	Gross National Product	Domestic Economy	
					Public Sector	Private Sector including households
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	At factor cost accruing to the sector	97051	(—)201	96850	4089	92761
2	Indirect taxes less subsidies	11495	..	11495	11495	..
3	At market prices	108546	(—)201	108345	15584	92761
4	Inter-sectoral Transfers . . . . .	..	1520	1520	188	1332
	(i) Direct Taxes . . . . .	..	..	..	(+)3242	(—)3242
	(ii) Misc. Govt. Receipts . . . . .	..	..	..	(+)295	(—)295
	(iii) Interest on Public Debt . . . . .	..	..	..	(—)1028	(+)1028
	(iv) Current transfers from Govt. to Private Sector . . . . .	..	..	..	(—)2321	(+)2321
	(v) Other Current transfers from rest of the world . . . . .	..	1520	1520	..	(+)1520
5	Disposable Income . . . . .	..	..	109865	15772	94093
6	Consumption* . . . . .	..	..	86810	11757	75053
7	Saving . . . . .	..	..	23055	4015	19040
8	Net exports of goods & services . . . . .	..	(—)1882	..	..	..
9	Net capital inflow . . . . .	..	(—)563	563	..	..
10	Investment . . . . .	..	..	23618	..	..

* The figures differ slightly from the "Quick Estimates" of the Central Statistical Organisation due to difference in methodology relating to the treatment of "statistical discrepancy."

Annexure 2.2

Macro-Economic Estimates of Disposable Income, Consumption and Saving: 1984-85

(Rs. crores at 1979-80 prices)

Sl. No.	Source/Destination	Gross Domestic Product	Income from abroad	Gross National Product	Domestic Economy	
					Public Sector	Private Sector including households
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	At factor cost accruing to the sector	125050	(—)248	124802	7610	117192
2	Indirect taxes less subsidies	21490	..	21490	21490	..
3	At market prices	146540	(—)248	146292	29100	117192
4	Inter-sectoral transfers . . . . .	..	843	843	(—)3311	(+)4154
	(i) Direct Taxes . . . . .	..	..	..	(+)4209	(—)4209
	(ii) Misc. Govt. Receipts . . . . .	..	..	..	(+)330	(—)330
	(iii) Interest on Public Debt . . . . .	..	..	..	(—)2850	(+)2850
	(iv) Current transfers from Govt. to private sector . . . . .	..	..	..	(—)5000	(+)5000
	(v) Other current transfers from rest of the world . . . . .	..	843	843	..	(+)843
5	Disposable Income . . . . .	..	..	147135	25789	121346
6	Consumption . . . . .	..	..	111265	16879	94386
7	Saving . . . . .	..	..	35870	8910	26960
8	Net exports of goods and services . . . . .	..	(—)1522	..	..	..
9	Net capital inflow . . . . .	..	(—)927	927	..	..
10	Investment . . . . .	..	..	36797	..	..

Annexure 2.3

Macro-Economic Estimates of Disposable Income, Consumption and Saving : 1994-95

(Rs. crores at 1979-80 prices)

Sl. No.	Source/Destination	Gross Domestic Product	Income from abroad	Gross National Product	Domestic Economy	
					Public Sector	Private Sector including households
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	At factor cost accruing to the sector	213600	(—)495	213105	13850	199255
2	Indirect taxes less subsidies	42720	..	42720	42720	..
3	At market prices	256320	(—)495	255825	56570	199255
4	Inter-sectoral transfers . . . . .	..	1650	1650	(—)6430	(+)8080
	(i) Direct taxes . . . . .	..	..	..	(+)7665	(—)7665
	(ii) Misc. Govt. Receipts . . . . .	..	..	..	(+)505	(—)505
	(iii) Interest on Public Debt . . . . .	..	..	..	(—)6600	(+)6600
	(iv) Current transfers from Govt. to private sector . . . . .	..	..	..	(—)8000	(+)8000
	(v) Other current transfers from rest of the world . . . . .	..	1650	1650	..	(+)1650
5	Disposable Income . . . . .	..	..	257475	50140	207335
6	Consumption . . . . .	..	..	186945	33200	153745
7	Saving . . . . .	..	..	70530	16940	53590
8	Net exports of goods and services . . . . .	..	385	..	..	..
9	Net capital inflow . . . . .	..	1540	(—)1540	..	..
10	Investment . . . . .	..	..	68990	..	..

CHAPTER 3

OBJECTIVES AND STRATEGY OF THE SIXTH FIVE YEAR PLAN

The Sixth Five Year Plan has been formulated taking into account the achievements and failures of the past three decades of planning, recent economic developments which have a bearing on the growth prospects of the economy in the medium term as well as the vision of the future as reflected in the long term perspective. The removal of poverty is the foremost objective of the Sixth Plan even though it is recognised that given the magnitude of the task, it cannot be accomplished in a short period of five years. Inevitably, the pace of movement towards the long-term objectives of removal of poverty and the achievement of self-reliance and the nature of priorities in the immediate period ahead, are influenced by the current economic situation and the constraints operating in the economic system. It should be recognised that the Sixth Plan is being launched under difficult conditions. These include the acute inflationary pressures which have prevailed since March 1979, a set-back in the functioning of such critical sectors as power, coal, railways and steel and the steep rise in the price of petroleum products resulting in an increasing deterioration in the nation's terms of trade and the balance of payments. A realistic blue-print of the Sixth Plan must take note of these unfavourable developments. Effective solution for the existing difficulties are a precondition of successful implementation of the Sixth Plan. It goes without saying

that any effective solutions for these problems must be consistent with long term social and economic objectives so that the economy emerges out of these difficulties with improved growth prospects. Thus the economy is faced with many challenges and these will have to be met with courage, determination and a firm faith in India's destiny and future.

3.2 The wholesale price index has risen by nearly 17 per cent between 1979 and 1980 and by nearly 16 per cent between April and November, 1980-81. With rising prices, the real resource content of the Plan is likely to erode over time with consequent adverse effects on the prospects for growth. Rational and balanced economic policies for checking inflation and measures to protect the real size of the Plan will need to be formulated.

3.3 Trends in capacity utilisation upto 1979-80 in major industries have been a source of considerable concern because in most cases there has been a decline after 1976-77. For accelerating the tempo of industrial growth, improving the rates of return on capital and generating additional resources for the Plan, improvement in capacity utilisation must be regarded as a pre-condition for the success of the Sixth Plan (Table 3.1).

Table 3.1

Measurement of Capacity Utilisation in Major Sectors, 1976-77 to 1979-80

		(Per cent)			
Sl. No.	Sector	1976-77	1977-78	1978-79	1979-80
(0)	(1)	(2)	(3)	(4)	(5)
1	Saleable Steel (Integrated Plants)	91.9	90.3	81.5	69.1
2	Aluminium	83.5	61.3	66.4	58.2
3	Fertilizers (N) (Stabilised Plants)	83.6	82.3	83.3	76.6
4	Fertilizers (P ₂ O ₅)	66.0	78.0	73.4	61.55
5	Cement	86.6	88.8	85.6	72.6
6	Newsprint	76.9	74.7	64.0	63.2
7	Paper and Paper Board	79.0	76.0	72.4	68.2
8	Power Generation Thermal (All India Average Percent Capacity Factor)	56.0	50.8	48.4	45.0
9	Railways (Index of Net Tonne-Kilometres Freight Traffic, 1950-51=100)	356	369	351	350

As is evident from the table, recent trends in capacity utilisation in several industries are discouraging. This is also true for agriculture. For example, the irrigation potential which has been created is not fully utilised. Levels of yield per acre for many parts of the country are far below what can be attained with known technology. While the poor utilisation of capacity represents a waste of resources and thus adds to the resource constraint, it also provides an opportunity for a quick increase in output and productivity in the short run, thus improving the prospects for controlling inflation and creating conditions for accelerated growth in output as well as investment in coming years.

3.4 The poor utilisation of capacity in agriculture as well as in industry stems from many factors but the major problem areas can be located in the basic infrastructure of power and transport. The efforts currently under way are expected to improve the short run situation with respect to power and transport; but further intensive efforts will be required over the Sixth Five Year Plan.

3.5 India's balance of trade has shown an adverse trend since 1977-78. As against a surplus of Rs. 72 crores in 1976-77, the deficit in trade balance was Rs. 621 crores in 1977-78 and is reported to have been more than Rs. 2370 crores in 1979-80. The available data regarding the balance of trade for the first six months of 1980-81 show that the deficit has already exceeded Rs. 3000 crores. The increase in trade deficit during 1977-80 was due not only to the lower export growth of 6.1 per cent compared to

the growth rate of 26.8 per cent between 1974-77 at current prices, but also due to the rise in the value of imports at an average rate of 19 per cent annually.

3.6 This unfavourable picture is largely due to sharply deteriorating terms of trade since 1973-74 with some improvement temporarily in 1976-77 and 1977-78. The index of terms of trade with 1968=100 shows a decline to 90 in 1978-79 when export prices declined somewhat and import prices rose in general by 4.4 per cent and further deteriorated very sharply in 1979-80 when import prices, particularly those of petroleum products, rose considerably resulting in a large trade deficit.

3.7 If despite this picture on the trade account, the foreign exchange reserves continued to rise upto 1978-79 it was due to the buoyancy of invisible receipts, in particular remittances from Indians working abroad. It is quite possible that these remittances have reached their peak. Also the international economy in general faces a sharp recession of demand which, together with the protectionist tendencies in the industrialised countries, poses a serious challenge to our efforts to expand export earnings. The general situation in the oil exporting countries is also such as not to hold out hopes of any substantial increase in the demand for our exports or for migrant labour. Already in 1979-80, there was a slight decline of Rs. 55 crores in foreign exchange reserves and in 1980-81 by December 26, they had fallen further by Rs. 381 crores despite recourse to the I.M.F. to the tune of Rs. 815 crores. Table 3.2 shows the main indicators of external constraints.

Table 3.2

Selected Indicators of Developments in the External Sector

Sl. No.	Item	1976-77	1977-78	1978-79	1979-80
(0)	(1)	(2)	(3)	(4)	(5)
1	Exports as per cent of Imports	101.4	89.7	84.1	73.0
2	P.O.L. bill :				
	(i) Rs. crores	1413	1551	1677	3200
	(ii) As per cent of exports	27.5	28.7	29.5	49.8
3	Net External Assistance as per cent of imports	16.6	7.7	5.7	7.8
4	Foreign Exchange Reserves (year end) (Parenthesis show variation) (Rs. crores) .	2863 (1371)	4500 (1637)	5220 (720)	5164 (-56)
5	Debt service as per cent of exports (i.e. Repayment and interest)	14.7	15.2	15.4	11.1
6	Invisibles as per cent of exports	16.0	26.2	33.3	35.2
7	Trade deficit (Rs. crores)	72	(-621)	(-1088)	(-2370)

3.8 Growth prospects of the economy have been adversely affected by all these three factors: inflationary situation, constraints imposed by a poor performance in the basic infrastructure and the deteriorating balance of payments position. Since, however, the long term prospects of the economy depend significantly on the development of domestic resources of oil, coal, power, and renewable source of energy, on the investment in the modernisation and expansion of transport and on a rapid growth in agriculture and rural development, it will be necessary to make the requisite effort to mobilise resources in the face of all these difficulties so as to put the economy back on the path of sustained and self-generating growth.

OBJECTIVES

3.9 It is in the light of these considerations that the objectives of the Sixth Plan have been formulated. These are given below. Along with the objectives are also listed major areas of effort which will be required to fulfil these objectives:

- (i) a significant step up in the rate of growth of the economy, the promotion of efficiency in the use of resources and improved productivity;
- (ii) strengthening the impulses of modernisation for the achievement of economic and technological self-reliance;
- (iii) a progressive reduction in the incidence of poverty and unemployment;
- (iv) a speedy development of indigenous sources of energy, with proper emphasis on conservation and efficiency in energy use;
- (v) improving the quality of life of the people in general with special reference to the economically and socially handicapped population, through a minimum needs programme whose coverage is so designed as to ensure that all parts of the country attain within a prescribed period nationally accepted standards;
- (vi) strengthening the redistributive bias of public policies and services in favour of the poor contributing to a reduction in inequalities of income and wealth;
- (vii) a progressive reduction in regional inequalities in the pace of development and in the diffusion of technological benefits;
- (viii) promoting policies for controlling the growth of population through voluntary acceptance of the small family norm;
- (ix) bringing about harmony between the short and the long term goals of development by promoting the protection and improvement of ecological and environmental assets; and
- (x) promoting the active involvement of all sections of the people in the process of development through appropriate education, communication and institutional strategies.

3.10 The strategy adopted for the Sixth Plan consists essentially in moving simultaneously to strengthen the infrastructure for both agriculture and industry so as to create conditions for an accelerated growth in investments, output and exports, and to provide, through special programmes designed for the purpose, increased opportunities for employment especially in the rural areas and the unorganised sector and meet the minimum basic needs of the people. Stress is laid on dealing with inter-related problems, through a systems approach rather than in separate compartments; on greater managerial efficiency and intensive monitoring in all sectors and active involvement of the people in formulating specific schemes of development at the local level and in securing their speedy and effective implementation. The attack on the problem of poverty is most effective only in the conditions of an expanding economy. Since growth by itself may not, however, suffice, other programmes and policies will need to be adopted with the specific aim of improving the living conditions of the masses and to bring about a reduction in inequalities of income and wealth. The scheme of the Sixth Plan outlays thus provides for specific allocations for such programmes.

MACRO-DIMENSIONS

Aggregate Saving and Investment

3.11 The Sixth Plan envisages a total investment (gross capital formation) of Rs. 158710 crores over the plan period 1980-85 at 1979-80 prices. This is to be financed by domestic saving of Rs. 149,647 crores estimated at 1979-80 prices during the Sixth Plan and net inflow of funds from abroad to the extent of Rs. 9063 crores. Thus, nearly 94.3 per cent of the total investment is to be financed from domestic resources.

3.12 The total investment has been projected to grow from Rs. 23,618 crores in 1979-80 to Rs. 36,797 crores in 1984-85. At the same time, the GDP at market prices has been projected to increase from Rs. 108,546 crores to Rs. 146,540 crores during the same period. Thus, investment (as per cent of GDP at market prices) is expected to rise from 21.8 per cent in 1979-80 to 25.1 per cent in 1984-85.

3.13 Domestic saving has been projected to grow from Rs. 23,055 crores in 1979-80 to Rs. 35,870 crores in 1984-85. As per cent of GDP at market prices, the saving rate is envisaged to increase from 21.2 per cent in 1979-80 to 24.5 per cent in 1984-85, implying a marginal rate of saving of the order of 33.7 per cent over the plan period 1980-85.

3.14 The Sixth Plan aims at stepping up the rate of saving by bringing about an improvement in the ratio of saving to disposable income in the different sectors. Detailed estimates of sectoral disposable income, consumption and saving in 1979-80 and 1984-85 are given in Annexures 2.1 and 2.2, and are summarised in Table 3.3.

Table 3.3

Estimates of Disposable Income, Consumption and Saving: 1979-80 and 1984-85

Sl. No.	Item	Rs. crores at 1979-80 prices		Per cent of GNP	
		1979-80	1984-85	1979-80	1984-85
(0)	(1)	(2)	(3)	(4)	(5)
1	Public Sector				
	(i) Disposable Income	15772	25789	14.4	17.5
	(ii) Consumption	11757	16879	10.7	11.5
	(iii) Saving	4015	8910	3.7	6.0
	Private Corporate and Cooperative Sector.				
	(i) Disposable Income	1714	2972	1.5	2.0
	(ii) Consumption	..	..	..	..
	(iii) Saving	1714	2972	1.5	2.0
3	Household Sector				
	(i) Disposable Income	92379	118374	84.1	80.5
	(ii) Consumption	75053	94386	68.3	64.1
	(iii) Saving	17326	23988	15.8	16.4
4	Total				
	(i) Disposable Income	109865	147135	100.0	100.0
	(ii) Consumption	86810	111265	79.0	75.6
	(iii) Saving	23055	35870	21.0	24.4

3.15 Saving as per cent of corresponding disposable income is expected to rise from 25.5 to 34.5 per cent in the case of public sector and from 20.2 to 22.2 per cent in the case of private sector over the plan period 1980-85. Thus, saving effort in terms of sectoral disposable income is expected to show an improvement of 9 percentage points in the case of public sector and 2 percentage points in the case of private sector.

3.16 The share of public sector in aggregate domestic saving would rise from 17.4 per cent to 24.8 per cent, while that of the households would decline from 75.2 per cent to 66.9 per cent, as shown in Table 3.4.

Table 3.4

Sectoral Shares in Total Domestic Saving

Sl. No.	Sector	Rs. crores ¹		Share (per cent)	
		1979-80	1984-85	1979-80	1984-85
(0)	(1)	(2)	(3)	(4)	(5)
1	Public Sector . . .	4015	8910	17.4	24.8
2	Private corporate and Cooperative sector . .	1714	2972	7.4	8.3
3	Household sector . . .	17326	23988	75.2	66.9
4	Total	23055	35870	100.0	100.0

¹At 1979-80 prices.

Rate and Pattern of Growth

3.17 The choice of the rate of growth of gross domestic product of 5.2 per cent per annum has already been explained in Chapter 2. The sectoral growth rates are determined by the demand for and supply of different commodities and services either through the market mechanism or as a result of specific public policies adopted to clear specific markets. Sectoral growth rates are thus subject to technical, behavioural and institutional constraints as well as policies of the Government. A large part of the supply is determined by the investment decisions already made in the past; a large part of demand originates from the need for building up capacity for the future. There is also the foreign demand for our exports and the supply of imports from abroad. The pattern of growth is derived from a consistent system which is solved inter-temporally with an open economy model.

3.18 The model consists of an 89 sector input-output model integrating the Sixth Plan period with the perspective period (1985-95) through a 14 sector investment planning model. In working out the input-output model for the Sixth Plan, technological characteristics of the economy have been taken into account. The treatment of private consumption, public consumption, investment and foreign trade used in the model for projecting the sectoral outputs is discussed below.

3.19 Public consumption expenditure and exports for the terminal year have been estimated exogenously. While the aggregate public consumption expenditure has been assumed to grow at an annual rate of 7.5 per cent, certain social services like health and medical services, education and other social services have been postulated to grow at slightly higher rates in line with the objective of increasing social consumption. Exports have been projected to grow at an average rate of 9 per cent per annum at the overall level, while individual commodity exports have been projected to grow at different rates.

3.20 The total investment outlay envisaged for the Sixth Plan period has been appropriately phased over the Plan period taking into account the gestation lags of the individual sectors and the growth profile both in the Sixth Plan and post Sixth Plan period. Sectoral investment outlay thus generated (i.e. investment by destinations) has been disaggregated into various capital goods and changes in stocks and used in the model (i.e. investment by sources).

3.21 Import projections for inter-industry use and final use for the terminal year have been endogenously derived through the use of import co-efficient matrices.

3.22 Private consumption expenditure on goods and services in the terminal year has been projected through the use of a consumption sub-model which considers demand functions for people below and above the poverty line as well as rural and urban areas separately. The projected demand pattern takes into account the consumption requirements consistent with the objective of a significant reduction in the proportion of people below the poverty line. Redistribution of consumption in favour of the poorer sections of the population has been provided for to assess the output implications of the postulate of a reduction in the percentage of population below the poverty line to 30, both in rural and urban areas by 1984-85.

3.23 The internally consistent and feasible sectoral pattern of growth satisfying the selected growth strategy, corresponding to the aggregate annual growth rate of 5.2 per cent in GDP and the envisaged reduction in poverty is given in Table 3.5.

3.24 While significant growth is projected for all the sectors, the changing pattern of demand, as is to be expected in a developing economy, indicates different growth rates at sectoral level, leading to a diversification of the production structure of the economy. The consequent structural change in the composition of gross domestic product over the Plan period is shown in Table 3.6. The share of mining and manufacturing in gross value added goes up from 19.59 per cent in 1979-80 to 21.22 per cent in 1984-85, of electricity from 1.71 per cent to 1.88 per cent, of transport from 4.89 per cent to 4.95 per cent and of services from 33.61 per cent to 34.00 per cent, indicating that agriculture would contribute 32.90 per cent of gross value added in 1984-85 as against 35.13 per cent in 1979-80.

Table 3.5
Projected Sectoral Growth Rates of Value of Gross Output and Gross Value Added at Factor Cost 1984-85/1979-80

Sl. No.	Sector	Value of Gross Output	Gross Value Added
(0)	(1)	(2)	(3)
(Per cent Per Annum Compound)			
1	Agriculture	5.20	3.83
2	Mining and Manufacturing	7.76	6.90
	(a) Mining	11.50	11.25
	(b) Manufacturing	7.62	6.50
	(i) Food Products	6.20	4.35
	(ii) Textiles	4.40	3.61
	(iii) Wood and Paper Products	6.80	5.30
	(iv) Leather and Rubber Products	6.50	6.33
	(v) Chemical Products	11.00	9.33
	(vi) Coal and Petroleum Products	7.50	7.35
	(vii) Non-Metallic Mineral Products	6.50	5.15
	(viii) Basic Metals	10.40	8.75
	(ix) Metal Products	8.20	8.09
	(x) Non-Electrical Engineering Products	11.20	9.11
	(xi) Electrical Engineering Products	10.02	8.70
	(xii) Transport Equipment	10.15	9.00
	(xiii) Miscellaneous Industries	4.20	4.06
3	Electricity, Gas and Water Supply	11.25	7.15
4	Construction	7.10	5.10
5	Transport	6.70	5.46
6	Services	6.00	5.44
	TOTAL . . . . .	..	5.20

3.25 The projected rates of growth in output in the different sectors have been translated in terms of physical targets for important commodities in order to facilitate the formulation of necessary investment projects and production programmes. In addition, the physical targets for key commodities have also been cross-checked through the system of material balances.

Table 3.6

Sectoral Composition of Gross Value Added:
1979-80 and 1984-85

Sl. No.	Sector	(Per cent)	
		1979-80	1984-85
(0)	(1)	(2)	(3)
1	Agriculture	35.13	32.90
2	Mining and Manufacturing	19.59	21.22
	(A) Mining	1.52	2.01
	(B) Manufacturing	18.07	19.21
	(i) Food Products	1.77	1.70
	(ii) Textiles	3.11	2.88
	(iii) Wood and Paper Products	1.02	1.03
	(iv) Leather and Rubber Products	0.50	0.52
	(v) Chemical Products	2.55	3.09
	(vi) Coal and Petroleum Products	0.45	0.49
	(vii) Non-Metallic Mineral Products	1.05	1.05
	(viii) Basic Metals	1.26	1.49
	(ix) Metal Products	0.96	1.10
	(x) Non-electrical Engineering Products	1.38	1.66
	(xi) Electrical Engineering Products	0.60	0.71
	(xii) Transport Equipment	1.02	1.23
	(xiii) Miscellaneous Industries	2.40	2.26
3	Electricity, Gas and Water Supply	1.71	1.88
4	Construction	5.07	5.05
5	Transport	4.89	4.95
6	Services	33.61	34.00
	TOTAL	100.00	100.00

Pattern of Public and Private Investment

3.26 The total Plan investment for the period 1980-85 is estimated at Rs. 158710 crores. Of this, Rs. 84000 crores* (53 per cent) is estimated to be in the public sector and the balance of Rs. 74710 crores (47 per cent) in the private sector.

3.27 Estimates of investment during the Plan period by 14 sectors of destination as derived from the investment planning model are given in Table 3.7. Incremental gross value added over the Plan period in the respective sectors is also provided in the table.

*In addition the public sector plan includes current outlays amounting to Rs. 13,500 crores.

Table 3.7

Gross Investment by Destination Sectors and Increment
in Gross Domestic Product (GDP) at Factor Cost
(1980-85)

Sl. No.	Sector	(Rs. crores at 1979-80 prices)	
		Investment (at market prices)	Incremental GDP (at factor cost)
(0)	(1)	(2)	(3)
1	Agriculture	32242	6404
2	Forestry and Logging	478	327
3	Fishing	748	318
4	Mining and Quarrying	6575	1040
5	Manufacturing	45515	6500
6	Construction	1760	1389
7	Electricity, Gas and Water Supply	23554	686
8	Railways	4724	420
9	Other Transport	11330	1025
10	Communications	2902	262
11	Trade, Storage and Ware Housing	7299	5026
12	Banking and Insurance	260	968
13	Real Estate and Ownership of Dwellings	16437	923
14	Other Services (including Public Administration and Research)	4886	2711
15	Total at factor cost . . . . .	..	27999
16	Total at market prices	158710	37994

3.28 The distribution of private investment in the major sectors is shown in Table 3.8.

Table 3.8

Distribution of Private Sector Investment 1980-85

Sl. No.	Sector	(Rs. crores at 1979-80 prices)	
		Amount	Share(%)
(0)	(1)	(2)	(3)
1	Agriculture & Allied	16101	21.55
2	Industry & Minerals	30323	40.59
3	Power	189	0.25
4	Transport & Communications	3390	4.54
5	Others	24707	33.07
	TOTAL	74710	100.00

The estimates of investment requirement for the different activities in the private sector have been derived on the basis of the targeted growth rates, the contribution of the public sector and the investment requirements for the generation of new capacity estimated from incremental capital-output ratio derived from past time-series data.

3.29 Investment in mining and manufacturing (including small and village industries) in the past has been nearly one-third of the total private investment. In the present Plan this ratio is likely to go up to nearly 41 per cent of the total. The organised private corporate and cooperative sectors in mining, manufacturing and non-financial services have shown an investment requirement of Rs. 19582 crores. Of this, cooperative sector is estimated to require an investment of Rs. 2000 crores.

3.30 The broad pattern of allocation of corporate mining and manufacturing investment by major industry groups is given in Table 3.9.

Table 3.9

Distribution of Private Corporate Investment in Mining and Manufacturing

(Rs. crores at 1979-80 prices)

Sl. No.	Industry Group	Total
(0)	(1)	(2)
1	Mining	259
2	Metallurgical	1244
3	Engineering	2463
4	Chemicals	3920
5	Consumer Industries	5375
6	Miscellaneous	2155
TOTAL		15182

@Excluding captive mining which is included under respective industries.

NOTE: Figures include about Rs. 2000 crores in cooperative manufacturing sector.

3.31 The inter-sectoral capital flows for the period 1980—85 are presented in Table 3.10.

Table 3.10

Inter-sectoral Capital Flows: 1980—85

(Rs. crores at 1979-30 prices)

Sl. No.	Item	Public Sector	Corporate & Cooperative Sector	Household Sector	Total
(0)	(1)	(2)	(3)	(4)	(5)
1	Own Saving	34200	10588	104859*	149647
2	Transfer from other domestic sectors	38871	8994	(—)47865	—
3	Inflow from rest of the world	10929	—	(—)1866	9063
4	Investment	84000	19582	55128	158710

*Details are given in Annexure 5.1.

3.32 Table 3.10 shows household savings of Rs. 104859 crores. These are used partly to finance the sector's investment in physical assets of Rs. 55128 crores; the rest are transferred to the public sector and the corporate and cooperative sectors. The latter sectors will have a total investment of Rs. 19582 crores financed by own savings and transfers from other domestic sectors, including the household sector.

SECTORAL GROWTH PROFILE

3.33 The experience of the recent past shows that a lack of coordination among critical sectors acts as a general drag on economic growth. Production capacities created after a massive investment effort remain under-utilised due to shortfalls in performance of a few sectors. It is, therefore, essential that the projected production profile should be internally consistent not only at the sectoral level, but also at the level of specific commodities/services. Commodity-wise demand-supply (material) balances presented below project the consistency of production targets of principal commodities/services with the targets of user-sectors. These balances are for the country as a whole. In taking operational decisions regarding production of the respective commodities and also for creation of additional capacities, inter-sectoral balances will need to be supplemented by inter-regional balances.

3.34 Physical targets of production for the principal commodities and services are presented in Table 3.11. Sectoral priorities have been built into the projected targets of demand and output of the principal commodities. These are discussed under the respective sectors.

Table 3.11

Commodity Output Projections : 1984-85

Sl. No.	Item	Unit	1979-80	1984-85 (Projections)	(0)	(1)	(2)	(3)	(4)
(0)	(1)	(2)	(3)	(4)					
1	Foodgrains . . .	Million tonnes	109	149 to 154	25	Synthetic Rubber (SBR and PBR)	Thousand tonnes	30.3	45
2	Sugarcane . . .	Million tonnes	128	200 to 215		Petroleum Products (Including Lubricants)	Million tonnes	25.8	35.3
3	Jute and Mesta . .	Lakh bales	80.3	91.0	27	Sulphuric Acid . .	Thousand tonnes	2131	3600
4	Cotton . . .	Lakh bales	77	92	28	Caustic Soda . . .	Thousand tonnes	549.6	850
5	Oilseeds (five major)	Lakh tonnes	81	110	29	Soda Ash . . .	Thousand tonnes	555.8	850
6	Tea . . .	Million Kgs.	550	705	30	Caprolactum . . .	Thousand tonnes	13.5	18.0
7	Coffee . . .	Million Kgs.	150.00	159.45	31	DMT . . .	Thousand tonnes	27.9	56.0
8	Milk . . .	Million tonnes	30.27	38	32	Nitrogenous Fertilisers (N)	Thousand tonnes	2226	4200
9	Eggs . . .	Million Nos.	12320	16300	33	Phosphatic Fertilisers (P ₂ O ₅)	Thousand tonnes	757	1400
10	Coal . . .	Million tonnes	103.96	165.00	34	Nylon Filament Yarn	Thousand tonnes	17.7	28.0
11	Lignite . . .	Million tonnes	3.12	8.00	35	Polyester Filament Yarn and Staple Fibre	Thousand tonnes	32.6	73.0
12	Crude Petroleum	Million tonnes	11.77	21.6	36	Cement . . .	Million tonnes	17.68	34 to 34.5
13	Iron Ore and Concentrates	Million tonnes	39	60	37	Pig Iron for sale . .	Million tonnes	1.09	1.52
14	Sugar . . .	Million tonnes	3.9	7.6	38	Saleable Steel (Plain carbon)	Million tonnes	7.38	11.51
15	Vanapati . . .	Thousand tonnes	626	900	39	Aluminium . . .	Thousand tonnes	192	300
16	Cloth (mill and decentralised sectors)	Million metres	10435	13030	40	Copper Refined	Thousand tonnes	18.8	45.0
17	Jute Manufactures	Thousand tonnes	1336	1500 to 1540	41	Zinc . . .	Thousand tonnes	52.65	85.00
18	Paper and Paper Board	Thousand tonnes	1050	1500	42	Lead . . .	Thousand tonnes	11.4	25.0
19	Newsprint . . .	Thousand tonnes	47.45	180	43	Agricultural Tractors	Thousand nos.	62.5	100.0
20	L.D. Polyethylene	Thousand tonnes	71.3	100.0	44	Machine Tools . . .	Rs. Million	1633	2500
21	H.D. Polyethylene	Thousand tonnes	25.4	27.0	45	Hydro Turbines	Million Kw	0.95	1.20
22	Polypropylene	Thousand tonnes	13.4	27.0	46	Thermal Turbines	Million Kw	2.28	3.50
23	P.V.C. . . .	Thousand tonnes	49.9	128.0	47	Electric Transformers	Million KVA	18.7	35.0
24	Natural Rubber . .	Thousand tonnes	148.47	200.0	48	Commercial Vehicles	Thousand nos.	57.4	105.0
					49	Electricity Generation	Billion KWH	112	191
					50	Railways—Originating Traffic	Million tonnes	217.8	309

Agriculture

3.35 The gross cropped area in 1979-80 has been estimated at 168 million hectares with net sown area of 140 million hectares and 28 million hectares area sown more than once. Thus the cropping intensity in 1979-80 is estimated at 1.20. Based on land utilisation concept of irrigated areas, the gross irrigated area in 1979-80 has been estimated as 50.00 million hectares. During the Sixth Plan another 14 million hectares would be brought under irrigation. Thus the gross irrigated area in 1984-85 is likely to attain a level of 64.00 million hectares. The additional irrigation is likely to increase the area under short duration high yielding varieties and thus promote cropping intensity which is projected to go up from 1.20 in 1979-80 to 1.25 in 1984-85.

3.36 It has been assumed that the increase in gross cropped area in future years could be achieved through the creation of additional irrigation facilities. Several functional relationships between gross cropped area and gross irrigated area, as also between gross irrigated area and incremental area sown more than once, with and without time lags, were studied, based on data for the period 1960-61 to 1978-79. On the basis of these studies, gross cropped area has been projected to increase to 179.74 million hectares in 1984-85. A substantial step-up in the creation of irrigation potential and its optimum utilisation is thus crucial for achieving the output targets for various crops in the Sixth Plan period.

3.37 In the allocation of gross cropped area estimated for the terminal year of the Sixth Plan between different crops, lagging crop sectors, like pulses and oilseeds, have been given greater impor-

tance. As a first approximation, gross cropped area has been allocated between different crops on the basis of trend growth rates of the percentage share of each crop in the gross cropped area. The area projected for each crop has again been allocated between different categories of land (HYV/Irrigated/Unirrigated) on the basis of respective estimated trend growth rates. In view of the existing imbalances in the crop composition, trend projections of area for lagging crop sectors have been revised upwards. Policy instruments particularly with reference to land and water use, coupled with promotion of appropriate research on high yielding varieties and intensification of lab-to-field movement, are likely to help in inducing the acreage as well as yield shifts in favour of lagging crops sectors.

3.38 Per hectare yield rates as available from the reports of the crop cutting experiments of the National Sample Survey Organisation have been used in the case of foodgrains and cotton. For sugarcane, marginal improvement in all India yield rates over the peak-levels achieved so far is visualised in the estimation of output in 1984-85. In the case of jute and mesta, improvement in yield rates as warranted by past experience have been assumed. While selecting the estimates of average yields for foodgrains, account was taken of the experience of early seventies when the average yields were relatively on the high side compared to their levels in the later years.

3.39 The projected output of major crops for the year 1984-85, estimated on the basis of above assumptions, are indicated in Table 3.12.

Table 3.12
Area Yield Level and Output of Principal Crops in 1984-85

Crop	Land Category	Area (Mill. Hec.)	Yield (Kg/Hec)	Production (Mill. Tonnes)
(0)	(1)	(2)	(3)	(4)
Rice	HYV Irrigated	19.89	2231	44.37
	Other Irrigated	0.80	1293	1.03
	Unirrigated	20.58	863	17.76
	TOTAL	41.27	1524	63.16
Wheat	HYV Irrigated	18.00	2101	37.82
	Other Irrigated	0.80	1290	1.03
	Unirrigated	6.20	790	4.90
	TOTAL	25.00	1750	43.75
Other Cereals	Irrigated	6.00	1394	8.36
	Unirrigated	32.00	627	20.06
	TOTAL	38.00	748	28.42
Pulses	Irrigated	3.40	..	..
	Unirrigated	23.40	..	..
	TOTAL	26.80	560	15.00
Total Foodgrains	Irrigated	48.89	..	..
	Unirrigated	82.18	..	..
	TOTAL	131.07	1147	150.33
Sugarcane	Irrigated	3.48	..	..
	Unirrigated	0.00	..	..
	TOTAL	3.48	57,500	200.10
Cotton	Irrigated	4.10	310	74.76
	Unirrigated	4.36	75	19.24
	TOTAL	8.46	189	94.00 (lakh bales)
Jute & Mesta	Irrigated	0.06	..	..
	Unirrigated	1.28	..	..
	TOTAL	1.34	1250	93.06 (lakh bales)
Other Crops	Irrigated	7.47	..	..
	Unirrigated	27.92	..	..
	TOTAL	35.39	..	..
All Crops	Irrigated	64.00	..	..
	Unirrigated	115.74	..	..
	TOTAL	179.74	..	..

The foodgrains output is projected to grow by 6.5 per cent per annum using a base level figure of 109 million tonnes in 1979-80. However, using trend estimate for 1979-80 the growth rate works out to 3.2 per cent as against a growth rate of 2.74 per cent observed during 1969-70 to 1978-79.

3.40 With the launching of the project 'Operation Flood II', the output of milk is to be substantially increased and is estimated at 38 million tonnes in 1984-85 as against an estimated level of 30.27 million tonnes in 1979-80. The increase implies an annual growth rate of 4.65 per cent. The growth rate for milk and milk products during the Plan period works out to 5.51 per cent. In respect of other animal husbandry products, the Sixth Plan envisages a growth rate of 5.71 per cent.

3.41 The Sixth Plan provides for a growth rate of 4.50 per cent for the forestry sector and 6.60 per cent for the fisheries sector.

3.42 Taking the various components of the agricultural sector together, the overall rate of growth of gross value added in agriculture during the Sixth Plan is estimated to be 3.83 per cent per annum. Any projection of output in agriculture is beset with uncertainty, largely due to fluctuations in weather. The output targets given above are based on the average yield levels already realised and may thus be regarded in the sense that the effects of possible further technological change have not been taken into account.

Sugar

Table 3.13

Supply-Demand Balance for Sugar : 1979-80 and 1984-85

(Million Tonnes)			
Sl. No.	Item	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Domestic Demand	5.1 ¹	6.8
2	Exports	0.2 ¹	0.8
3	Total Demand	5.3	7.6
4	Production	3.9	7.6
5	Stock Depletion	1.4	
6	Total Supply	5.3	7.6

¹Offtake from the mills.

3.43 Domestic demand for sugar would reach a level of 6.8 million tonnes by 1984-85. Given the potential of raising sugarcane output, it should be possible to raise sugar production from 3.9 million tonnes in 1979-80 to 7.6 million tonnes by 1984-85. This projected level of production would not only meet the demand of the domestic market, but may also enable our sugar exports to reach a level of 0.8 million tonnes by 1984-85. For this purpose, it will be necessary to mount a drive for better management of ratoon crops and an integrated pricing policy so as to promote the use of cane for sugar, gur and khandsari production in a balanced manner.

Cotton Cloth and Yarn

3.44 Demand for cotton textiles as given by the consumption sub-model together with the cloth requirements for the projected exports of cotton fabrics indicates that the demand for cotton cloth, including pure art silk, blended and mixed fabrics, will rise to 13030 million metres by the end of the Plan period. With the indigenous availability of raw cotton at 92 lakh bales in 1984-85 and considering the relative consumer preferences, the share of pure cotton cloth in total textiles output will be 8640 million metres the balance of 2490 million metres being blended and mixed fabrics and 1900 million metres of art silk fabrics. The production of decentralised sector will increase to 5340 million metres in 1984-85. Cotton yarn requirements for this pattern of output will be 1156 million Kgs. Raw cotton requirements in 1984-85 have been estimated at 92 lakh bales.

Table 3.14

Supply-Demand Balance for Cotton Cloth and Yarn: 1984-85

Sl. No.	Item	Cloth Production (Mill. Mts.)	Yarn Requirement (Mill. Kgs.)
(0)	(1)	(2)	(3)
1	Cotton Cloth	8640	946
	(i) Mill Sector	3300	412
	(ii) Decentralised Sector	5340	534
2	Blended & Mixed Fabrics produced in the mill and decentralised sectors, of which cotton yarn part	2490	130
3	Yarn for Hosiery and Export		80
4	Total Demand		1156
5	Total Production		1156

Raw Cotton

Table 3.15

Supply-Demand Balance for Raw Cotton : 1984-85

Sl. No.	Item	Raw Cotton Requirement (lakh bales of 170 kgs. each)
(0)	(1)	(2)
1	Yarn Manufacture	83
2	Extra Factory Consumption	3
3 ^a	Khadi & Ambar Charkha	3
4	Exports	3
5 ^a	Total Demand	92
6	Total Production	92

Jute Manufactures

Table 3.16

Material Balance for Jute Manufactures: 1984-85

(Thousand Tonnes)

Sl. No.	Consuming Sector	Sacking	Hessian	Total Sacking and Hessian
(0)	(1)	(2)	(3)	(4)
1	Cement	184.80	—	184.80
2	Sugar	91.20	—	91.20
3	Flour	37.70	—	37.70
4	Salt	74.40	—	74.40
5	Fertilisers (materials)	93.50	93.50	187.00
6	Foodgrains	372.50	—	372.50
7	Cloth (incl. blended & mixed)	—	33.40	33.40
8	Other uses	—	—	129.00
9	Total	854.10 ¹	126.90 ²	1101.00
10	Substitution by synthetic materials & bulk handling	—	—	(-)111.00
11	Domestic Demand	—	—	990.00
12	Export	—	—	510 to 550
13	Total Demand	—	—	1500 to 1540
14	Production	—	—	1500 to 1540

¹Included in column (4)²Excluding 'other uses'.

3.45 The domestic requirements of jute manufactures in 1984-85 are derived from the projected levels of output of commodities which need these as packaging materials. Packaging requirements for cement, sugar, fertilisers, foodgrains, textiles, flour and salt add up to 854 thousand tonnes of sacking and 127 thousand tonnes of hessian. After providing for the requirements of other sectors and the likely effect of substitution by synthetic packaging materials and bulk handling, the net domestic demand in 1984-85 is placed at 990 thousand tonnes. Taking into account the projected level of exports of 510 to 550 thousand tonnes, the output target for jute manufactures in 1984-85 is placed at 1500 to 1540 thousand tonnes.

Coal

Table 3.17

Material Balance for Coal : 1979-80 & 1984-85

(Million Tonnes)

Sl. No.	Consuming Sector	1979-80	1984-85
(0)	(1)	(2)	(3)
<i>Coking Coal</i>			
1	Steel Plants (hot metal) }	22.52	34.50
2	Coke Ovens etc. }		
<i>Non-Coking Coal</i>			
3	Power	33.34 (1.52)	65.00 (3.50)
4	Railways	12.53	11.70
5	Cement	4.53	8.60
6	Fertilisers	2.11	5.60
7	Soft Coke/LTC	3.36	6.00
8	Brick and Others	24.51 (9.70)	32.70 (1.50)
9	Colliery Consumption	3.55	53.50
10	Export	0.09	0.40
11	Total requirement	106.56 (2.22)	163.00 (5.00)
12	Production	103.96	165.00
13	Imports	1.88 ¹	3.00
14	Changes in stocks	0.72 }	

¹Indigenous raw coal equivalent of 0.94 million tonnes of imported coal.

Figures in brackets indicate middlings.

3.46 To realise Plan targets in power generation, iron and steel and transportation and to meet the energy needs of other sectors, coal production will have to be raised from 104 million tonnes in 1979-80 to 165 million tonnes in 1984-85. Domestic production will be supplemented by 2 million tonnes of imported Coking Coal in 1984-85. This is also necessary keeping in view the need for conservation of the reserves and improvement in the quality of coal fed to steel plants. Total consumption in 1984-85 would be 168 million tonnes. Consumption profile, based on the growth projections for consuming sectors is presented in Table 3.17. Expected variation in the quality of raw coal has been provided for in estimating the sectorwise requirements.

Petroleum Products

Table 3.18
Supply-Demand Balance for Petroleum Products: 1979-80 & 1984-85
(Million Tonnes)

Sl. No.	Item	1979-80				1984-85			
		Light distillates	Middle distillates	Heavy ends	Total Petroleum products	Light distillates	Middle distillates	Heavy ends	Total Petroleum products
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Domestic Demand	4.456	16.191	8.879	29.526	7.050	25.920	12.530	45.500
2	Production	4.413 ¹	12.687 ¹	8.036 ¹	25.136 ¹	7.690	19.430	8.220	35.340
3	Imports	0.131	3.504	0.843	4.478	..	6.490	4.310	10.800
4	Export	0.088	..	..	0.088	0.640	..	..	0.640

¹ Production plus changes in stocks.

3.47 During the Plan period the overall demand for petroleum products is projected to grow at around 9 per cent per annum compound, and would reach 45.5 million tonnes by 1984-85, consistent with the projected increase in the production of fertilizers and petro-chemicals, the targets in the different transportation sectors and the expected increase in household consumption. Product-wise, substantial deficits are foreseen in middle distillates and heavy ends. Domestic production of light distillates would be sufficient for meeting domestic demand and marginal surpluses are expected by 1984-85. Given the world oil situation, the possibility of meeting these demands is uncertain and hence ways and means will have to be found to restrain the rate of growth of demand for oil without affecting the overall rate of growth of the economy.

Crude Petroleum

Table 3.19
Supply-Demand Balance for Crude Petroleum:
1979-80 & 1984-85

Sl. No.	Item	(Million Tonnes)	
		1979-80	1984-85
(0)	(1)	(2)	(3)
1	Installed refining capacity	31.80	45.55
2	Production of petroleum products	25.83	35.34
3	Crude throughput	27.47 ¹	38.00
4	Crude production	11.77	21.60
5	Crude imports	16.12 ²	16.40

¹ Excluding changes in stocks.

² Provisional

3.48 The installed capacity for refining is anticipated at 45.55 million tonnes by 1984-85. However, installation of secondary processing facilities will not be completed by then and hence the crude oil requirement is placed at 38 million tonnes in 1984-85. Of this, the supply from indigenous production is estimated at 21.6 million tonnes, while 16.4 million tonnes of crude oil is planned to be imported.

3.49 The principal reasons for the continued rise in consumption of petroleum products, inspite of the price rise, are the replacement of non-commercial energy as a consequence of mechanisation of agriculture and irrigation, expansion of rural link roads, substitution by kerosene of other fuels and the increased input of fertilizers in agriculture to realise the higher yield rates. Continued increase in motorised inter-city and intra-city transport is also one of the principal factors. A significant adjustment of economic activities to the energy scarcity will be realised only over a longer time horizon.

3.50 Given the international oil situation, a reduced dependence on imported oil has to be a key element of our development strategy for the years to come. The main features of such a strategy are described in the chapter on Energy and may be summarised as follows:

- (i) Through the pursuit of appropriate pricing policies and other related measures, the rate of growth of consumption of oil products must be curbed, particularly of diesel and kerosene which have shown unacceptably high rates of growth in recent years. Utmost economy and maximum efficiency in the proper use of petrol, diesel and petroleum products should be effected and public should be made more aware of the nature of the oil crisis and what it means for the average citizen.
- (ii) Efforts for the exploration and development of domestic resources of oil have to be greatly intensified.

- (iii) Expansion in the production of coal and electricity and faster exploitation of India's considerable hydro-potential and further development of nuclear power have to be pursued with greater vigour.
- (iv) In order to economise in the use of kerosene and diesel in rural areas, setting up of biogas plants and energy plantations under the intensive forestry development programme, using waste land, and appropriate timber species which grow rapidly, have to be pushed ahead.
- (v) There is a considerable scope for conservation and economy in the use of several industrial processes. An energy audit should invariably become an annual feature of the activity of all major industrial enterprises in the public and private sectors.
- (vi) Research on the development of renewable sources of energy, particularly use of solar energy must receive greater attention than in the past. An Alternative Energies Commission has already been set up.

Paper and Paper Board

Table 3.20

**Supply-Demand Balance for Paper and Paper Board:
1979-80 and 1984-85**

(Thousand Tonnes)

Sl. No.	Item	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Demand	1100	1540
2	Production	1050	1500
3	Imports	50 ¹	40

¹Provisional Estimate.

3.51 The demand for paper and paper board would increase from 1100 thousand tonnes in 1979-80 to 1540 thousand tonnes by 1984-85. This includes the requirements arising out of the National Adult Education Programme. Barring marginal imports of about 40 thousand tonnes of speciality paper, the entire domestic demand can be met from indigenous production, the target for which has been fixed at 1500 thousand tonnes in 1984-85.

Newsprint

Table 3.21

**Supply-Demand Balance for Newsprint: 1979-80 and
1984-85**

(Thousand Tonnes)

Sl. No.	Item	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Demand	359.5	500
2	Production	47.5	180
3	Imports	312.0 ¹	320

¹Provisional Estimate.

3.52 There has been a spurt in the consumption of newsprint in the recent past and the domestic production being confined to Nepa mills only, the gap had to be filled from imports. It appears that due to the sharp increase in demand which is likely to continue during 1980-85, a substantial rise in imports would be inescapable. By 1984-85, the output from two public sector projects being set up in Kerala and Karnataka and that of Nepa mills is not expected to be more than 180 thousand tonnes. Since domestic demand of newsprint in 1984-85 would be about 500 thousand tonnes, imports of about 320 thousand tonnes would be necessary.

Fertilisers

Table 3.22
Supply-Demand Balance for Fertiliser : 1979-80 and 1984-85

		(Million Tonnes)							
Sl. No.	Item	Nutrients							
		1979-80				1984-85			
		N	P	K	Total	N	P	K	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Demand	3.50	1.15	0.61 ¹	5.26	6.0	2.3	1.3	9.6
2	Production	2.20 ¹	0.91 ¹	..	3.11 ¹	4.2	1.4	..	5.6
3	Imports	1.30	0.24	0.47	2.01	1.8	0.9	1.3	4.0

¹. Including changes in stocks.

3.53 The production of nitrogenous and phosphatic fertilisers in 1979-80 is estimated at 2.23 million tonnes (N) and 0.76 million tonnes P_2O_5 respectively. It is expected that with the commissioning of new fertilizer plants and better utilisation of capacity of the existing units, the production of nitrogen (N) and P_2O_5 in 1984-85 would be 4.2 million tonnes and 1.4 million tonnes respectively. The demand for fertilisers in terms of nutrients is expected to rise to 9.6 million tonnes by the end of the Plan in line with the projected increase in agricultural production and the expected higher yield levels.

Inorganic Heavy Chemicals

Table 3.23

Demand for Sulphuric Acid: 1979-80 and 1984-85

(Thousand Tonnes)

Sl. No.	Consuming industry/product	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Phosphate fertilizers	1160	2071
2	Ammonium sulphate	316	316
3	Viscose rayon	197	258
4	Pickling and petroleum refining	77	116
5	Ferric Alum	69	110
6	Other industries including changes in stock	431	729
7	Total requirement	2250	3600
8	Production	2131 ¹	3600

¹Provisional.

Table 3.24

Demand for Caustic Soda: 1979-80 and 1984-85

(Thousand Tonnes)

S. No.	Consuming industry/product	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Paper and newsprint	121	185
2	Rayon fibre/filament	108	140
3	Washing soap	77	120
4	Textiles	48	56
5	Alumina	48	74
6	Other misc. uses including export & addition to stocks	163	275
7	Total requirements	565	850
8	Production	550	850
9	Imports	15 ¹	..

¹Provisional.

Table 3.25

Demand for Soda Ash: 1979-80 and 1984-85

		(Thousand Tonnes)	
Sl. No.	Consuming industry/product	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Glass	127	188
2	Sodium silicate	100	160
3	Textiles	10	11
4	Caustic soda (chemical process)	37	37
5	Paper and Paper board	21	30
6	Dhobies and Laundries	155	210
7	Other miscellaneous uses including exports and changes in stocks	126	214
8	Total requirement	576	850
9	Production	556	850
10	Imports	20 ¹	--

¹Provisional.

3.54 The demand in 1984-85 for major chemicals namely sulphuric acid, caustic soda and soda ash is estimated on the basis of the production targets of the major consuming industries. The requirements of these chemicals are given in Table 3.23, 3.24 and 3.25 respectively.

Man-made Fibres

Table 3.26

Demand for Man-made Fibres: 1984-85

		(Thousand Tonnes)	
Sl. No.	Consuming Sector	Requirement 1984-85	
(0)	(1)	(2)	
1	Art Silk	189.3	
2	Blended/Mixed Fabrics	151.7	
3	Other Uses	10.0	
4	Total Requirement	351.0 ¹	

¹Does not include Acrylic Fibres which is a substitute for wool.

3.55 The demand for man-made fibres has risen mainly to supplement natural fibres (cotton etc.) in textiles production. Corresponding to the production target of 1900 million metres of art silk fabrics and 2490 million metres of blended/mixed fabrics, and other use of these fibres, the demand for man-made fibres in 1984-85 is estimated at 351 thousand tonnes. Table 3.26 shows the sector-wise requirements of man-made fibres in 1984-85. Fibre-wise distribution of demand, production and imports is given in Table 3.27.

Table 3.27

Supply-Demand Balance for Man-Made Fibres: 1984-85

		('Thousand Tonnes)						
Sl. No.	Item	Polyester Staple Fibres	Polyester Filament Yarn	Nylon Filament Yarn	Viscose Staple Fibres	Viscose Filament Yarn	Other Polynosics	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Demand	110	30	43	120	43	5	351
2	Production	55	18	28	120	43	..	264
3	Import	55	12	15	..	..	5	87

Cement

Table 3.28

Supply-Demand Balance for Cement: 1979-80 and 1984-85			
(Million Tonnes)			
Sl. No.	Item	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Demand	19.16	37.00
2	Production	17.68	34 to 34.5
3	Imports	1.48 ¹	2.5 to 3

¹Provisional.

3.56 The demand for cement is estimated to rise to 37 million tonnes in 1984-85 in view of the step up in the construction component of investment due to the large irrigation and power programmes, the Minimum Needs Programme and the works to be taken up under the NREP. Cement production was 17.68 million tonnes in 1979-80. Domestic capacity will be able to yield an output of 34 to 34.5 million tonnes by 1984-85 as a result of various incentives being given to manufacturers and the policy of encouraging mini and split-location plants. Thus imports of cement of 2 to 3 million tonnes would still be necessary. Constraints such as the shortage of railway wagons and the insufficient supply of coal and power which have impeded the growth of cement production in the past are expected to be removed during the Sixth Plan period. Hence the rate of capacity utilisation can be expected to improve.

Mild Steel

Table 3.29

Supply-Demand Balance for Mild Steel: 1979-80 and 1984-85

(Million Tonnes)			
Sl. No.	Sector	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Manufacture of Machinery and Metal Products (6 to 9)	4.500	7.472
2	Transport Equipment	0.726	1.230
3	Electric Power Equipment	0.197	0.347
4	Industrial Machinery	0.401	0.645
5	Other Metal Manufacturers	1.148	1.885
6	Total—Organised Sector Principal Consuming Industries (2 to 5)	2.472	4.107
7	Other misc. steel consuming industries	0.594	0.987
8	Small Scale Industries	1.394	2.316
9	Processing Loss in Wires, Forging, etc.	0.040	0.062
10.	Construction Sector	3.500	5.400@
11.	Total Domestic Demand (1 plus 10)	8.000	12.872
12.	Production (Finished Steel)	7.310	11.400
13.	Imports	1.380	1.772
14.	Exports	0.061	0.300
15.	Change in stocks	0.629	—
16	Domestic Availability (12 to 15)	8.000	12.872

Note: @ Based on Gross Investment.

3.57 The Plan targets for production of transport equipment, electrical equipment, industrial machinery and metal products together with the projected requirements of steel as construction input, indicate that the demand for finished steel would rise from 8 million tonnes in 1979-80 to 12.9 million tonnes in 1984-85 (Table 3.29). Finished steel production would rise from 7.31 million tonnes in 1979-80 to 11.4 million tonnes in 1984-85, based upon the expected additions to capacity and the improvements in capacity utilisation of steel plants. Given the long gestation period of steel plants additional capacity for shaped steel products would materialise only in the Seventh Plan period although demand for these would increase considerably. Therefore, the deficit in domestic supply of shaped steel products will be met by imports for which adequate provision has been made in the Plan besides marginal imports of other categories of steel.

*Non-ferrous Metals***Table 3.30****Supply-Demand Balance for Non-ferrous Metals 1979-80 and 1984-85**

(Thousand tonnes)

Sl. No.	Item	1979-80				1984-85			
		Alumi- nium	Copper refined	Zinc	Lead	Alumi- nium	Copper refined	Zinc	Lead
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1	Demand	250 ¹	80 ¹	115 ¹	44 ¹	450	115	150	60
2	Production	192	18.8 ²	52.7	11.4	300	45	85	25
3	Imports (including changes in stocks)	58 ¹	61.2 ¹	62.3 ¹	32.6 ¹	150	70	65	35

¹. Provisional.

². In addition 7.2 million tonnes of secondary reverts were toll smelted abroad and consumed in the country.

3.58 The production plan of non-ferrous metals during the Sixth Plan period is based largely on the capacity available from existing and on-going schemes. With the commissioning of a number of copper, lead and zinc mining projects and expansion schemes, there would not be any constraint on the supply of ores. Suitable balancing facilities have been provided for in copper ore concentration, smelting and refining capacities so as to maximise the production through improved capacity utilisation. The projected demand for

aluminium and copper takes account of the electricity generation, transmission and distribution and rural electrification programmes, envisaged in the Plan. The demand for these metals in transport, construction, utensils and consumer durables has been estimated on the basis of the production plan of these sectors. The demand for lead and zinc has been determined on the basis of the growth of steel galvanising, battery manufacture and production of cables and metal products.

Electricity

Table 3.31

Material Balance for Electricity: 1977-78 and 1984-85

(Billion Kwh.)

Sl. No.	Sector	1977-78 (Actuals)	1984-85
(0)	(1)	(2)	(3)
<i>Consumption</i>			
1	Irrigation	10.11	20.48
2	Major Industries	34.41	56.71
3	Other industries	14.84	35.16
4	Total industries	49.25	91.87
5	Railways-traction	2.33	3.45
6	Public Water Works and sewage	1.50	3.69
7	Public lightings	0.62	1.59
8	Domestic users	6.82	13.82
9	Commercial activities	4.43	9.97
10	Miscellaneous users	0.84	1.00
11'	All India Consumption	75.90	145.87
<i>Supply</i>			
12	Generation : utilities	91.40	182.74
13	Auxiliary losses: utilities	5.62	11.88
14	Transmission and distribution losses : utilities	16.53	32.46
15	Energy available : utilities (12-13-14)	69.25	138.40
16	Generation: non-utilities	7.56	8.50
17	Auxiliary losses: non-utilities	0.91	1.03
18	Energy available at bus-bar : non-utilities (16-17)	6.65	7.47
19	All-India generation (12+16)	98.96	191.24
20	Total energy available: (15+18)	75.90	145.87

3.59 To meet the requirements of electrical energy for industry, transport, agriculture and other sectors of economy electricity generation will have to be raised from 112 billion units in 1979-80 to 191 billion units in 1984-85, that is, with an annual compound growth rate of 11.3 per cent during the Plan period. Requirement of electricity for major industries are estimated at 56.7 billion units in 1984-85 on the basis of the production targets of these industries. Keeping in view the capacity growth in small scale industries and other industrial sectors their requirements of electricity are estimated to increase from 43 per cent of major industrial consumption in 1977-78

to 62 per cent in 1984-85. The requirements for railway traction and irrigation pump sets have been worked out on the basis of the sectoral programmes. Household consumption of electricity has been estimated from the consumption model. The requirements for remaining sectors have been worked out on the basis of past trend. All India Consumption demand adds upto 145.87 billion units in 1984-85. Providing for losses in transmission and distribution and the auxiliary requirements, the generation target for 1984-85 has been determined.

Railway Traffic

Table 3.32

Demand for Railway Traffic : 1979-80 and 1984-85

(Million tonnes of originating traffic)

Sl. No.	Commodity	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Integrated steel plants		
	(i) Finished products from steel plants (pig-iron for sale & mild steel)	7.20	11.00
	(ii) Raw materials for steel plants other than coal	20.70	31.70
	Total (steel)	27.90	42.70
2	Coal	75.90	116.70
3	Iron ore for export	9.30	16.00
4	Cement	10.00	21.60
5	Foodgrains	18.40	19.00
6	Fertilisers	8.20	16.00
7	POL products	14.20	20.00
8	Other goods	43.00	46.00
9	Railway materials	10.90	11.00
10	Grand Total	217.80	309.00

3.60 Originating traffic for the Railways would increase from 217.8 million tonnes handled in 1979-80 to 309 million tonnes in 1984-85. The projection is based on the transportation requirements of bulk commodities such as steel, coal, cement, fertilisers and foodgrains. Location of coal based fertiliser plants near the coal pit-heads as also of the super thermal power stations, the planned movement of POL products in some regions through pipe-lines and the changes in geographical pattern of production have been taken into consideration in arriving at goods traffic to be handled by the Railways during the plan period. Sectorwise originating traffic for the Railways in 1984-85 is presented in Table 3.32. The total requirement of railway transport in 1984-85 is expected to be 309 million tonnes.

POVERTY AND EMPLOYMENT

Poverty

3.61. The economic development during the last three decades has enabled a perceptible increase in average per capita income from Rs. 466 in 1950-51 to Rs. 730 in 1978-79, both at 1970-71 prices. In spite of this increase, the incidence of poverty in the country is still very high. Thus determined measures are necessary to combat poverty. A substantial increase in the overall rate of growth of the economy will no doubt create favourable conditions for a reduction in poverty and unemployment. However, in the light of past experience, it will not be realistic to rely solely on the growth process to find a solution to this problem. Specific policy measures will be needed not only to influence the composition of output in favour of mass consumption goods but also to ensure a more even regional and class distribution of output, paying special attention to stimulating growth in more backward regions. In addition, the on-going poverty eradication programmes aimed at the specified target groups of population will also have to be improved and enlarged with regard to both content and coverage. The objectives of these programmes will be to improve the productivity and therefore income of the poor and also to ensure that employment opportunities are enlarged at a fast enough pace. Labour-intensive village and small industries will need adequate encouragement to grow. Institutional reform designed to impart a greater redistributive bias to public policies in favour of the poorest sections will have to be pursued with greater vigour and effectiveness. Effective implementation of these programmes will demand the highest standard of devotion, efficiency and integrity from public services at all levels as well as active involvement and participation of the people in this vital national undertaking.

3.62. The Sixth Plan places a very high priority on the alleviation of poverty. For an assessment of the problem and for setting targets a quantitative index for poverty was formulated in the report of the "Task Force on Projections of Minimum Needs and Effective Consumption Demand" set up by the Planning Commission in 1977, where poverty line is defined as the mid-point of the monthly per capita expenditure class having a daily calorie intake of 2400 per person in rural areas and 2100 in urban areas. In 1979-80 prices, the mid-points are Rs. 76 in rural areas and Rs. 88 in urban areas.

3.63. Subsequently on the basis of an assessment of several rounds of National Sample Survey of household consumer expenditure it has been observed that nearly 50 per cent of our population has been living below the poverty line continuously over a long period (Table 3.33).

Table 3.33
Percentage of people below poverty-line

Sl. No.	Area	1972-73	1977-78
(0)	(1)	(2)	(3)
1	Rural	54.09	50.82
2	Urban	41.22	38.19
3	All India	51.49	48.13

3.64. The Sixth Plan approaches the problem of poverty alleviation by three major stages:

- (a) Identification and measurement;
- (b) Developing realistic targets; and
- (c) Formulation of specific programmes to match the targets.

3.65. The majority of the poor live in the rural areas and belong to the categories of landless labourers, small and marginal farmers, rural artisans including fishermen, and backward classes and backward tribes. These people have either no assets or assets with very low productivity, few relevant skills and no regular fulltime jobs or very low paid jobs.

3.66. The number of poor people as defined above and the distribution of the consumption expenditure as estimated from 32nd Round of National Sample Survey are indicated in Table 3.34.

Table 3.34

Distribution of total private consumption expenditure by deciles: 1977-78

Decile	(Per cent)	
	Rural	Urban
(0)	(1)	(2)
0—10	3.65	3.36
10—20	5.12	4.67
20—30	6.24	5.59
30—40	6.56	6.50
40—50	8.03	7.39
50—60	8.66	8.69
60—70	9.84	9.77
70—80	11.77	12.31
80—90	14.55	14.24
90—100	25.58	27.48
0—100	100.00	100.00
Average monthly per capita consumption for people below poverty line*		
	44.96	53.87
Average aggregate monthly per capita consumption*		
	75.61	108.73
People below poverty line (million)		
	251.66	51.10
Total population (million)		
	495.2	133.8

*Rupees at 1977-78 prices as per total private consumption given in the National Accounts Statistics, Central Statistical Organisation, February, 1980.

3.67 Assuming that the consumption distribution in 1977-78 remains constant in future years, and taking account of the actual growth of the economy between 1977-78 and 1979-80 and the planned growth

between 1979-80 and 1984-85, the poverty profile is estimated for both the years as given in the Tables 3.35 and 3.36.

Table 3.35
Consumption Expenditure*, 1979-80

Sl.No.	Population Group	Average monthly per capita consumption (Rupees at 1979-80 Prices)			No. of people (in million)		
		Rural	Urban	Total	Rural	Urban	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Bottom decile	32.11	41.38	34.12	51.20	14.21	65.41
2	Below poverty line @	51.27	59.75	52.80	259.56 (50.70)	57.28 (40.31)	316.84 (48.44)
3	Total Population	87.97	123.16	95.62	512.00	142.10	654.10

Table 3.36
Consumption Expenditure*, 1984-85
(without redistribution)

Sl.No.	Population Group	Average monthly per capita consumption (Rupees at 1979-80 Prices)			No. of people (in million)		
		Rural	Urban	Total	Rural	Urban	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Bottom decile	37.07	46.06	39.12	55.34	16.38	71.72
2	Below poverty line@	53.44	61.37	55.01	223.97 (40.47)	55.21 (33.71)	279.18 (38.93)
3	Total Population	101.55	137.10	109.67	553.40	163.80	717.20

Table 3.37
Consumption Expenditure in 1984-85
(with redistribution)

Sl. No.	Population Group	Average monthly per capita consumption (Rupees at 1979-80 Prices)			No. of people (in million)		
		Rural	Urban	Total	Rural	Urban	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	People below poverty line@	60.31	64.09	61.17	166.02 (30.0)	49.14 (30.0)	215.16 (30.0)
2	Total Population	101.55	137.10	109.67	553.40	163.80	717.20

*With same consumption distribution as in 1977-78.

@ Figures in bracket are percentage of people below the poverty line.

3.68 The above calculation shows that assuming the distribution of consumption of 1977-78 remaining unchanged, the poverty percentage will be reduced from 48.44 per cent in the base year 1979-80, to 38.93 per cent in 1984-85. But the public sector outlay in the Sixth Plan provides for many poverty alleviation programmes which operate mainly by way of transforming assets and skills and by providing employment in the slack seasons of the year. The Integrated Rural Development Programme (IRDP) belongs to the former category and the National Rural Employment Programme (NREP) to the latter. Besides, there are a large number of other public sector schemes which will contribute to the reduction of unemployment and underemployment. In this context, mention may be made of the Special Component Plan for the uplift of scheduled castes for which a substantial provision has been made in the Sixth Plan by way of special Central assistance. The special programmes for drought prone areas, tribal areas and hill areas will also help to strengthen the redistributive bias in public policies. If all these programmes are implemented effectively, the distribution of consumer expenditure in 1984-85 is not expected to be the same as in the year 1977-78. A rough calculation of the new distribution and the number of people below the poverty line in 1984-85 can be made by going into programme details.

3.69 The total number of households to be covered by IRDP during the Plan period is nearly 3,000 families per block. There are altogether 5,000 blocks in the country. This means that the programme intends to cover nearly 75 million people *i.e.* more than 13 per cent of the rural population. The total investment outlay set aside for this purpose is Rs. 1500 crores over the Sixth Plan period supplemented by Rs. 3000 crores from institutional finance. The target group for this purpose is located in the poorest of the rural population. The detailed estimates of income generation from this transfer of assets show that an income of Rs. 3000 crores per annum will be generated out of this transfer. This implicitly means a capital output ratio of 1.5. By making an independent study of the consumption distribution in the rural sectors of the economy it is found that this amount of income transfer will bring nearly 11 per cent of the rural population (61 million in 1984-85) above the poverty line covering about 12 million households in the rural sector, which will almost satisfy the Plan target. Besides, a provision for moving nearly 6.1 million of the poor in the urban sector above the poverty line has been made in the Plan in terms of providing additional consumption benefits to these people mainly through public redistributive services like health, education and sanitation, housing and drinking water, and urban slum improvement programmes. Consumption expenditure in 1984-85 for the people below poverty line with redistribution of income as stipulated above would be as in Table 3.37.

3.70 Nearly 75 per cent of the farming population operate between them only a quarter of the cultivated area. Since wage employment from all sources may not make up the deficiency in their consumption, it would be essential as a poverty alleviation pro-

gramme to implement a limited measure of land redistribution. A redistribution of 5 per cent of the cultivated area from holdings above 5 acres to small farmers and agricultural labour households will have the effect of increasing income accruing to this class by about 20 per cent. In addition, a sizeable amount is expected to be transferred by NREP, which by providing jobs during the slack season, will further help in bringing these families above the poverty line.

Employment

3.71 In the field of employment the picture has been far from satisfactory. The number of people unemployed and underemployed have risen significantly over the last decade. In the above context therefore our employment policy should cover two major goals:

Reducing underemployment by increasing the rate of growth of the gainfully employed and reducing unemployment on the basis of usual status, commonly known as open unemployment.

For assessing the nature and extent of the problem and in order to develop corresponding programmes to tackle them, attempts have been made in the Plan to measure the number of full-time employed by constructing a statistical index of standard person years employed. Any individual working 8 hours a day for 273 days of the year is regarded as employed on a standard person year basis. Similarly, for defining open unemployment, definition of unemployment on the usual status basis is adopted. In analysing the employment potential of different sectors we observe that almost all industries and most of the major infrastructure activities which have high capital intensity, are very deficient in terms of employment generation. The major employment generation activities are to be found in agriculture, rural development, village and small scale industries, construction, public administration and other services. The employment generation capacity of a sector is derived by studying its past employment performance against its growth. Statistically, the employment in an activity is related as a non-linear function (double log) of either gross output or value added and in the case of agriculture as a fixed coefficient of land, the major input.

3.72 To go into more details, employment in agriculture has been based on employment norms per hectare of gross cropped area separately for HYV and local varieties, irrigated and unirrigated area under each crop using the same cropping pattern as used for the estimation of production of agricultural commodities. Employment in the mining sector has been related to the growth in physical output while in the manufacturing and electricity sectors this has been related to the growth in gross value of output using the respective employment elasticities. In the case of services, growth in employment has been considered as a function of growth in gross value added in these sectors. Employment potential of specific employment programmes has been estimated separately.

3.73 On this basis, the increase in employment (in standard person years) has been estimated. The estimates are given in Table 3.38. These estimates take into account the specific employment generation programmes in the Plan like NREP, IRDP, etc. in addition to the choice of investment and output mix of the economy. The growth of employment in the construction sector will be higher than the one presented in the table, as part of the employment generation shown against special programmes is expected to take place in construction activities.

3.74 The present estimates show that employment on the basis of standard person years will grow at 4.17 per cent per annum in the Sixth Plan period *i.e.*, at a rate much higher than the growth of labour force of 2.54 per cent per annum over the same period. In terms of absolute numbers, it means an increase in employment in standard person years by 34 million which will almost match the increase in the labour force defined as persons of fifteen years age and above, over the same period. This result can be interpreted thus: if all new employment is on full-time basis, then the total jobs created will accommodate the entire increase in the labour force. However, assuming that in reality all the newly employed cannot be on a full-time basis, there will be a greater absorption and the existing backlog of unemployment will be reduced.

Table 3.38
Estimated Sectoral Employment: 1979-80 and 1984-85
(Million Standard Person Year)

Sl. No.	Sector	1979-80	1984-85
(0)	(1)	(2)	(3)
1	Agriculture	2,184	85,237
2	Forestry & Logging	6,207	7,794
3	Fishing	1,940	2,220
4	Mining & Quarrying	0,724	0,894
5	Manufacturing	22,012	27,759
6	Construction	9,286	11,321
7	Electricity, Gas & Water Supply	0,723	0,927
8	Railways	1,662	1,704
9	Other Transport	7,160	8,677
10	Communication	0,800	0,917
11	Trade, Storage & Warehouses	13,278	16,640
12	Banking & Insurance	1,638	1,225
13	Real Estate and Ownership of Dwellings	0,030	0,032
14	Public Administration, Defence and other Services	11,419	16,042
15	Special Programmes for Employment Generation, including National Rural Employment Programmes . . . . .	..	4,030
16	<i>Total</i>	151,116	185,389

PUBLIC SECTOR OUTLAYS

The Sixth Five Year Plan provides for a total outlay in the public sector of Rs. 97,500 crores at 1979-80 prices. This includes the current outlay of Rs. 13,500 crores which is mainly for the maintenance of services created during the Plan period and which does not create assets. Thus, the public sector investment outlay in the Plan will be Rs. 84,000 crores.

4.2 In comparison with the Fifth Five Year Plan (1974—79), the outlay for the Sixth Plan represents an increase of 148 per cent in nominal terms. Even after allowing for the rise in the price level in the intervening period, the increase comes to more than 80 per cent.

4.3 Of the total outlay of Rs. 97,500 crores, Rs. 47,250 crores is in the Central sector and the balance of Rs. 50,250 crores is in the States and Union Territories. The share of the latter in the total works out to 51.54 per cent. Annexures 4.1 and 4.2 show the distribution of Plan outlays among the various States and Union Territories.

4.4 The sectoral allocations of the public sector outlays have been determined in the light of the pat-

tern of growth of the economy visualised in the next five years (indeed, over the next 15 years), the capacity already available in the economy and the objectives of the Plan. A considerable part of the investment in the Sixth Five Year Plan will be for on-going projects; many of these will generate output during or towards the end of the Plan period. It is necessary to provide for the completion of such projects. Similarly, a part of the investment in the Sixth Plan, especially on projects with relatively long gestation, will generate output in the period beyond the Sixth Plan. In determining the sectoral distribution of outlays in the Sixth Plan, help was taken of an investment planning model which is inter-connected with the dynamic input-output framework used for projecting output, employment and other macro-economic targets of the economy. For a few specific programmes such as Integrated Rural Development and the National Rural Employment Programme, investment requirements were worked out on the basis of the programme content.

Annexure 4.3 gives the details of public sector outlays in the Sixth Plan.

Annexure 4.1
Plan Outlays of States

States	(Rs. crores)
	Outlay 1980—85
Andhra Pradesh	3100.00
Assam	1115.00
Bihar	3225.00
Gujarat	3680.00
Haryana	1800.00
Himachal Pradesh	560.00
Jammu and Kashmir	900.00
Karnataka	2265.00
Kerala	1550.00
Madhya Pradesh	3800.00
Maharashtra	6175.00
Manipur	240.00
Meghalaya	235.00
Nagaland	210.00
Orissa	1500.00
Punjab	1957.00
Rajasthan	2025.00
Sikkim	122.00
Tamil Nadu	3150.00
Tripura	245.00
Uttar Pradesh	5850.00
West Bengal	3500.00
<i>Special Area Programmes</i>	
Hill Areas	560.00
Tribal Areas	470.00
North Eastern Council	340.00
Other Unclassified	26.00
TOTAL	48600.00

Annexure 4.2
Plan Outlays of Union Territories

Union Territories	(Rs. crores)
	Outlay 1980—85
Andaman and Nicobar Islands	96.60
Arunachal Pradesh	212.00
Chandigarh	100.75
Dadra and Nagar Haveli	23.09
Delhi	800.00
Goa, Daman & Diu	192.00
Lakshdweep	20.35
Mizoram	130.00
Pondicherry	71.55
Other Unclassified	3.66
TOTAL	1650.00

Annexure 4.3

Sixth Five Year Plan—Public Sector Outlays

(Rs. crores)

Head of Development	Centre	States	Union Territories	Total
I. <i>AGRICULTURE</i>	2450.13	3119.02	125.92	5595.07
Agricultural Research and Education	340.00	197.67	*	537.67
Crop Husbandry	293.00	935.50	34.48	1233.98
Soil and Water Conservation	90.00	323.16	20.41	433.57
Animal Husbandry and Dairying	393.00	430.55	22.82	851.38
Fisheries	174.00	185.13	12.29	371.42
Forestry	105.00	559.54	28.10	692.64
Land Reforms	30.10	272.62	1.91	304.63
Management of Natural Disasters	15.00	—	—	15.00
Agricultural Marketing	46.65	43.55	0.91	95.11
Food, Storage and Warehousing	294.00	38.61	5.00	337.61
Investment in Agricultural Financial Institutions	664.38	156.68	—	821.06
II. <i>RURAL DEVELOPMENT</i>	2314.87	3020.03	28.83	5363.73
Integrated Rural Development and related Programmes	997.55	1508.09	1.00	3486.64
National Rural Employment Programme	980.00			
Community Development & Panchayat Institutions	7.17	335.29	9.74	352.20
Cooperation	330.15	565.00	18.09	914.24
Special Employment Programmes	—	610.65	—	610.65
III. <i>SPECIAL AREA PROGRAMMES</i>	—	1480.00	—	1480.00
Hill Areas	—	560.00	—	560.00
Tribal Areas	—	470.00	—	470.00
North Eastern Council	—	340.00	—	340.00
Development of Backward Areas	—	110.00	—	110.00
IV. <i>IRRIGATION AND FLOOD CONTROL</i>	635.00	11395.48	129.55	12160.03
Major and Medium	90.00	8301.46	56.90	8448.36
Minor	70.00	1710.70	29.60	1310.30
Command Area Development	300.00	555.92	0.35	856.27
Flood Control including Anti-Sea Erosion	175.00	827.40	42.70	1045.10
V. <i>ENERGY</i>	11995.00	14293.56	246.88	26535.44
Power	4725.00	14293.56	246.88	19265.44
New and Renewable sources of Energy	100.00	—	—	100.00
Petroleum	4300.00	—	—	4300.00
Coal	2870.00	—	—	2870.00
VI. <i>INDUSTRY & MINERALS</i>	12771.47	2135.86	60.24	15017.57
Village and Small scale	923.40	815.11	41.94	1780.45
Large and Medium	11848.07	1370.75	18.30	13237.12

*Included under Crop Husbandry.

Annexure 4.3—Continued

(Rs. crores)

Head of Development	Centre	States	Union Territories	Total
VII. TRANSPORT	8418.64	3797.34	285.99	12411.97
Railways	5100.00	—	—	5100.00
Roads	830.00	2398.87	210.00	3438.96
Road Transport	70.00	1111.40	14.15	1195.55
Ports	575.00	63.85	43.75	1414.60
Light Houses	12.00			
Shipping	720.00			
Inland Water Transport	45.00	24.36	2.30	71.66
Civil Aviation	850.00	6.30	2.80	859.10
Meteorology	43.00	—	—	43.00
Tourism	72.00	102.56	12.90	187.46
Farakka Barrage	50.00	—	—	50.00
INSAT—Space Segment	51.64	—	—	51.64
VIII. COMMUNICATIONS AND INFORMATION AND BROADCASTING	3101.98	28.61	3.67	3134.26
Communication	2810.00	0.15	0.12	2810.27
INSAT—Space Segment	51.65	—	—	51.65
Broadcasting & Television	210.33	—	—	210.33
Information & Publicity	30.00	28.46	3.55	62.01
IX. SCIENCE AND TECHNOLOGY	848.15	17.05	—	865.20
Atomic Energy	248.98	—	—	248.98
Space	245.80	—	—	245.80
Scientific Research	304.87	17.05	—	321.92
Ecology and Environment	40.00	—	—	40.00
National Test Houses	8.50	—	—	8.50
X. SOCIAL SERVICES	4453.42	8830.88	750.96	14035.26
<i>Education</i>				
(a) General Education	515.75	1493.09	153.39	2162.23
(b) Art and Culture	51.00	31.85	1.05	83.90
(c) Technical Education	168.00	99.13	10.48	277.61
Health Including Medical	601.00	1091.19	128.86	1821.05
Family Planning	1010.00	—	—	1010.00
Housing	300.00	1065.95	124.92	1490.87
Urban Development	110.00	780.77	106.76	897.53
Water Supply & Sanitation	614.22	3123.65	184.15	3922.02
Welfare of Scheduled Castes, Scheduled Tribes and other Backward Classes	240.00	709.00	11.30	960.30
Special Central Additive for Scheduled Caste Component Plans	600.00	—	—	600.00
Social Welfare	150.00	109.78	12.19	271.97
Nutrition	14.95	214.55	8.64	238.14
Labour & Labour Welfare	78.50	111.92	9.22	199.64
XI. OTHERS	261.34	522.17	17.96	801.47
Statistics	68.87	24.56	2.01	95.44
Rehabilitation of displaced persons	154.12	—	—	154.12
Planning Machinery	20.07	—	—	20.07
Stationery and Printing	12.00	26.06	1.49	39.55
Public Works	—	190.30	4.87	195.17
Training for Development	2.28	—	—	2.28
Other unclassified Services	4.00	281.25	9.59	294.84
Total (I to XI)	47250.00	48600.00	1650.00	97500.00

RESOURCES FOR THE PLAN

Planning involves generation, distribution and utilisation of productive assets. The generation of physical assets takes place through private or public institutions. So does the generation of financial resources which are a counterpart, so to say, of the process of creation of physical assets. In this Chapter, an analysis has been made of the financial resources likely to be generated and the funds needed for investment in different sectors of the economy. These resources are derived from domestic and foreign sources. The uses of financial resources may deviate from their sources by transfers between the public and private sectors and also by the activities of financial intermediaries. In the planning exercise, a matching between the needs of the different agencies for investment and the financial resources which can be made available through financial intermediaries and fiscal measures is carefully examined with the help of an appropriate accounting model.

5.2 The estimates of resources of the public sector and the underlying policy assumptions are described in this Chapter. A broad indication is also given of the resources required by the private sector and the availability of such resources. The estimates of financial resources as well as of outlays have been made at 1979-80 prices. However, due account has been taken of the rise in prices that has occurred in 1980-81 in assessing the purchasing power of resources and the growth potential of the economy. Some adjustments in outlays and the target of additional resource mobilisation have been made so as to protect, to the extent possible, the real volume of investment, in face of rise in project costs in 1980-81.

5.3 The aggregate resources for the Sixth Five Year Plan 1980—85, are placed at Rs. 172210 crores, consisting of an investment outlay of Rs. 158710 crores and current development outlay in the public sector of Rs. 13500 crores. The investment outlay is to be financed through domestic saving of Rs. 149647 crores and net inflow of funds from abroad to the extent of Rs. 9063 crores, as shown in Table 5.1.

Table 5.1

Estimates of Gross Domestic Saving, Investment and Aggregate Resources 1980—85

(Rs. crores at 1979-80 prices)		
Sl. No.	Item	Amount
(0)	(1)	(2)
1	Public saving	34200
2	Private saving	115447
3	Aggregate Domestic Saving	149647
4	Net inflow from abroad	9063
5	Total saving available for gross investment	158710
6	Current Development outlay in the public sector	13500
7	Aggregate Resources	172210

DOMESTIC SAVING

5.4 Of the total domestic saving of Rs. 149,647 crores, public saving, comprising savings of Government, public sector non-financial enterprises (including departmental enterprises) and public sector financial enterprises has been estimated at Rs. 34200 crores. The balance of Rs. 115447 crores is accounted for by private saving comprising corporate, cooperative and household saving. The composition of the total domestic saving is shown in Table 5.2.

5.5 Public saving accounts for 22.9 per cent of the total domestic saving estimated for the Plan period, while the balance of 77.1 per cent represents saving generated in the private sector. Within the private sector, household saving dominates with a share of as much as 70.1 per cent of the total domestic saving. The details of estimates of private saving are given in Table 5.3.

Table 5.2

Gross Domestic Saving by Sector of Origin
1980—85

Sl. No.	Sector	Amount (Rs. crores)	Percent- age to total
(0)	(1)	(2)	(3)
1	Public Saving	34200	22.9
	(i) Government	13430	9.0
	(ii) Public enterprises non- financial	18245	12.2
	(iii) Public enterprises financial	2525	1.7
2	Private Saving	115447	77.1
	(i) household sector	104859	70.1
	(ii) corporate sector	9053	6.0
	(iii) cooperative sector	1535	1.0
3	Total Domestic Saving	149647	100.0

Table 5.3

Estimates of Private Saving : 1980—85

Sl. No.	Sector	Amount (Rs. crores)
(0)	(1)	(2)
1	Household sector	104859
	(i) Financial Assets (Net)	49731
	(ii) Physical Assets	55128
2	Private Corporate sector	9053
	(i) Financial enterprises	183
	(ii) Non-financial enterprises	8870
3	Cooperative sector	1535
	(i) Financial institutions	910
	(ii) Non-financial institutions	625
4	Total Private Saving	115447

HOUSEHOLD SAVING

5.6 The item-wise estimates of household saving for the Plan period are given in Annexure 5.1. The gross household saving has been estimated at Rs. 104859 crores comprising Rs. 55128 crores of physical assets and Rs. 49731 crores of financial assets. Thus, nearly 53 per cent of the household saving is accounted for by physical asset formation in this sector.

Physical Assets

5.7 The saving of the households in the form of physical assets covers acquisition of productive assets and construction activities like residential and non-residential buildings as well as creation of physical assets through own-account labour input. The saving of the household in the shape of physical assets is thus a form of direct capital formation in the household sector. Projections of physical assets in the household sector for the Plan period have been made by studying its relationship with personal disposable income observed in the past years; projections of personal disposable income, in turn have been obtained by analysing its relationship with the GDP. Thus, gross physical assets in the household sector have been estimated at Rs. 55128 crores for the Plan period.

Financial Assets

5.8 The gross increase in financial assets of the household sector has been estimated at Rs. 61034 crores over the Plan period. Allowing for the increase in financial liabilities of the order of Rs. 11303 crores the net acquisition of financial assets by the households have been estimated at Rs. 49731 crores. The details of the different components of financial assets are discussed in the following paragraphs.

5.9 (i) *Deposits*: Out of the gross increase in financial assets of Rs. 61034 crores of the household sector, the increase in deposits has been estimated at Rs. 32430 crores, thus accounting for about 53 per cent of the total increase in gross financial assets. The increase in deposits comprises deposits with scheduled commercial banks, cooperatives and non-banking companies. The growth of demand deposits has been estimated at 12.48 per cent per annum over the Plan period, while that of time deposits has been estimated at 18.71 per cent per annum. The share of the household sector in the estimated increase of aggregate bank deposits has been taken at 79 per cent, based on the recent analysis of the Reserve Bank of India. On this basis the increase in household deposits with scheduled commercial banks has been estimated at Rs. 29164 crores over the Plan period. The increase in deposits of the households with cooperative banks/societies and non-banking companies has been projected at Rs. 2116 crores and Rs. 1150 crores respectively.

(ii) *Currency*: The expansion of currency over the Plan period has been estimated on the basis of its relationship with respect to growth in real national income, wholesale price index and the weighted average of interest rates on time deposits. The share of the household sector in total currency expansion has been assumed at 94 per cent as observed in the recent past. The increase in currency with the households over the Plan period is estimated at Rs. 4734 crores.

(iii) *Life Insurance Fund*: Net increase in the Life Fund of Life Insurance Corporation has been esti-

mated at Rs. 5577 crores on the basis of the observed annual trend growth rate of 14 per cent in recent years.

(iv) *Provident Funds*: The net accretion to State Provident Funds has been estimated at Rs. 3702 crores taking into account the observed growth in the past, expected increase in employment, and existing rates of contribution to provident funds by the Central and State Government employees. On the other hand, Employees' Provident Funds (EPF) and "Other Provident Funds" have been projected to increase by Rs. 8646 crores and Rs. 3300 crores respectively, on the basis of past trends. The implicit annual growth rate is 14 per cent in the case of EPF and 12 per cent in the case of "Other Provident Funds".

(v) *Shares, Debentures and Units*: The net increase of household investment in corporate/cooperative shares, debentures and units of the Unit Trust of India has been estimated at Rs. 1400 crores over the Plan period 1980—85. This is based on recent trends in their growth and on the assumption that the household sector would account for 85 per cent of the net increase of such financial assets.

(vi) *Net Claims on Government*: Net claims of the households on Government consist of small saving and **Compulsory Deposit** collections of the Government and the loans advanced by the Government to the public. On the basis of the projections of Small Savings and compulsory deposit collections as well as the outstanding debts of the households, net claims of the households on Government are projected to increase by Rs. 1245 crores over the Sixth Plan period.

Financial Liabilities

5.10 The financial liabilities of the house-hold sector have been estimated on the basis of the observed ratio of such liabilities to gross financial assets of the households. The increase in financial liabilities is estimated at Rs. 11303 crores.

PRIVATE CORPORATE SAVING

5.11 The private corporate sector consists of non-financial and financial enterprises. Non-financial enterprises cover public and private limited companies while financial enterprises comprise non-nationalised commercial banks and private financial and investment companies. Gross saving of non-financial enterprises has been estimated at Rs. 8870 crores while that of financial enterprises has been placed at Rs. 183 crores.

5.12 The saving of private non-financial enterprises, estimated at Rs. 8870 crores, comprises Rs. 5710 crores of retained profits and Rs. 3160 crores of depreciation provision. These estimates have been worked out on the basis of detailed studies of sales, profits, depreciation, investment etc. of such enterprises.

5.13 The saving of private financial enterprises has been estimated at Rs. 183 crores, of which private commercial banks account for Rs. 108 crores, while the balance of Rs. 75 crores represents the gross saving of private financial and investment companies.

COOPERATIVE SAVING

5.14 The gross saving of the cooperative sector has been estimated at Rs. 1535 crores. This consists of Rs. 625 crores in respect of cooperative non-credit institutions and Rs. 910 crores in respect of cooperative banks and societies. Past performance of cooperative non-credit institutions indicates that they are not making any profit. The saving estimated for the cooperative non-credit institutions represents, therefore, mainly the depreciation provision made in respect of fixed assets held by them.

5.15 The gross saving of the cooperative banks and societies has been estimated at Rs. 910 crores comprising Rs. 685 crores of retained profits and Rs. 225 crores of depreciation.

PUBLIC SECTOR SAVING

5.16 The saving of the public sector over the Plan period 1980—85, has been estimated at Rs. 34200 crores. The saving of the public sector includes Rs. 2525 crores of gross saving (after payment of dividend to Government) of the public sector financial institutions, including the Reserve Bank. However, this amount is not available for direct investment in the public sector because a major part of it flows to private sector through investment in Long Term Operations Funds of the Reserve Bank of India and the balance is invested by the public financial institutions in their own fixed assets. The details of the saving of public sector financial institutions are given in Table 5.4.

Table 5.4

Estimates of Saving of Public Sector Financial Institutions: 1980-85

Sl. No.	Institution	Amount (Rs. crores)
(0)	(1)	(2)
1	Reserve Bank of India	2200
2	Nationalised Banks	175
3	Other Financial Institutions	150
4	Total	2525

5.17 The retained profits of the Reserve Bank of India after the payment of dividend to the Central Government, represent its contributions to Long Term Operations Funds like the National Agricultural Credit Fund and the National Industries Credit Fund. Such contributions amounted to Rs. 390

crores in 1978-79 and Rs. 455 crores in 1979-80. On this basis, the retained profits of the Reserve Bank of India have been estimated at Rs. 2200 crores over the period 1980—85. The gross saving of the nationalised banks has been placed at Rs. 175 crores, while that of the remaining public sector financial institutions like the Industrial Financial Corporation of India, Industrial Development Bank of India, State Financial Corporations, etc. has been estimated at Rs. 150 crores.

5.18 The public sector saving, excluding that of public sector financial institutions, works out to Rs. 31675 crores, comprising budgetary saving of the order of Rs. 13430 crores and gross saving of the non-financial public enterprises of Rs. 18245 crores.

Budgetary Saving

5.19 The budgetary saving of the Government represents the balance from current revenues of the Central and State Governments at the existing (*viz.* 1979-80) rates of taxes, rates of tariffs and the additional resources mobilisation effort envisaged during the Plan period, after making allowance for the current development outlay proposed in the public sector plan. Government saving during the Plan period has been estimated at Rs. 13430 crores as shown in Table 5.5.

Table 5.5
Budgetary Saving 1980—85

Sl. No.	Item	Amount (Rs. Crores)
(0)	(1)	(2)
1	Balance from current revenues at 1979-80 rates	14478
2	Additional Resource Mobilisation*	12452
3	Less current development outlay	13500
4	Budgetary saving	13430

*Refers to Budgetary measures.

Public Enterprises

5.20 The gross surplus of public enterprises represents their retained profits, depreciation provision and additional resource mobilisation through revision of tariffs, prices, etc. On the basis of the existing pricing policies of public enterprises, this surplus for the Plan period is estimated at Rs. 9395 crores, while the same is estimated at Rs. 18245 crores after taking into account measures for the revision of pricing policies envisaged in the Plan. The details of the gross surplus of public enterprises are given in Table 5.6.

Table 5.6

Estimates of Gross Surplus of Central and State Enterprises at 1979-80 rates, fares and tariffs 1980—85

Sl. No.	Enterprises	Amount (Rs. crores)
(0)	(1)	(2)
1	Railways	1698
2	Posts and Telegraphs	2365
3	Other Central enterprises	5848
4	State Electricity Boards	(—) 22
5	State Roads Transport Corporations	(—) 506
6	Other State enterprises	12
7	Total	9395

5.21 The gross surplus of public enterprises indicated above is not identical with the contribution of public enterprises as calculated on the basis of the concept adopted in the Fifth Plan. The contribution of public enterprises for the Fifth Plan had been worked out without deducting repayment of loans to the Central/State Governments. However, for the Sixth Plan, the loan repayments have been deducted to arrive at the gross surplus of public enterprises, following commercial principles. Correspondingly, credit for such repayments by public enterprises has been taken in estimating the capital receipts of the Central and State Governments. The estimates of gross surplus of important public enterprises are discussed below.

5.22 The gross surplus of Railways during the Plan period has been estimated at Rs. 1698 crores. This comprises mainly depreciation provision. The gross surplus of Posts and Telegraphs has been estimated at Rs. 2365 crores in the light of the anticipated expansion of postal, telegraph and tele-communication services.

5.23 The estimate of gross surplus of other Central enterprises has been placed at Rs. 5848 crores. Compared to the heavy investment that has been made in these enterprises in the past, the rate of return is very low. The operational efficiency of these enterprises has to be substantially improved in order to obtain a fair rate of return on public investment.

5.24 State Electricity Boards and State Road Transport Corporations are expected to incur huge losses at the existing levels of tariffs and fares. This is mainly on account of the steep escalation in their working expenses. These enterprises would need to undertake tariff/fare revision at the earliest in order to avoid losses and step up their contribution to the Plan.

5.25 Almost all the Central and State enterprises would need to adopt appropriate pricing policies in order to achieve an adequate rate of return on capital employed. Although, substantial revision of tariffs, freight rates and prices had been undertaken in the past, the additional receipts have largely been absorbed by escalation of working expenses due to the revision of emoluments of their employees, rise in input costs, etc. It is, therefore, essential to ensure that the additional resources generated by these enterprises during the Sixth Plan period by way of revision of prices, tariffs, etc. are not eroded by cost increases and that efforts are made simultaneously to secure the maximum feasible improvement in the functioning and efficiency of these enterprises.

DISTRIBUTION BETWEEN PUBLIC AND PRIVATE SECTORS

5.26. An aggregate outlay of Rs. 172210 crores is envisaged for the Sixth Five Year Plan. Of this the public sector outlay has been estimated at Rs. 97500 crores while the balance of Rs. 74710 crores would be in the private sector. The public sector outlay of

Rs. 97500 crores provides for an investment outlay of Rs. 84000 crores and current development outlay of Rs. 13500 crores over the Plan period. However, the public sector's own saving available for investment (excluding the saving of public sector financial institutions) has been estimated at only Rs. 31675 crores. In order to finance an investment outlay of Rs. 84000 crores, it will be necessary for the public sector to draw upon domestic saving of other sectors to the extent of Rs. 41396 crores and foreign saving (including a drawal on foreign exchange resources) of the order of Rs. 10929 crores.

5.27 Private saving, including the saving of the public financial institutions, has been estimated at Rs. 117972 crores. After transferring Rs. 41396 crores to the public sector, the resources available with the private sector for investment would be Rs. 76576 crores. Further, the net outgo of the private sector to the rest of the world is estimated at Rs. 1866 crores. Thus, the investment of the private sector over the Plan period is estimated at Rs. 74710 crores. The estimates of saving and investment along with the inter-sectoral transfers are given in Table 5.7.

Table 5.7

Financing of the Aggregate Outlay: 1980—85

(Rs. crores at 1979-80 prices)

Sl. No.	Sector	Own Saving	Transfers from Domestic Sectors		Rest of the world	Investment	Current Outlay	Aggregate Outlay
			Public	Private				
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Pub.c	34200	(-)-2525	(+)-41396	10929	84000	13500	97500
2	Private	115447	(+)-2525	(-)-41396	(-)-1866	74710	—	74710
3	Total	149647	—	—	9063	158710	13500	172210

Table 5.8

Estimate of Financial Resources for the Public Sector Plan 1980—85

(Rs. crores at 1979-80 prices)

Sl. No.	Item	Amount
(0)	(1)	(2)
✓1	Balance from current revenues at 1979-80 rates of taxes	14478
✓2	Contribution of Public Enterprises	9395
✓3	Market Borrowings of Government, public enterprises and local bodies	19500
✓4	Small Savings	6463
✓5	State Provident Funds	3702
✓6	Term loans from financial institutions (Gross)	2722
✓7	Miscellaneous capital receipts (Net)	4009
✓8	External assistance and borrowings from rest of the world (Net)	9929
✓9	Drawing down of Foreign Exchange Reserves	1000
✓10	Additional Resource Mobilisation	21302
✓11	Uncovered gap/deficit financing	5000
✓12	Aggregate Resources	97500

5.28 The above estimates of investment imply that the share of public sector investment in total investment would be nearly 53 per cent over the Sixth Plan period 1980—85, as compared to the estimated share of around 45 per cent during the Fifth Plan period 1974—79. However, these ratios do not reflect the real shares of the two sectors since several of the Plan schemes in the public sector envisage capital transfers by way of loans/grants to the private sector to finance capital formation in the private sector, especially the household sector.

RESOURCES FOR THE PUBLIC SECTOR PLAN

5.29 The estimates of financial resources for the Plan in the public sector are given in Table 5.8.

5.30 The various components of resources of the Centre and the States are briefly explained in the following paragraphs:—

Balance from Current Revenues

5.31 The balance from the current revenues (BCR) of the Central and State Governments represents their saving out of their revenue receipts after meeting their current non-Plan expenditure. It has been assumed that the Seventh Finance Commission's recommendations relating to the statutory transfer of the resources to the States valid upto 1983-84 will continue to operate for 1984-85, the last year of the Plan. Any adjustment necessary in the resources of the Centre and the States as a result of the Eighth Finance Commission's award will be made as and when it becomes available and the Government has taken a decision thereon. On the expenditure side, while allowance has been made for normal growth from year to year, specific provision has been made for better maintenance of the existing assets like buildings, roads, public works, etc.

Central Government

5.32 The total revenue receipts of the Centre over the Plan period have been estimated at Rs. 68583 crores while the non-Plan revenue expenditure during this period has been estimated at Rs. 67405 crores. The BCR of the Centre thus works out to Rs. 1178 crores as shown in Table 5.9.

Table 5.9

Balance from Current Revenues—Centre 1980—85

(Rs. crores at 1979-80 prices)

Sl. No.	Item	Amount
(0)	(1)	(2)
I. Revenue Receipts		
1	Tax Revenue—gross	72192
2	Less States' share of Central Taxes	20705
3	Tax Revenues—Net	51487
4	Non-Tax Revenues	17096
5	Total Revenue Receipts	68583
II. Non-Plan Revenue Expenditure		
1	Interest Payment	17783
2	Other non-development non-Plan expenditure	34939
3	Subsidies	10124
4	Grants to States and Union Territories	3718
5	Grants to local bodies and Foreign Governments	841
6	Total Non-Plan Revenue Expenditure	67405
III. Balance from Current Revenues (I-II)		1178

The major assumptions underlying the calculation of Centre's resources are as follows:—

- (i) The estimates of revenue from income tax and corporation tax have been worked out on the basis of elasticities of tax revenue with

respect to the relevant income base and allowing for the effects of price changes, separately for income tax and corporation tax.

- (ii) Estimates of interest payments as part of non-Plan revenue expenditure of the Centre are at the existing rates of interest.
- (iii) The estimates of non-developmental expenditure for the Plan period have been made on the basis of past trends and taking into account the normal growth in employment, proper maintenance of existing developmental facilities etc.
- (iv) Instalments of dearness allowance to the employees on the price rise in 1979-80 have been allowed for.
- (v) Grants to States for compensating them for the loss of revenue on account of prohibition have been estimated at the existing level; any likely change in policy will be reflected in additional resource mobilisation.
- (vi) A provision of Rs. 500 crores has been made as non-Plan assistance to States on account of natural calamities.

State Governments

5.33 The total revenue receipts of the States have been estimated at Rs. 73752 crores for the Plan period, inclusive of their share in Central taxes. On the other hand, their non-Plan revenue expenditure during the Plan period has been estimated at Rs. 60452 crores, thereby leaving a balance from current revenue of Rs. 13300 crores, as shown in Table 5.10.

Table 5.10

Balance from Current Revenues—States 1980—85

(Rs. crores at 1979-80 prices)

Sl. No.	Item	Amount
(0)	(1)	(2)
I. Revenue Receipts		
1	Tax Revenue	39646
2	Share of Central Taxes	20705
3	Non-Tax revenue	10146
4	Grants from Centre	3255
5	Total Revenue Receipts	73752
II. Non-Plan Revenue Expenditure		
1	Debt Services	7972
2	Other non-development and non-Plan development expenditure	52480
3	Total Revenue Expenditure	60452
III. Balance from Current Revenues (I-II)		13300

Estimates of State resources which have been worked in the light of detailed discussions with the State Governments, involve the following major assumptions:—

- (i) Estimates of the five major taxes, namely sales tax, stamp duty and registration, taxes on transport, State excise duties and entertainment tax were worked out by applying relevant tax elasticities to 1979-80 revised budget estimates; in the case of electricity duty the effective tax rate has been applied to the projected electricity generation to obtain the estimates of revenue yield. The estimates have been suitably revised in the light of preliminary actuals for 1979-80 and observed trends in respect of individual States.
- (ii) In the non-tax revenue category, revenue from forests has been worked out broadly on the lines adopted by the Seventh Finance Commission, and also taking into consideration the renewed emphasis in the Plan on the need to maintain ecological balance.
- (iii) Adequate provision has been made in estimating non-Plan revenue expenditure for proper maintenance of existing capital assets, like irrigation works, roads, bridges and buildings as also for the efficient functioning of the existing social service facilities.

Market Borrowings

5.34 The details of the contribution of the different agencies to the net market borrowings over the Plan period are given in Table 5.11.

Table 5.11
Market Borrowings: 1980—85

(At 1979-80 prices)

Sl. No.	Item	Estimated increase (Rs. crores)	Statutory provision (%)	Estimated contribution to market Borrowings (Rs. crores)
(0)	(1)	(2)	(3)	(4)
1	Aggregate deposits of scheduled commercial banks	36917	34	12550
2	Aggregate deposits of co-operative banks	2800	32	896
3	Life Fund of Life Insurance Corporation	5577	50	2790
4	Employees' Provident Fund	8650	40	3450
5	Other Provident Funds'	3300	40	1320
6	Others (General Insurance Corporation etc.)			500
7	Total			21506

5.35. An additional market borrowing of Rs. 1000 crores has been envisaged in the Plan as a result of new policy measures proposed to be undertaken during the Plan period like measures for accelerating the growth in bank deposits, changes in the statutory liquidity ratio, etc. Thus, the aggregate market borrowing over the Plan period has been estimated at Rs. 22500 crores out of which Rs. 19500 crores would be utilised for financing the public sector Plan. Of this, Rs. 15000 crores will be for financing the Central Plan while the States and their enterprises are expected to raise Rs. 4500 crores from the open market for financing their Plans. The distribution of market borrowing among the different States seeks to ensure a step up of 10 per cent over the level of market borrowing undertaken by each State in 1979-80. Additional market borrowing of Rs. 1000 crores has been allocated to a few States having per capita income below the national average. The balance of Rs. 3000 crores represent market borrowings to be undertaken by financial institutions like the Industrial Development Bank of India, Industrial Finance Corporation of India, etc. However, the market borrowings of these financial institutions could be higher than this during the course of the Plan depending upon the growth in the resources of commercial banks, co-operative banks, Life Insurance Corporation etc.

Small Savings

5.36. The contribution to small savings collections flows from the households as well as other agencies like the Employees' Provident Funds and other provident funds in the private sector. There has been a phenomenal rise in small savings collections in recent years, rising from Rs. 393 crores in 1975-76 to Rs. 925 crores in 1979-80. Allowing for a modest growth over the Plan period, the small savings collections have been estimated at Rs. 6463 crores which would be shared between the Centre and the States in terms of the existing formula of one-third going to the Centre and two thirds being made available to the States.

State Provident Funds

5.37 The estimates of net accrual to State Provident Funds have been placed at Rs. 3702 crores during the Sixth Plan period—Rs. 1660 crores at the Centre and Rs. 2042 crores in the States. These estimates have been made in the light of past trends of such accruals, the anticipated rise in employment in the Central and State Governments and the existing rate of contributions.

Term Loans from Financial Institutions

5.38 The State Plans envisage loans from Life Insurance Corporation to State Governments, local bodies and State enterprises for financing the housing, water supply and power development programmes. The Reserve Bank of India is also expected to provide loans to the States for participation in the share capital of coopeartives while the Rural Electrification Corpo-

ration is expected to provide funds for expansion of rural electrification facilities. These negotiated loans under the State Plans have been estimated taking into account the financial position of these institutions during the Plan period to provide such loans. The States are expected to raise term loans to the extent of Rs. 2722 crores over the Plan period as shown in Table 5.12.

Table 5.12

Term Loans from Financial Institutions to States

Sl. No.	Institution	Amount (Rs. crores at 1979-80 prices)
(0)	(1)	(2)
1	Life Insurance Corporation	1908
2	Reserve Bank of India	185
3	Rural Electrification Corporation	602
4	Others	27
5	Total	2722

5.39 The negotiated loans indicated above are in gross terms, since repayments to these institutions on account of outstanding loans have been provided for separately under other heads.

Miscellaneous Capital Receipts

5.40 This item represents the net result of a number of transactions on the receipts and disbursement sides of the capital accounts of the Central and State Governments.

5.41 The major sources of capital receipts are recoveries of loans and advances from public enterprises and households sector. The repayment liabilities of the public enterprises to the Centre have now been included in the estimates of recoveries of loans from them whereas earlier these were treated as a part of their own contribution. Special deposits, non-Government provident funds as well as borrowings from the Reserve Bank of India against Compulsory Deposit (Income-tax payers) Scheme have also been taken credit for under capital receipts. It has been assumed that the Compulsory Deposit (Income tax payers) Scheme would continue during the Sixth Plan period.

Net inflow from the Rest of the World

5.42 The estimate of net inflow from rest of the world is derived on the basis of the projections of balance of payments. Detailed estimates of imports, exports, current invisibles and capital transactions are given in the Chapter on Balance of Payments.

5.43 The net inflow of external resources to the public sector plan has been taken at Rs. 9929 crores as under:—

	(Rs. crores)
Net Aid	5889
Other inflows from abroad	4040
Total	9929

The assumed order of net inflow of foreign resources of Rs. 9929 crores constitutes about 10.2 per cent of the total public sector plan outlay.

Drawing Down of Foreign Exchange Reserves

5.44. Foreign Exchange reserves at the end of 1979-80 stood at Rs. 5164 crores, excluding gold and SDRs. It is proposed to draw down these reserves to the extent of Rs. 1000 crores during the Plan period.

Additional Resource Mobilisation

5.45 In the Framework of the Sixth Plan considered by the NDC in August, 1980, it was indicated that of the additional resource mobilisation target of Rs. 19150 crores, the Centre would raise Rs. 13150 crores and States Rs. 6000 crores. In the detailed discussions with the States, a number of States agreed to mobilise larger resources to the extent of over Rs. 3000 crores to finance their development plans. Thus additional resource mobilisation of Rs. 21302 crores has been envisaged during the Sixth Plan period—Rs. 12290 crores at the Centre and Rs. 9012 crores by the States. The enormity of task involved in raising the resources of this order cannot be underrated and a number of hard decisions would be necessary for this purpose. Utmost emphasis will have to be laid on the maintenance of firm fiscal discipline. However, considering both past trends and the potential that still exists, it is by no means an unrealistic target. The broad lines along which the additional resources could be mobilised are discussed below.

5.46 The traditional mechanism for mobilising additional resources has been to rely on additional taxation. As a result of progressive increase in the tax rates in the past, the ratio of tax revenues to the country's national income has now reached the level of 20 per cent. The scope for raising additional revenues, therefore, through mere changes in tax rates is rather limited. On the other hand, there is considerable scope for reducing tax evasion, rationalising tax laws, streamlining tax administration and widening the tax base in the urban sector and tapping the surpluses of the affluent section of the farming community. Even then, greater reliance will have to be placed on the reduction in subsidies and substantial improvement in the financial

return on investment in the public sector undertakings, both of the Centre and the States, through appropriate measures.

5.47 Of additional resource mobilisation target of Rs. 12290 crores by Centre, Rs. 5140 crores are expected to be contributed by taxation, Rs. 3250 crores by reduction in subsidies and Rs. 3900 crores from internal resources of public sector enterprises. The additional tax measures announced in the Central budget 1980-81 are estimated to yield additional revenue to the extent of about Rs. 2030 crores over the Plan period, leaving a balance of Rs. 3110 crores to be raised during the rest of the Plan period.

5.48 There has been a very steep rise in Central subsidies in recent years. The burden on the Central exchequer on account of subsidies on food, fertiliser, export and other items has risen from Rs. 470 crores in 1975-76 to about Rs. 1860 crores in 1979-80. It is estimated that at 1979-80 rates, these subsidies would account for Rs. 12400 crores over the Sixth Plan period. It is essential to ensure that these subsidies are kept within reasonable limits in order to release resources for development. In respect of food subsidies, while increase in procurement prices may have to be allowed in future in order to provide incentives to the farmers as well as to offset the rise in the cost of inputs, measures would have to be taken simultaneously for the appropriate revision of issue prices of foodgrains and for the reduction in the operational costs of the Food Corporation of India and other agencies. Similarly, if the cost of imported fertilisers goes up, the fertiliser prices may have to be raised so that fertiliser subsidy is maintained at the 1980-81 level. It is also not possible to expand the scope of export subsidies and other measures need to be employed to promote exports.

5.49 The Coal India is incurring losses and such losses are estimated at Rs. 500 crores during the Plan period. It will be necessary to eliminate these losses completely through suitable adjustment in prices and other measures. The Railways, Posts & Telegraphs and other public enterprises will have to adopt suitable policy measures in order to achieve a reasonable rate of return on their investment. The estimates of financial resources for the Plan take credit of additional internal resources to be raised by Railways and P & T to the extent of Rs. 1200 crores and Rs. 200 crores respectively during the Plan period. The resource mobilisation effort made by Railways and P & T in 1980-81 will generate additional resources to the tune of Rs. 562 crores in the Plan period leaving a balance of Rs. 838 crores for 1981-85 period. At present a number of Central enterprises are either incurring losses or are not yielding adequate return on the investments made. The estimates of contribution of public sector enterprises of the Centre indicated earlier are based on a rate of return of about 8 per cent during the Plan period. It would be necessary, however, to improve the rate of return of investment of these enterprises so as to earn at least 10 per cent by the end of Plan period through suitable measures, e.g. improved operational efficiency, better inventory management control, improvement in managerial capability and

appropriate changes in price Policy, wherever necessary. On this basis, credit has been taken for additional contribution of these enterprises other than Railways and P & T during the Plan period at Rs. 1000 crores. At present the domestic crude oil is under-priced and a moderate adjustment could yield a substantial revenue over the Plan period.

5.50 The States have agreed to the additional resource mobilisation target of Rs. 9012 crores during the Plan period. A part of this will, no doubt, have to be contributed through appropriate adjustments in tax rates and better collection. Innovative methods, including decentralisation of powers and involvement of local community in mobilising additional resources, will have to be adopted to tap a part of the surpluses generated in agriculture.

5.51 The commercial losses of the State Electricity Boards, which amounted to Rs. 103 crores in 1973-74 increased to Rs. 440 crores in 1979-80. The cumulative losses of State Electricity Boards during the 1980-85 period are estimated at Rs. 4400 crores. In view of the massive investment envisaged in the power sector during the Sixth Plan period, it will be necessary to take effective steps to reduce substantially the losses of the State Electricity Boards. In a number of States, action has already been initiated on these lines. If 80 per cent of these losses are wiped out, additional resources to the extent of Rs. 3500 crores would become available for financing the State Plans.

5.52 The performance of State Road Transport Corporations in most of the States is far from satisfactory. The aggregate losses during 1979-80 were Rs. 62.35 crores and have been estimated at Rs. 1340 crores during 1980-85 period at 1979-80 rates. The poor performance of these Corporations is partly due to a rise in the cost of fuel and other materials in recent years. Effective measures including appropriate adjustments in the fares are called for to improve the return on investment made by the State Road Transport Corporations. Bus fares have already been raised in a number of States which is estimated to yield Rs. 825 crores over the Plan period and other States have agreed to take similar action to wipe out these losses so as to bring additional revenues to the extent of Rs. 1378 crores over the Plan period.

5.53 The State Governments are incurring huge losses on irrigation works. This, in effect, amounts to a subsidy to the farmers who benefit from irrigation facilities created by the Government. It is necessary to reduce progressively, and over a period of time, eliminate these losses through suitable revision of the existing rates. The minimum objective should be to set rates at levels such as to cover the working expenses on the existing irrigation works during the Plan period. This would bring additional resources to the tune of Rs. 325 crores over the Plan period.

Uncovered Gap/Deficit Financing

5.54 The estimates of financial resources indicated above aggregate to Rs. 92,500 crores leaving a gap of Rs. 5000 crores for financing the public sector Plan.

outlay of Rs. 97,500 crores. This is proposed to be covered through deficit financing.

CENTRAL ASSISTANCE TO STATES

5.55 The financial resources of the Centre are estimated at Rs. 64,250 crores (Annexure 5.2). The Sixth Plan outlay for the Centre including the Union Territories has been fixed at Rs. 48,900 crores after transferring Rs. 15,350 crores to the States as Central Assistance. Of this, Rs. 2,805 crores is proposed to be allocated as follows:—

	(Rs. crores)
Hill areas	560
Tribal areas	470
North-Eastern Council	325
Externally-aided projects	1450
	<hr/> 2805 <hr/>

5.56 Of the balance of Central assistance of Rs. 12,545 crores, Rs. 3,245 crores has been allocated to 8 special-category States viz., Assam, Himachal Pradesh, Jammu & Kashmir, Manipur, Meghalaya, Nagaland, Sikkim and Tripura and the remaining amount of Rs. 9300 crores has been distributed among the 14 non-special category States as under:—

Modified Gadgil Formula	Rs. 7700 crores
I.A.T.P. Formula	Rs. 1600 crores

5.57 Under the modified Gadgil formula as approved by the National Development Council in its meeting held in August, 1980, 60 per cent of the assistance has been distributed on the basis of population, 20 per cent to States having per capita income below the national average, 10 per cent on the basis of per capita tax effort and 10 per cent for special problems.

Annexure 5.1

Estimates of Household Saving; 1980—85

(Rs. crores at 1979-80 prices)

Sl. No.	Item	Amount
(0)	(1)	(2)
I. Increase in :		
1	Deposits	32430
	(i) Scheduled Banks	29164
	(ii) Cooperatives	2116
	(iii) Non-Banking Companies	1150
2	Currency	4734
3	Life Insurance Corporation—Life Fund	5577
4	Provident Funds	15648
	(i) State Provident Fund	3702
	(ii) Employees' Provident Fund	8646
	(iii) Other Provident Funds	3300
5	Private Corporate and Cooperative Shares, Debentures and Units	1400
6	Net claims on Government (Small Savings, Debts, Deposits, etc.)	1245
7	Gross Financial assets	61034
8	Less Financial Liabilities	11303
9	Financial Assets—Net	49731
10	Physical Assets—Gross	55128
II.	Aggregate Household Saving (Total of items 9 and 10)	104859

Annexure 5.2

Estimates of Resources of the Public Sector Plan 1980—85

(Rs. crores at 1979-80 prices)

Sl. No.	Item	Centre*	States	Total
(0)	(1)	(2)	(3)	(4)
1	Balance from current revenues at 1979-80 rates of taxes	1178	13300	14478
2	Contribution of public enterprises	9911	(—)516	9395
3	Market borrowings (excluding market borrowings of financial institutions)	15000	4500	19500
4	Small Savings	2112	4351	6463
5	Provident Funds	1660	2042	3702
6	Term loans from financial institutions	—	2722	2722
7	Misc. capital Receipts (net)	6170	(—)2161	4009
8	Inflow of Foreign Resources	9929	..	9929
	(i) Net aid	5889	..	5889
	(ii) Other Inflows	4040	..	4040
9	Drawing down of foreign exchange reserves	1000	..	1000
10	Additional Resource Mobilisation	12290	9012	21302
11	Uncovered gap/deficit financing	5000	..	5000
12	Total Resources	64250	33250	97500
13	Central Assistance for State Plans	(—)15350	(+)15350	..
14	Resources available for Plan (12-13)	48900	48600	97500

*Inclusive of Union Territories

CHAPTER 6

BALANCE OF PAYMENTS

The Indian economy has, by and large, faced difficult balance of payments situation right from the First Plan. With very few exceptions, India has had a negative balance of trade throughout the last thirty years. The difficulties on the balance of payments front, therefore, are not new for the Indian economy. However, on present reckoning, the balance of payments problems facing the country during the Sixth Plan are likely to be acute and will require innovative approaches to cope with the situation.

6.2 Annexure 6.1 gives the estimates of India's Balance of Trade for 1979-80 and the projected picture for 1984-85. The trade deficit in the base year of the Plan, namely 1979-80, has been estimated at Rs. 2370 crores which is higher than ever before. It was, nevertheless, possible to manage the situation because of the substantial net inflows on account of invisibles which included inward remittances from abroad, particularly from Indians working abroad, and the earnings on account of tourism, transportation, insurance, etc. It is estimated that the trade deficit by the end of the Sixth Plan will increase to about Rs. 3972 crores, the major increase being on account of the expected increase in the import bill in respect of petroleum and petroleum products. Aggregate imports are estimated to increase from Rs. 8790 crores in 1979-80 to Rs. 13850 crores in 1984-85 at 1979-80 prices, inclusive of contingency imports.

6.3 India's exports are projected to increase from Rs. 6420 crores in 1979-80 to Rs. 9878 crores by the end of the Sixth Plan. This represents a compound annual growth in export volume of about 9 per cent and it is consistent with Sixth Plan objective of an annual increase of 5.2 per cent in the gross domestic product.

6.4 Annexure 6.2 shows the projections of all major items of balance of payments at constant prices. Despite a substantial growth in exports and net inflows of external aid of Rs. 5889 crores, there would still be a gap in the balance of payments. This is proposed to be met partly from our own foreign exchange reserves which will be allowed to be drawn down to the extent of Rs. 1000 crores and partly from additional capital inflows from abroad, including borrowings from commercial sources.

6.5 The task of policy during the coming years would be to contain the balance of payments gap

within the limits projected and this will require a massive effort to realise the assumed export growth of 9 per cent in volume terms, to contain the growth of imports to 7.9 per cent (excluding contingency imports) per annum, to continue to attract remittances from abroad and promote the earnings from tourism and other sources of foreign exchange. At the same time, utmost economy will need to be exercised in the outgo of foreign exchange for non-essential purposes.

6.6 The main assumptions underlying the balance of payments projections and the policy measures required, to make them realisable are discussed in the following paragraphs.

EXPORTS

6.7 Exports during the Sixth Plan are projected to grow at a rate much faster than the one observed (6 per cent) in the last decade i.e. an annual average rate of 9 per cent at 1979-80 prices.

6.8 Agricultural exports on the whole have been projected to grow at almost the same rate as that of overall exports projected for the Plan. India's share in world exports of agricultural commodities is only about 1 per cent; there is thus scope for increasing the exports. Also, the accelerated growth in agricultural production visualised in the Plan should permit generation of exportable surpluses for several agricultural products. While in the case of commodities of mass consumption such as foodgrains, exports can be considered only after meeting fully the needs of our people, it should nevertheless be possible to export better varieties of cereals such as fine grain rice and aim at a substantial growth in exports of plantation crops, marine products and other processed food products. Marine products and processed food exports have been projected to grow at an annual rate of around 15 per cent at constant prices. Exports of cashew have been projected to grow only at a rate marginally higher than that in the recent past in view of the constraints in the supply of raw nuts from abroad and the time lag involved in stepping up domestic production. Sugar exports will be conditional on the possibilities of exportable surpluses from the domestic market. The share of agricultural exports in domestic output, except for plantation crops, would still be low.

6.9 Exports of manufactured items have been projected to grow at a rate slightly higher than the over-

all growth rate in exports. Industrial production is expected to grow at around 8 per cent during the Plan period. This is expected to provide substantial exportable surpluses, especially of engineering goods, garments and textile products, silk, woolen and man-made textiles, chemical products, plastics, leather products (notably travel goods and sports goods), and various other handicraft items including carpets, gems and jewellery. More than half the projected growth in our exports is expected to be contributed by the above items which are relatively labour-intensive and have a higher value added. On the other hand, the traditional exports of manufactured items like cotton piece-goods and jute, fabrics have been projected to grow only moderately on account of the severe competition from synthetic products as well as the restrictive import policies pursued by some of the industrialised countries.

6.10 In the mineral sector, exports of iron ore have been projected to increase from the estimated level of 24 million tonnes in 1979-80 to 30 million tonnes in 1984-85; this is in addition to 2 million tonnes of iron ore pellets and another 5 million tonnes of concentrates from the Kudremukh project. A growth rate of 2.8 per cent has been assumed in respect of other mineral exports.

6.11 Commodity-wise export projections for the period 1980-85 are given in Annexure 6.3.

IMPORTS

6.12 Import requirements have been projected for major items like petroleum crude and petroleum products, fertilizers and fertilizer raw materials, steel, non-ferrous metals, edible oils, newsprint and cement, taking into account the target growth rate of the economy and the additional capacity creation in the different sectors during the Plan period. The projected imports of major items have been cross checked with detailed material balances as well as through the input-output model.

6.13 Crude oil and petroleum products account for a substantial share in the projected imports. The import bill on this account is projected to go up from Rs. 3202 crores in 1979-80 to Rs. 4641 crores in 1984-85. Over the Plan period, total imports of POL are projected to be Rs. 19977 crores. Though it is of vital importance for the country to reduce its dependence on imported energy by augmenting domestic production of crude oil and substituting oil products by alternative sources of energy, in the medium term plan, the choice on both these fronts is somewhat limited.

6.14 Domestic production of chemical fertilisers will be stepped up substantially; nevertheless, imports will continue during the Plan period to meet the rapidly rising demand for this vital input for agricultural development. Increased domestic production particularly of phosphate fertilisers will push up the demand for raw materials like rock-phosphate and sulphur. As the country is not favourably placed in regard to the production of these materials, bulk of the requirements will have to be imported.

6.15 Even though a substantial step-up is expected in the production of mild steel, it may not be possible to match indigenous product mix with demand for all sizes and sections of steel products. This would necessitate imports of certain categories of steel, particularly shaped products. The Plan provides Rs. 2745 crores for such imports.

6.16 Studies regarding demand and production of non-ferrous metals indicate that the country will continue to depend on imports of these metals for meeting its requirements. The value of imports of four major non-ferrous metals, viz. aluminium, copper, zinc and lead is estimated at Rs. 1915 crores over the Plan period.

6.17 A provision of Rs. 676 crores has been made for cement imports to fill the domestic supply gap.

6.18 Domestic production of newsprint will not be sufficient to meet the growing demand fully. Imports worth Rs. 590 crores are estimated during the Plan period.

6.19 In view of the likely comfortable position on the agriculture front, it is hoped that there would be no need to import foodgrains. In the case of edible oils however, it would be prudent to provide for imports of this item of essential consumption to prevent excessive price increases. The Plan provides Rs. 2920 crores for the import of these oils. However, it may be possible to scale down these imports if the efforts now being made to step up the domestic production of vegetable oils are successful.

6.20 Despite increased availability from indigenous sources, the country will continue to import a small part of its requirements of machinery to meet the special needs in off-shore drilling, telecommunications, space and other technology-intensive sectors. A part of the imports will go into export production. Larger imports of precious and semi-precious stones will be needed for the growing export industry of reworked precious stones. Provision has also been made for a certain amount of imports to meet unforeseen contingencies, such as higher than expected increase in import prices. The commodity composition of imports is given in Annexure 6.4.

6.21 The projections of balance of payments in Annexure 6.2 have been presented at 1979-80 prices. Exports and imports are estimated at constant prices. The total volume of imports is constrained by the purchasing power of exports, and total capital inflow at constant prices. The loss in the purchasing power of exports is estimated by calculating the likely deterioration in the terms of trade. The capital account was estimated initially at current prices and then converted to constant prices by using the appropriate import price indices.

INVISIBLES

6.22 Net receipts from invisibles at current prices have been projected to remain more or less at the estimated level of the base year. Tourism, private transfers and investment income are the major items

on the invisible account. While income from tourism is projected to grow at the rate of 12.5 per cent per annum, the net inflow on account of private transfers is assumed to record a decline during the Plan period in view of the uncertainties in the prospects of labour absorption in foreign countries. In the case of tourism, There is a further scope for increase in the earnings provided recessionary trends in the advanced countries are checked and we can step up the requisite promotion activities in this sector.

FOREIGN AID AND BORROWINGS

6.23 The net capital inflow from abroad is projected at Rs. 9063 crores at 1979-80 prices. But for the projected developments in export/import prices, implying a deterioration in the terms of trade and erosion thereby in the real purchasing power of exports, the real value of the net inflow from abroad would have been larger by Rs. 2913 crores as shown in Annexure 6.2. The estimates of resources assume a net inflow of aid and borrowings of the order of Rs. 10976 crores at 1979-80 prices. Out of the total inflow, net aid is estimated at Rs. 5889 crores. The aid estimates take into account the possibilities of increased aid from world agencies and assume improvements in the disbursement of aid, amongst other things through speedy project implementation. The projections of aid inflow are made after taking into account the uncertain climate for international aid. The rest of the gap in the balance of payments is projected to be met by other borrowings, including commercial borrowings and drawal on foreign exchange reserves. The estimates of borrowings have been guided by the need to keep down the debt-service ratio. The details of the balance of payments projections are given in Annexure 6.2.

TRADE AND PAYMENTS POLICIES

6.24 The trade and balance of payments projections which have been incorporated in the Sixth Five Year Plan calculations require that both import substitution and encouragement of exports will have to be pursued vigorously through the adoption of efficient policy instruments and innovations made in the pattern of financing.

6.25 The investment allocations made in the Plan assume a considerable degree of import substitution in a number of industries, namely, steel, cement fertilizers, crude oil and capital equipment of all kinds, including the science-intensive areas such as electronics. However, it will be counter productive to pursue a policy of indiscriminate import substitution. The emphasis has to be on efficient import substitution which improves both our balance of payments as well as national income. In order to ensure that the export effort is sustained and the country's competitive ability improved, it will be necessary to bring about a re-orientation in the economy from producing wholly for the domestic market to producing both for the domestic and the international market, thus earning foreign exchange for the country and at the same time benefiting the domestic economy through reduction of costs and improvement of quality. What this means is that export production should be profitable.

In view of the resource constraints, it would be necessary to keep down to the minimum export assistance provided from the budget; nevertheless, with all the improvement which can be made in the regime of import restrictions, price policy and the like, it might still be necessary to provide some support from the budget in ensuring that the export effort is not adversely affected. It is also important to ensure that institutional arrangements for export credit and for financing of foreign trade are strengthened and priority attention is given to the provision of export finance on reasonable terms. A decision has already been taken by the Government to establish an Export Import Bank. Some aspects of foreign trade policy are discussed in Chapter 7.

6.26 With respect to invisibles, we should continue to adapt the incentives provided for directing inward remittances in the light of changing circumstances. It will be necessary to encourage investments from persons of Indian origin resident abroad into remunerative areas and also to improve the quality of service provided in the handling of remittances. There is scope for promoting tourist earnings and consistent with the other objectives of the Plan investment allocations have been made for this sector. There is also scope for expanding earnings from other services, such as shipping, insurance and banking and the task of policy will be to keep alive to the opportunities as they are presented and to permit a quick and flexible response to make use of them.

6.27 The international environment in which we have to function is undergoing a considerable change. While foreign assistance on a concessional basis can be expected to continue at around the present level and may even increase somewhat, it is not a source solely on the basis of which we can confidently plan our investments. In the past few years, there has been a rapid increase in the re-cycling of funds through the international banking mechanism and several developing countries have made use of international capital markets for meeting their foreign exchange requirements. Our policy in regard to borrowing on commercial terms has by and large been restrictive in view of the paramount need to keep the country's indebtedness within limits and to maintain our ability to service the foreign debts. It is nevertheless desirable to make selective use of the opportunities of borrowing abroad, particularly for financing projects which have a high rate of return and are also able to strengthen our export capability. It is in the light of these considerations that the balance of payments projections include borrowings from abroad on commercial terms.

6.28 The fact that India has had a comfortable level of foreign exchange reserves has given confidence to the economy and also enabled us to take risks in policies and programmes which we could not take a few years ago, when the foreign exchange reserves were unacceptably low. It is necessary, therefore, to maintain a fair level of reserves even in the face of the pressing requirements of the economy. The Plan provides for a reduction of Rs. 1000 crores; even so at the end of the Plan, reserves as a proportion of total imports will not be lower than about 25 per cent.

Annexure 6.1

Balance of Trade: 1979-80 and 1984-85

(Rs. crores at 1979-80 prices)

	1979-80	1984-85
1 Exports	6420	9878
2 Imports	8790	13850
(of which contingency imports) . . . . .	..	(1000)
3 Balance of Trade	(-2370)	(-3972)

Annexure 6.2

Balance of Payments Projections: Total for 1980-85

Account	Rs. crores at 1979-80 prices
A. Current Account	
1 Exports	41078
2 Imports	58851
(of which contingency imports)	(4911)
3 Balance of Trade	(-17773)
4 Invisibles	8710
5 Current Account (Net)	(-9063)
B. Capital Account	
1 Net Aid	5889
2 Other borrowings, including commercial borrowings, and other capital flows	5087
3 Drawal of foreign exchange reserves	1000
Total 1 to 3	11976*
4 Depletion on resources due to terms of trade deterioration	(-2913)
5 Net inflow	9063

* Of this total, the resources available for financing public sector outlays will be Rs. 10929 crores.

Annexure 6.3

Exports

(Rs. crores at 1979-80 prices)

S.No.	Items/Group of items	1979-80*	1984-85	Sixth Plan Total 1980-85
(0)	(1)	(2)	(3)	(4)
1	Tea	340	440	2080
2	Coffee	179	245	1012
3	Tobacco manufactured	100	155	696
4	Cashew kernels	105	120	520
5	Processed food	115	230	900
6	Castor oil	40	54	247
7	Spices	170	210	950
8	Sugar	150	185	670
9	Marine products	285	555	2196
10	Jute manufactures	284	345	1641
11	Iron ore	253	515	2134
12	Leather & leather mfs. (including footwear)	400	560	2444
13	Cotton piece goods	265	400	1691
14	Apparel, hosiery and other cotton manufactures;	485	680	2985
15	Man-made fibre fabrics	36	75	323
16	Coir and coir manufactures	30	50	236
17	Iron and steel	30	85	250
18	Engineering goods	700	1275	5395
19	Chemicals and allied products	330	510	2304
20	Gems and jewellery	575	900	4095
21	Other handicrafts	260	415	1835
22	Sub- total (1 to 21):.	5132	8004	34604
23	Others**	1288	1874	6474
24	Grand Total (22+23)	6420	9878	41078

* Provisional estimates.

**Includes cereal exports.

Annexure 6.4

Imports

(Rs. crores at 1979-80 prices)

S.No.	Item/Group	1979-80*	1984-85	Sixth Plan Total 1980-85
(0)	(1)	(2)	(3)	(4)
1	Crude oil and petroleum products	3202	4641	19977
2	Chemical fertilizers, rock phosphate and sulphur	745	1187	5113
3	Steel (mild)	470	613	2745
4	Major non-ferrous metals**	263	427	1915
5	Cement	80	162	676
6	Newsprint	125	122	590
7	Edible oils	607	584	2920
8	Sub-total (1 to 7)	5497	7736	33936
9	Others	3293	6114	24915
	(of which contingency imports)	..	(1000)	(4911)
10	Total imports (8+9)	8790	13850	58851

*Provisional estimates.

**Aluminium, copper, zinc and lead.

CHAPTER 7

POLICY FRAMEWORK

The Plan is primarily a set of consistent and feasible investment programmes designed to achieve the targets of output and generation of surpluses for development in different sectors of the economy; but in order to ensure that the programmes move as scheduled and to bring about the requisite direction and effort in the wideranging economic activities of the people, corporate and non-corporate entities and government machinery itself, it is necessary to indicate the framework of policies affecting these activities as an integral part of the Plan. The success of the Plan depends on many factors among which the choice of the correct policy framework must be rated as crucial.

7.2 Such a policy framework has to embrace mobilisation of savings, supply and demand management, measures for improving the performance of the public sector and adoption of specific steps required for the attainment of the objectives of the Plan in different sectors of the economy: accelerated growth in agriculture, pursuit of a well coordinated energy policy aiming at reduced dependence on imported oil, promotion of employment including self-employment, reduction of regional disparities, protection of environment and ecological balance, family planning and welfare and so on. An attempt is made in this Chapter to indicate the underlying assumptions of the Plan in respect of some of these matters and the kind of policy measures which will need to be adopted from time to time. A more elaborate treatment of the issues involved is given in the relevant Chapters of the Plan.

GROWTH WITH STABILITY

7.3 A major task of economic policy in the Sixth Plan is to create the necessary conditions for the mobilisation of resources for development in a non-inflationary manner. The control of inflation and generation of stable price expectations are crucial for a successful implementation of the Plan. However, anti-inflationary policies must be so devised as to facilitate basic structural changes which are essential for a progressive increase in the country's productive potential. This is by no means an easy task even under normal conditions. It is rendered all the more difficult when the international environment is highly inflationary, the outlook for the country's terms of trade and external payments is unfavourable and there are bottle-necks in certain critical domestic sectors (like power, coal, rail transport) which fan inflationary expectations and can be overcome only

gradually. In the background of such difficult external and internal conditions, the rate of inflation can be reduced only gradually. A great deal of ingenuity and imagination will be needed to devise effective economic policies to cope with inflationary pressures.

7.4 Sensible demand management policies will continue to be an important element of an effective package of anti-inflationary policies. Fiscal and monetary policies will have to be so designed as to prevent an excessive growth of money supply. Due attention will have to be paid to the proper phasing of investments so that inflationary pressures are not accentuated. If demand management policies are not to hurt the country's longer term growth prospects, major emphasis must be laid on curbing the growth of conspicuous consumption, preventing diversion of investible resources into low priority activities and on promoting savings so that investment requirements of accelerated growth can be financed in a non-inflationary manner. Thus fiscal and monetary policies will need to provide positive encouragement to savings, particularly to savings in the form of assets which are under social control.

7.5 In Indian conditions, agricultural prices are the kingpin of the price structure. Thus fluctuations in agricultural output can give rise to a price spiral which is not easily controlled by demand management policies once it gets started. In the long run, an increase in agricultural production and a reduction in the amplitude of fluctuations will no doubt contribute to greater stability of the price level. In the short run, the effects of fluctuations in weather conditions on the price level can be moderated if adequate buffer stocks of important agricultural products like food-grains, cotton, and sugar are built up and these are accompanied by an effective system of public distribution of essential commodities.

7.6 Recent experience shows that bottlenecks in certain critical sectors like power and transport can have a significant bullish effect on price expectations. These factors, together with the inevitable adjustments in prices demanded by an era of rising energy costs, bring out the growing importance of structural factors in generating inflationary pressures. To this extent, inflation has acquired a structural character. Thus, in any viable anti-inflationary strategy, adequate emphasis on supply management—involving both fuller utilisation of existing capacities and growth of these capacities over time—must go hand in hand with demand management. Indeed, in a situation in

which India is faced with a sharp deterioration in her terms of trade, a significant increase in productivity, both in agriculture and industry, is essential for maintaining a reasonable degree of price stability. Such an increase in productivity can materialise only in the framework of an expanding economy.

MOBILISATION OF RESOURCES

7.7 The size of the Plan, its scheme of financing, the pattern of allocation of resources, the composition of output and the physical targets for various sectors including infrastructure etc. have been arrived at keeping in view the objective of accelerated growth while maintaining a reasonable balance between aggregate demand and supply of essential goods and services, important raw materials and other key inputs. The implementation of the Plan according to schedule and the realisation of the targets in different sectors is, therefore, of crucial importance from the point of view of ensuring relative price stability. The policy measures that need to be adopted in different areas are indicated below.

Fiscal Policy

7.8 The scheme of financing the Plan, which is described in detail in Chapter 5, has been so designed as to be essentially non-inflationary in character. It calls for additional resource mobilisation of Rs. 21,302 crores by the Central and State Governments and their enterprises while deficit financing is proposed to be restricted to Rs. 5,000 crores.

7.9 As a result of progressive increases in tax rates, taxation expressed as a percentage of the country's national income now stands at 20 per cent. There is thus only a limited scope for raising additional resources through taxation. In the field of direct taxes, the possibilities of raising additional resources through income tax, corporation tax and wealth tax are somewhat limited. There is need to check tax evasion through a strengthening of the administrative machinery for tax collection, plugging the loopholes in the tax laws and also through an imaginative adjustment of tax policy so as to reduce the incentive as well as scope for such evasion.

7.10 Direct taxes on agriculture at present constitute less than 1 per cent of the total agricultural income. Land revenue, which is the principal direct tax on agriculture, is generally a flat rate levy and, consequently, regressive in character. Fixation of minimum support and procurement prices for major agricultural crops and provision of various inputs such as fertilisers, irrigation and electricity at subsidised or concessional rates have helped raise agricultural incomes, particularly of large farmers. It is, therefore, necessary to consider measures for raising additional resources from the agricultural sector and introducing a measure of progressivity in agricultural taxation. Care should, however, be taken to ensure that this does not in any way affect the incentives to increase production and productivity.

7.11 The resource base of the Indian fiscal system has been considerably eroded, among other things,

due to the inability of the public sector enterprises to generate adequate resources for the expansion of public sector investment. In the case of Central Government's industrial and commercial enterprises, which accounted for an investment of over Rs. 15,600 crores at the end of March, 1979 the projections made for the Plan period on the basis of 1979-80 pricing policies imply a rate of return on capital employed of about 8 per cent. This should be raised to at least 10 per cent by the end of the Plan period. For this purpose, it would be necessary to improve management increase capacity utilisation, reduce inventories and adopt appropriate pricing policies. The Railways and Posts and Telegraphs are also expected to raise substantial additional resources.

7.12 In the States, the Electricity Boards are incurring huge losses. In the case of irrigation, the gross receipts are not sufficient to cover even the working expenses. Most of the State Road Transport Corporations are also making losses. It would be necessary for these undertakings to improve their financial performance through a revision of tariffs, water charges and taxes and other suitable measures,

7.13 Another area which offers scope for contribution to the Plan resources is reduction of subsidies by both the Centre and the States. The Central Government has already reduced the net burden of fertiliser subsidy by increasing its prices. Further, while increasing the procurement prices of rice and other kharif cereals, the Central Government has also simultaneously decided to increase their issue prices to avoid additional subsidy. It is recognised that it may not be possible to eliminate altogether the subsidies that exist at present. Nevertheless a significant reduction in subsidies from the level budgeted for 1980-81 is necessary to raise the required order of resources for the Plan.

7.14 It will also be necessary for the Central and State Governments to take measures to improve tax collections, curb tax evasion and observe strict fiscal discipline. Severe restraints will have to be imposed on the growth of non-Plan and unproductive expenditure. In particular, there is no basis for the assumption that every item of non-Plan expenditure should automatically register growth at a certain minimum rate every year.

7.15 The possibilities of mobilising local resources for local use need to be fully explored. Block level committees and village panchayats could be given powers to raise specified resources, including land revenue, for deployment on local development schemes. The experience of some States demonstrates the usefulness of market cesses, for instance, in mobilising additional resources. In small towns and metropolitan areas also, local authorities have not fully tapped the resources through appropriate means available to them. Rent control and the consequent low valuation of properties, have the effect of eroding the tax base of local authorities; they in turn depend for resources for local programmes of development and improvement on the State Governments. The question of municipal finance needs to be reviewed in all its aspects.

7.16 Finally, it would be necessary to adopt further measures—fiscal, monetary and others—to increase savings. In so far as this contributes to the increase in financial savings in the form of bank deposits, life insurance premia and contribution to provident funds, there would be an increased flow of resources for the public sector Plan through market borrowings; an increase in small savings and provident fund accumulations of Government employees would flow directly to the public sector.

7.17 Studies in the Planning Commission indicate that the Indian fiscal system does not have adequate built-in elasticity to generate additional resources automatically for financing higher project costs in the wake of inflation. If, therefore, prices continue to rise, leading thereby to a rise in project costs, the additional resource mobilisation in nominal terms may have to be higher than indicated above if the real size of the Plan is to be protected. Any resort in such a situation to an increase in deficit financing to cover the gap between the desired level of Plan outlay and available resources will have to be scrupulously avoided as this would accentuate inflationary trends and create distortions in the structure of the Plan.

Monetary and Credit Policies

7.18 Money supply increased by over 13 per cent in 1979-80 (after adjustment for the change in the classification of demand and time deposits). This order of increase in money supply in the context of a decline in both agricultural and industrial production was an important factor contributing to the price rise in that year. Its impact was all the more severe as it came over and above the substantial increase in money supply that had taken place in the preceding years. The rate of growth of money supply has, however, decelerated in 1980-81 and this has helped materially in restraining the price rise in the last few months.

7.19 Monetary and credit policies, while aiding the process of economic and social development in line with the priorities of the Plan, have to be so designed as to help maintain a balance between the aggregate demand and supply of goods and services. For this purpose, it would be necessary to ensure that the growth of money supply over the Plan period bears a reasonable relationship with the increase in national income.

7.20 This would require coordination of fiscal, monetary and credit policies so that deficit financing by the Government, credit to public agencies or agencies designated by the Government for purchase of foodgrains and other commodities as well as credit to the commercial sector taken together do not lead to an excessive increase in money supply. The anticipated deficit in the balance of payments would provide some cushion for monetary growth. On the other hand, food credit, which has declined since 1979-80 as a result of the reduction in food stocks, may be expected to go up with the rebuilding of food stocks. Procurement of other commodities under

price support operations or for the purpose of public distribution would add to the requirements of credit. Proper planning in regard to the deployment of monetary and credit resources is, therefore, of utmost importance.

7.21 Credit policy is being reoriented to meet increasingly the needs of the poorer and weaker sections of the community in order to increase their productive capacity. It has been decided to increase the proportion of advances to the priority sectors, comprising agriculture, small-scale industry, retail trade and small business, professional and self-employed persons etc., from 33 1/3 per cent of total bank advances in 1979-80 to 40 per cent by 1985. Further, out of the total advances to the priority sectors, at least 40 per cent will be extended to the agricultural sector. To ensure a larger flow of funds to the weaker sections, separate targets are to be fixed for them within the priority sector lending for agriculture and small-scale industries, which account for a predominant share of the total priority sector lending.

7.22 The monetary and credit trends would need to be monitored closely and may be reviewed periodically with a view to determining whether any corrective measures are needed. The level and pattern of interest rates will also need to be kept under constant review in the light of the evolving economic trends. There is evidence to suggest that savings in the form of deposits with financial institutions and certain other types of financial assets are responsive to changes in the rates of interest. Interest rate policy can thus be effectively employed for augmenting savings, in addition to its use in the regulation of credit expansion by increasing the cost of inventories and speculative hoarding. The interest rates must also reflect the relative scarcity of capital and the need to promote labour intensive techniques of production. It will, of course, be necessary to ensure that the interest rates are not too high for the poor and weaker sections or for investment in high priority areas. This could be taken care of by differential rates of interest on a selective basis.

Income Policies

7.23 The existence of wide disparities in incomes and living standards inevitably creates an atmosphere in which it is extremely difficult to secure discipline and dedicated effort in major areas of economic activity. On the other hand, given the fact that the vast bulk of the incomes are generated in the agricultural sector and among those who are self-employed, it is not easy to design an incomes policy on the same pattern as that attempted in some of the western countries. The paramount need to promote a sustained increase in agricultural productivity requires maintenance of adequate incentives for the farmers; similarly incentives for private industrial investment are also required consistent with the objective of avoiding concentration of wealth and economic power. None of these considerations, however, come in the way of creating a general climate of austerity and against conspicuous consumption.

7.24 An incomes policy as such has to derive its rationale from the objective of the Plan. It has to aim at reducing the existing disparities in order to bring about a more rational and equitable pattern of income distribution. Besides, it must help in stabilising the prices. In fact, the success of the incomes policy itself is better assured under conditions of price stability.

7.25 In spite of the various measures taken so far, there has been no significant dent yet in the problem of income disparities. While this is attributable partly to the limitations of the measures adopted and shortcomings in their implementation, the development process itself has also tended to benefit more the favourably placed sections of the community. The recurrence of the inflationary phenomenon has further accentuated the distortions in income distribution. The problem is extremely complex on account of the skewed distribution of assets on the one hand and the deep-rooted historical socio-economic factors on the other. The need to provide adequate incentives for increased efficiency and productivity renders the task of income redistribution even more difficult.

7.26 In a country where nearly half of the population lives below the poverty line, the most important task of the incomes policy has to be to increase the income levels of the poorer and weaker sections. One of the major objectives of the Plan is, therefore, to progressively reduce the incidence of poverty and unemployment and improve the quality of life of the people. The household-centred poverty alleviation strategy under the Integrated Rural Development Programme, development of agriculture and ancillary activities, promotion of cottage, village and small industries and creation of additional employment under the National Rural Employment Programmes are among the important measures designed to achieve this objective. In addition, the Minimum Needs Programme would provide certain amenities to the people in the form of drinking water, elementary education, health care, house sites to the landless labour, etc. Further, the purchasing power of the incomes of the poorer and weaker sections of the community would be protected through the supply of essential consumer goods at reasonable prices under the public distribution system.

7.27 At the same time it is essential to exercise some control on high incomes as well as on non-functional incomes. Reliance will have to be placed mainly on fiscal policy and measures such as industrial licensing, regulation of monopolies and restrictive trade practices, etc. It is of utmost importance in this context to tighten up tax administration and curb tax avoidance and evasion. Expansion of the public sector will also help indirectly in preventing accrual of large incomes at the top level. There are ceilings on income in the public sector and certain guidelines have also been adopted for fixing the emoluments of top executives in the corporate sector. However suitable differentials in emoluments in favour of managerial and high skill jobs will have to be permitted in order to attract the best people to these jobs.

7.28 In regard to wages, there is marked disparity between the organised and unorganised and urban and rural sectors. One of the main problems is that of lower wages than the prescribed minimum. It is therefore, necessary to enforce the Minimum Wages Act and to undertake periodical revision of the minimum wages notified under the Act. The real solution to the problem, however, lies in increasing substantially the employment opportunities and bringing about a better balance between the demand for and supply of labour. Measures to impart skills and promote diversification of occupations could contribute further to an improvement in wages.

7.29 Wage levels in the organised sector vary not only between regions and industries but even among units in the same industry. These are related neither to the nature of occupations nor to the level of skills. These anomalies and disparities have resulted in social tensions and industrial unrest. There is, therefore, need for bringing about a greater rationalisation of the wage structure and linking of wages at least in some measure to labour productivity. This can be done only with the full and willing cooperation of workers and their representatives and the success of any such attempt will depend a great deal on the pursuit of policies conducive to reduce the disparities in income and consumption. In an environment which promotes economic discipline generally, it should be possible to ask those who are fully employed, both wage earners as well as others to accept some restraint on the growth of their consumption in the interest of those who are under-employed or unemployed. In the medium to long term, real wages must be allowed to move with gains in productivity in the economy as a whole; but such a policy may still require those engaged in occupations with rapidly rising productivity to accept a somewhat lower increase in earnings in order to permit a measure of equity *vis-a-vis* occupations in which productivity growth is likely to be small. Also, in the immediate period ahead, there should be less insistence on improvements in real incomes on the part of those who are fully employed to help establish expectations of price stability, so important for mounting the development effort called for by the Plan. There is also urgent need to generate a climate in favour of modernisation in industry and adoption of new techniques which help in increased productivity, without being detrimental to employment. In the small and decentralised sectors the scope for technological improvement is quite considerable and this must be explored to the full.

Pricing Policy

7.30 In view of the increases in demand on account of the increase in population as well as the growth of incomes, the durable solution to the problem of maintaining a proper macro-balance between demand and supply would essentially lie in increasing the production and availability of goods and services in relation to the growing demand. This would be specially necessary in the case of basic consumer goods and essential raw materials and other inputs

It is important, therefore, that the targets of production both in agriculture and industry are realised and, for this purpose, the various programmes, schemes and policy measures included in the Plan are effectively implemented. As recent experience indicates the increase in production would critically depend on adequate and timely availability of the basic facilities such as power and transport. Particular attention has, therefore, to be given to improving and developing the infrastructure so as to ensure that constraints in these sectors do not hamper growth. It would also be necessary to improve the monitoring system, so that remedial measures are taken expeditiously as and when necessary.

7.31 Overall stability of prices does not mean rigidity in prices. Changes in relative prices may occur in response to changes in the demand-supply situation. These may also have to be induced to influence resource allocation in order to achieve the desired pattern of consumption, production and investment. The policy in regard to agricultural and industrial commodities is discussed below.

7.32 *Agricultural commodities:* Prices of agricultural products exercise a significant influence on the general price level as several of the essential articles of mass consumption as well as some of the industrial raw materials are agriculture based. In fact, prices of foodgrains act as a pace setter in the behaviour of general prices. Food and food products account for a weight of over 60 per cent in the All India Consumer Price Index for Industrial Workers and of over 75 per cent in the Consumer Price Index for Agricultural Labour. In the Wholesale Price Index, agricultural and agriculture based products account for more than half of the total weight. The output of agricultural commodities is not only subject to year to year fluctuations but the demand for these being generally inelastic, a marginal rise or fall in their output causes a disproportionate increase in prices. Maintenance of relative stability and reduction in seasonal fluctuations in their case is, therefore, of vital importance.

7.33 Since fluctuations of agricultural production tend to generate instability of prices and, in the lean years, trigger inflationary pressures, an important instrument of maintaining price stability is the establishment of adequate buffer stocks in as many of the essential commodities as possible. A buffer stock of about 15 million tonnes in respect of foodgrains, for instance, is considered absolutely necessary in order to minimise the impact of weather fluctuations on their availability and prices. Buffer stocks for the articles of common consumption will need to be created as the situation permits and marginally with the help of imports, to the extent feasible.

7.34 Minimum support/procurement prices are fixed for major agricultural commodities each year on the basis of the recommendations of the Agricultural Prices Commission (APC). In making its recommendations, the Agricultural Prices Commission is expected to take into account the need for a "balanced and integrated price structure in the perspective of overall needs of the economy and with due regards to

the interests of the producer and the consumer". Accordingly it takes into account all relevant factors such as the demand and supply situation in respect of individual commodities, cost of cultivation, changes in terms of trade between agricultural and non-agricultural sectors, prices of competing crops, etc.

7.35 It is hardly necessary to emphasise that the farmers need to be provided remunerative prices so as to ensure that they have adequate incentive to produce more and improve productivity. In determining remunerative prices, due account will have to be taken of the cost of production and other relevant factors, including changes in terms of trade, overall needs of the economy and interests of consumers. At the same time, the various programmes and schemes designed to increase yields should be effectively implemented to reduce unit costs. Improvement in management practices can also help in reducing costs. Moreover, it is necessary to bring about an improvement in marketing to reduce the excessive share going to the middlemen and ensure better realisation for the farmers. There is also need to improve the efficiency of the public procurement/purchase agencies and increase the area of their operation whenever necessary.

7.36 Over time, the pattern of relative prices of agricultural commodities has to be such as to promote the desired pattern of crop production. However, in the case of commodities like pulses and oilseeds, where there is an imbalance between demand and supply, the use of the price instrument alone may not be sufficient to bring about the desired level of production. The main solution would seem to lie in technological break-through, and institutional improvements.

7.37 *Industrial Commodities:* In the interest of overall price stability, it will also be necessary to control or regulate the prices of certain essential industrial products, particularly basic consumer goods and important industrial or agricultural inputs. Care has however, to be taken to limit price control and regulation measures, or the system of administered prices, to as few commodities as possible.

7.38 Administered prices are generally fixed on the recommendations of an expert body like the Bureau of Industrial Costs Prices (BICP) or, in the case of certain public enterprises, of specially constituted Inter-Ministerial Committees or Groups. While recommending prices, the BICP normally goes by the guidelines for price fixation prescribed by the Government and *inter alia*, takes into account the cost of more efficient firms which account for a large percentage of the total output (to ensure a certain level of efficiency in production), the optimal norms of consumption of raw materials and energy as well as capacity utilisation and provides a fair rate of return which has generally ranged between 10 to 14 per cent on net worth, depending on differences with respect to factors such as risk, priority, growth prospects, etc. In order to reconcile the interests of consumers as well as producers, a system of retention prices for different producers on the basis of costs of production on the one hand and uniform sale price for consumers on the other has been recommended and is in opera-

tion in several cases such as steel, fertilisers, cement, etc. Price adjustments are allowed for changes in major cost components from time to time and a review in depth is undertaken after suitable intervals. This system will be continued.

7.39 The principle of fair return is relevant to public enterprises as well. However, these enterprises are generally engaged in the provision of infrastructural services or in the manufacture and supply of basic industrial materials such as coal, steel and POL, or agricultural inputs such as fertilisers and the increase in their prices generally has a cascading effect. Hence, an attempt has been made to keep down their prices. This, together with managerial deficiencies and other factors, has resulted in inadequate resource generation by public enterprises, losses in some of them and a heavy draft on the public exchequer. It has also meant supply of goods and services produced in the public sector at subsidised prices even for non-priority uses, and, consequently, accentuated the imbalances between demand and supply. Further, a delay in the revision of prices results in the subsequent revisions having to be of a substantial order. In the interest of making public enterprises viable, enabling them to play their assigned role and raising additional resources for development, there is need for rationalising their pricing policies in a phased manner. While doing so, due weight will also have to be given to considerations of social costs and benefits.

7.40 It may be noted that in a number of public enterprises, there is sub-optimal utilisation of the existing capacities due to various factors, particularly infrastructural constraints and managerial deficiencies. Besides, delay in the implementation of projects has resulted in costs over-runs. Substantial improvement in the working of public enterprises as well as in the execution of projects is, therefore, necessary to increase production, reduce costs and improve the rate of return. Enterprises in both the public and private sectors have, therefore, to strive to achieve greater efficiency and reduce costs through the adoption of modern management techniques, better inventory control, etc. Wherever economies of scale exercise an important influence on the cost of production, the expansion of existing enterprises has to be preferred to setting up of new plants. Tariff policies may also be reviewed to avoid excessive protection to indigenous industries and induce them to improve their competitiveness.

PUBLIC DISTRIBUTION SYSTEM

7.41 From the point of view of maintaining stable price conditions, an efficient management of the supplies of essential consumer goods is of crucial importance. The demand for such commodities being largely inelastic, even a marginal fall in their output and availability often leads to a disproportionate increase in prices. Further, as most of these commodities are agriculture-based, their prices are subject to large seasonal variations. Public distribution will, therefore, have to play a major role in ensuring supplies of essential consumer goods of mass consumption

to people at reasonable prices, particularly to the weaker sections of the community.

7.42 A large proportion of agricultural products—foodgrains as well as industrial raw materials tends to come to the market immediately after the harvest when prices are depressed. A mechanism for buying such commodities at prices which ensure a certain minimum profit to the producers and their distribution through the public channels would provide a two-sided shield to protect the poor; in relatively easy times, they would be assured a minimum profit margin and in critical times they would receive supplies of essential commodities at reasonable prices. The public distribution system will, therefore, have to be so developed that it remains hereafter a stable and permanent feature of our strategy to control prices, reduce fluctuations in them and achieve an equitable distribution of essential consumer goods.

7.43 The public distribution system will also be necessary for operating the dual pricing arrangements in the case of certain commodities. Under these arrangements, a certain proportion of the output of the commodities involved is procured by public agencies or agencies designated by the Government at reasonable prices for distribution through approved channels, while remaining supplies may be disposed of by the producers at market prices. This would ensure availability of certain quantities of selected commodities to the consumers, particularly the vulnerable sections, at reasonable prices and at the same time allow the producers to realise on the whole a fair price for their produce.

7.44 An efficient public distribution system requires a nexus between production, procurement, transportation, storage and distribution of the selected commodities.

7.45 In the past, responsibilities for these have been fragmented and thus there has been a lack of an integrated system of approach which alone can ensure an effective system of public distribution. It is proposed in the Sixth Plan to follow such an approach and to pay attention, apart from production and procurement, to transportation and proper storage of the commodities covered by the public distribution system. A linkage will be established among the concerned agencies in the Central and State Governments as well as public undertakings and cooperative institutions at various levels.

7.46 In view of the complexity of the problem, a selective approach is called for in the matter. The essentiality of commodities to be covered under the system has to be determined with reference to the needs of the common man. Applying this criterion, cereals, sugar, edible oils, kerosene, soft coke, controlled cloth, tea, coffee, toilet soap, washing soap, match boxes and exercise books for children, etc. could be treated as essential items for public distribution. The emphasis has to be on reaching all parts of the country, even if it means selection of a fewer essential commodities for supply through the system. Besides it is not necessary that the public distribution

system all over the country should have a standardised list of commodities. The different regions may have different preferences. Further, different commodities may assume importance in the scheme of public distribution at different points of time. But having regard to the standard of living of the vast majority of the people, it is obvious that the overwhelming majority of commodities needing the care of the public distribution system will be fairly common for the entire country. Depending on local conditions the public distribution agencies may undertake operations in respect of certain perishable commodities also, provided suitable storage facilities are available or can be provided.

7.47. For the success of the public distribution system the maintenance of the supply line of the commodities selected for distribution would be of crucial importance. Even a temporary interruption in supplies could create great hardship to the people. The Plan includes suitable programmes for increasing the production of essential articles of mass consumption. There would, however, be need for forward planning in respect of individual commodities, so that the domestic supplies could be suitably augmented by timely imports, wherever possible. Besides, adequate arrangements should be made for procurement, transportation, storage and distribution of the commodities at the Central, State and local levels. Buffer Stocking may also be desirable in respect of certain commodities. In regard to foodgrains, the Plan envisages building up of buffer stock of 15 million tonnes to minimise the impact of weather fluctuations on their availability and prices.

Infrastructure for Public Distribution

7.48. For the effective functioning of the public distribution system, it would be necessary to revamp and strengthen its infrastructure and expand the system quickly to cover all areas in the country, particularly the backward, remote and inaccessible areas. Special attention will need to be given to rural areas, as the system is relatively less developed in such areas.

7.49. At the national as well as State levels, arrangements generally exist for procuring essential commodities and supplying them through the public distribution outlets. In regard to foodgrains, the necessary operations are undertaken by the Food Corporation of India. In the case of sugar, the operations are undertaken by the Food Corporation of India in some States and Civil Supplies Corporations or co-operatives in other States. The responsibility for importing and distributing edible oils has been entrusted mainly to the State Trading Corporation of India. Soft coke is being handled by the Department of Coal and Coal India Ltd. Kerosene is being handled by the public sector corporations like Indian Oil Corporation, Hindustan Petroleum, Bharat Petroleum, etc. The production of controlled cloth has now been generally entrusted to the National Textile Corporation and distributed through the National Consumers Cooperative Federation. Similarly, tea is being procured and distributed by the National Consumers Coopera-

tive Federation and coffee supplied by the Coffee Board. The supply of match boxes is arranged through the Khadi and Village Industries Commission. As regards exercise books, the State Governments receive paper at controlled price for conversion into exercise books through their own organisations. For toilet soap, in the absence of any public sector agency, the necessary arrangements for supply are being made by the Indian Soap and Toiletries Manufacturers Association. These arrangements will need to be kept continuously under watch and suitably strengthened or modified whenever necessary.

7.50. In the States, distribution of essential commodities received from or through the Central agencies is, by and large, being handled by the State Civil Supplies Essential Commodities Corporations. State level apex consumer cooperative federations and other designated agencies. In some States like Tamil Nadu, Punjab and Kerala, the Civil Supplies Corporations have opened their own retail outlets also.

7.51. A number of States have a fairly developed system of consumer cooperatives. In 1979-80, out of the total fair price shops numbering 2.5 lakhs, nearly 72,000 were in the cooperative sector—about 58,000 in rural areas and 14,000 in urban areas. Besides, there were 470 wholesale consumer stores with 4500 branches (including 200 departmental stores) and 1500 primary stores functioning in urban areas. There are State level cooperative federations in each State and a national level cooperative consumers federation is also in existence.

7.52. The cooperatives in both urban and rural areas are selling consumer articles worth about Rs. 1600 crores per annum. The Civil Supplies Corporations' operations at the retail level are, however, rather limited. The cooperatives and Civil Supplies Corporations together, therefore, seem to be meeting only a small proportion of the essential consumer needs at present. Their share in the trade in essential commodities will need to be increased substantially in the Sixth Plan period.

7.53. For the successful operation of the public distribution system, it would be necessary to revamp and strengthen the existing arrangements. In the States, where a strong cooperative movement exists, the apex body of consumer cooperatives and marketing societies may take up the responsibility of procurement storage, movement and distribution of essential commodities. However, in other States, it would be necessary to set up Civil Supplies Corporations or strengthen the existing Civil Supplies Corporations/Essential Commodities Corporations.

7.54. The Civil Supplies Corporations may have to construct some godowns also for meeting their requirements, where adequate godown space is not available from the Central and State Warehousing Corporations, cooperatives, etc. The Corporations will also have to build up a cadre of trained personnel. For this purpose, effective training will be necessary.

7.55. It has been found in practice that neither the private sector nor the cooperatives volunteer to go to

inaccessible areas, especially areas inhabited by the tribals and weaker sections of the community because of the non-viability of operations there. The State Governments will have, therefore, to shoulder this burden through their own Civil Supplies Corporations or other suitable agencies. Some subsidy may also have to be given to retail outlets in such areas in the initial years of their operation.

7.56 In view of the weak resource base of the North-Eastern States, the Plan includes a provision for assisting such States in setting up Civil Supplies Corporations as also for assisting these corporations for constructing godowns and for subsidy to retail outlets in inaccessible areas, etc.

7.57 It would also be necessary to strengthen and expand the structure of consumer cooperatives in both urban and rural areas and increase the number of co-operative retail outlets, in order to cover effectively all sections of the community, particularly the weaker sections. Necessary provision for this purpose has been made in the Plan. The main targets are indicated below:

		Consumer Cooperatives	
		1979-80	1984-85
1	Fair price shops (number)		
(a)	Urban	14,501	20,000
(b)	Rural	57,744	80,000
2	Distribution of consumer articles (Rs. crores)		
(a)	Urban	800	1600
(b)	Rural	800	2000

The total number of fair price shops, including private outlets, in the country is proposed to be increased from 2.5 lakhs at present to 3.5 lakhs by the end of the Sixth Plan.

7.58 Every care will have to be taken to ensure that the retail outlets established by the Civil Supplies Corporations or those operating in the cooperative sector are economically viable. Since a considerable infrastructure of private retail outlets exists and these have generally been operating for a long time, they would continue to play an important role in the public distribution during the Sixth Plan period also.

Other Improvements in the Public Distribution System

7.59. Emphasis has to be placed on efficient and socially-oriented marketing techniques and every effort will have to be made to reduce the cost of distribution by taking advantage of the economies of bulk handling, avoiding cross movement of goods, building up a network of rural godowns and use of non-mechanised means of transport from these godowns to consumer centres as far as possible. Besides, some fast selling

items may be allotted to fair price shops in the public and cooperative sectors to improve their financial viability. They should also be encouraged to handle postal articles and family planning materials.

7.60 Coordination and linkage between the consumer and marketing cooperatives would be strengthened so that the former could procure farm products directly from the farmers. Further, with a view to enabling the cooperatives to play a larger role in the public distribution system and the supply of essential articles in the rural and urban areas, considerable expansion in the storage capacity of cooperatives is envisaged.

7.61 The usefulness of the public distribution would be enhanced through horizontal linkages with Plan programmes. For instance, mobile fair price shops may be organised at Centres where rural works are in progress. Regular fair price shops could be established in areas where large-scale employment is generated under the Plan projects and programmes. The possibilities of non-formal staffing, i.e. use of personnel on part-time basis, may also be explored in appropriate places in order to minimise costs.

7.62. In the tribal areas, it may be noted, the problem is not merely one of supplying essential consumer goods, but also of supplying the other requirements, including the requirements of production inputs, and of procuring the products of tribals at reasonable prices, since they are often exploited by the middlemen. Some arrangement may also have to be made to supply goods to tribals on barter basis. The public agencies in tribal areas will have to take up all these tasks.

Consumer protection

7.63 It is necessary to provide a measure of protection to consumers in relation to quantity, quality and prices of at least essential consumer goods. The basic legal framework for providing such protection already exists. However, it needs to be reviewed and strengthened. Steps should also be taken for more effective enforcement of the laws and the various consumer protection measures. Besides, there is need for a coordinated price policy in regard to important consumer goods in order to ensure reasonable prices of such goods.

7.64 Voluntary consumer organisations could help a good deal in ensuring effective functioning of the public distribution system and providing more effective consumer protection. There is, therefore, need for promoting such organisations in both urban and rural areas. The major thrust of voluntary organisations should be towards reaching the generality of consumers. Women should be actively involved in voluntary organisations. Where it is not practicable to organise consumer organisations, there should be no hesitation to utilise the services of established and reputed social welfare organisations. In rural areas, local representative institutions like the Panchayats may be used to create consumer awareness through meetings and dissemination of information of consumer interest.

Intelligence and information system, enforcement and training

7.65 Finally, there is need for strengthening the intelligence, early warning and demand-supply management information system. It would be necessary to have an effective and integrated system at different levels. Based on the intelligence reports, prompt action should be taken at the block, district, State or Central level as the case may be. The enforcement machinery should be strengthened. Provision has also to be made for proper training of the personnel required for the collection of information, analysing it, monitoring the supply system and enforcing the legal provisions.

FOREIGN TRADE POLICIES

7.66 A major task facing the country is to reduce its dependence on imported energy and generally to promote exports and invisible earnings in an effort to secure self-reliance. It should be obvious, but often is not, that self-reliance does not mean self-sufficiency in all sectors of the economy. So long as the country is able to pay its way, it cannot be said to be dependent on others. The choice of the outputs to be produced domestically and those to be imported should then depend broadly on economic calculus and the long-term comparative advantage which the economy enjoys. While it may be necessary in respect of the basic and strategic sectors of the economy for Government itself to make such a choice, it should be possible in the rest of the economy to leave the choice to be made on the basis of criteria of rates of return. Given the resource constraint, the present skewness in income distribution and the balance of payments problem facing the country in the immediate future, there cannot be a question of adopting anything like a free trade policy. A considerable restraint on imports is inevitable, whether it is imposed through tariffs or import restrictions or both. A rapid increase in the domestic production of petroleum, fertilisers, cement, steel and vegetable oils is essential in order to contain growth of imports within reasonable limits. In addition, adequate stress will continue to be laid on promoting import substitution in activities where the country has a distinct long-term comparative advantage. Simultaneously, there is need to recognise, as has been done in recent years, that foreign trade policies should be such as not to come in the way of a rapid and wide ranging growth of exports. The system of incentives and disincentives should thus be neutral to the maximum extent possible as between export promotion and import substitution. This is not to deny that there could be a conflict as between different objectives of the Plan and that in making a choice of the appropriate foreign trade policy it would be necessary to keep in mind the other objectives of the Plan as well. When it comes to exports, however, it seems clear that over the next five years or so the balance of payments prospects facing the country are such that it can ill-afford not to give high priority to the promotion of exports and other foreign exchange earning activities.

7.67 To a considerable extent, the task of achieving the growth of 9 to 10 per cent a year in export volume

will be greatly eased if inflation is brought under control. The most rapid growth of exports in recent history has been during the two years when our rate of inflation was well below that in the rest of the world. The prospects are for a further increase in the price of oil which would transfer resources from the rest of the world to the OPEC countries. We must continue our endeavour to capture as large a share as possible in the imports of the OPEC countries, which may be expected to continue to grow even if at a slower rate than in the past. As the scope for earnings from remittances of migrant workers is likely to be limited, we will need to enlarge opportunities for exports of commodities, technology and enterprise to these countries. In developing a general strategy of export growth, it is necessary to identify specific areas of relevance for exports to OPEC and give them a priority treatment. A case in point is the production and export of vegetables and fruits. The Plan provides for special schemes for intensive cultivation in areas in the vicinity of easy air transport. Procedural and other obstacles in the way of Indian enterprises seeking to establish permissible business in the OPEC countries, e.g. construction activities—should be removed after a quick review of the present position.

7.68 A sustained increase in exports over a period of years cannot be achieved in the absence of a stable policy environment governing exports as well as production for export and production generally. Frequent changes in policies create uncertainty which is detrimental to the establishment of a stable market abroad and to risk-taking inherent in investment decisions. The environment for production also has to be such as to enable enterprising individuals, agencies and corporations to exploit the available opportunities to the full. Except in very special cases, any conflict between objectives must therefore be resolved in favour of exports. On a broad review of the current policies, it would appear that maximum attention will need to be given in the coming years to:

- (a) Removing the disadvantages which exports suffer because of the restrictions on imports;
- (b) Removing obstacles to the expansion of capacity for export;
- (c) Streamlining the existing cash compensation and other schemes intended to remove the disadvantages suffered by exports on account of taxation and physical controls operating in the economy;
- (d) Ensuring that Government intervention in the foreign trade policies is such as not to discriminate against exports and production for export, there is a case for making exporting marginally more profitable than import substitution, in view of the need to diversify export trade which involves capturing new markets abroad and retaining them; and
- (e) Maintaining adequate links with technological developments abroad so that our export capability is not hurt by outdated-technology.

7.69 An effort has been made in the Sixth Plan to provide investments necessary to remove the infrastructure bottlenecks—e.g. in power and transport and to the extent that this effort succeeds, the environment for increased production and export will improve. A tight control on domestic demand will similarly help the export effort.

POLICIES FOR ACCELERATED GROWTH IN AGRICULTURE

7.70 The Sixth Plan aims at an annual average increase of 3.9 per cent in the gross value added in agriculture (and over 5 per cent in agricultural production). This involves a considerable step up over the past trend of a little less than 3 per cent a year in gross value added. Indeed, the objective of attaining 5.2 per cent growth in gross domestic product is crucially dependent on achievement of the agricultural production targets. The success in the export effort of the country on the scale visualised in the Plan will also depend to a great extent on augmenting agricultural production. A clear strategy will have to be evolved to ensure that agriculture receives a very high priority in all policies and programmes. The postulated increase in output is expected to result from increases in area under irrigation and high yielding varieties, a substantial increase in the consumption of chemical fertilisers and adoption of a system approach for consolidating the gains already achieved and extending the benefits of new technology to all categories of farmers and all regions.

7.71 Along with the growth of production, it is proposed to remedy the imbalance in the relative growth of different crops, in particular by acceleration of the growth rate in the output of pulses and oilseeds. The structure of production will be diversified for enabling a sustained rise in output and incomes and for helping the export efforts.

7.72 All available instruments of policy will have to be geared to the promotion of the proposed increase in agricultural production. In particular, it will be necessary to ensure that crop production is remunerative to the farmer through adoption of appropriate policies concerning pricing of agricultural inputs and outputs, arrangements for supply and distribution of inputs, adequacy and timeliness of credit as well as marketing support, an intensification of research, education and extension. These are spelt out in greater detail in the Chapter on Agriculture.

7.73 An important task of policy is to ensure that the gains of the technology and publicly supported programmes accrue increasingly to the small and marginal farmers and are reflected in the adequacy of remuneration for agricultural labour. The National Rural Employment Programme will help provide additional employment opportunities in the lean season to the under-employed and thereby assist the efforts to enforce the minimum wage laws. Credit policies as well as special programmes including the integrated rural development scheme will be so designed as to make an effective contribution to the productive

effort of small and marginal farmers. Organisation of relevant services and diversification of the employment base—for instance, by providing employment opportunities in occupations outside agriculture, including village and cottage industries such as hand-looms, carpet weaving and the like—are the two principal elements in the strategy of improving the economic status of the weaker sections in rural areas.

7.74 In order to transmit the growth process throughout the agricultural sector, it will be necessary to increase the productivity of the small and marginal farmer. Provision of inputs and credit will help, but it is necessary, in order to induce durable investments in land, to give the tiller a stake in land. Thus the importance of effective land reforms can hardly be over-emphasised. Even a limited redistribution of land can make a significant contribution to the generation of productive employment opportunities in the rural areas. But the other elements of the land reform policies which give security to the tenant are also important particularly for promoting productive investment in land. State Governments will take specific measures to record rights in land which remain unrecorded as in the case of share-croppers and the credit institutions will need to devise systems whereby credit for land development and improvement could be provided jointly to the land owner and the share-croppers. If necessary, legislation will be undertaken to permit this.

7.75 Keeping in view the perspective of the next fifteen to twenty years, it is proposed to organise a National Water Development Corporation for the preparation of detailed blueprints for inter-basin transfers of water. Measures will also be taken for the conjunctive use of surface and ground water resources. Further, it is important to evolve a suitable policy frame-work for dealing with inter-State disputes in sharing river waters.

7.76 Long-term policy measures will also be necessary for a balanced-re-structuring of energy use and energy supply for agricultural purposes, taking account of substitution possibilities in energy-intensive inputs as well, such as chemical fertilisers. Agriculture is increasingly becoming science based, and future advances in application of science to agriculture will need to concentrate on improving productivity in agriculture consistent with the need to conserve non-renewable sources of energy.

POLICIES TOWARDS INDUSTRY IN THE PRIVATE SECTOR

7.77 Government intervention in industry is both direct and indirect. In so far as successive Five Year Plans have laid emphasis on the leading role of the public sector in basic and producer goods industries, Government has the responsibility of planning the requisite investments for securing the growth of these industries and of managing their current operations with a view to reaching a level of performance which permits maintaining adequate returns from

these investments. While several of the industrial units in the public sector have reached a profitable operation, others are still making losses. In an earlier section, reference is made to the paramount importance of improving the efficiency of the public sector; this applies to industrial undertakings in the public sector as much as to those concerned with provision of power or transport.

7.78 The indirect intervention of Government in industry arises from the need to ensure that private investment subserves national objectives and that its claims on resources of domestic as well as foreign finance, scarce raw materials and manpower are so regulated as to conform broadly to the Plan priorities. Government also is concerned about due dispersal of industry for the development of backward regions, to avoid concentration in metropolitan regions and to promote the growth of small industries and labour intensive operations, having regard to the general scarcity of capital and the need to promote opportunities for employment on a large scale. Industrial policies also have the objective of preventing the concentration of economic power in a few hands. Thus the growth of monopolies and restrictive practices has to be regulated in the larger public interest.

7.79 It is clear by now that the basic structure and objectives of policies governing Government's intervention in industry have stood the test of time. The commanding heights of the economy must continue to remain with the public sector. At the same time the review of past developments presented in Chapter 1, as well as the need for rapid increase in industrial production and exports visualised in the Sixth Plan suggest a greater emphasis in the direction of competitive ability, reduced cost and greater mobility and flexibility in the development of investible resources available in the private sector in accordance with broad national priorities. In order to secure these, it would be necessary, apart from general fiscal and monetary measures, to use the instruments of licensing policy and policies governing the regulation of capital markets, including the operations of term-lending institutions. Measures taken recently (described in the Chapter on Industry) have already shown the flexibility with which industrial licensing policies are being operated.

7.80 Turning to the capital markets and the role of term-lending institutions, it is necessary to pursue somewhat different approaches simultaneously. On the one hand it is necessary to adopt flexible policies to revive investor interest in the capital market. On the other hand, the role of term-lending institutions in promoting Plan objectives will need to be more carefully defined.

7.81 The new issue market has remained weak for a number of years, causing serious problems of shortage of risk capital and drawing the term-lending institutions gradually into the business of risk taking which is not their primary function. To the extent that the controls on capital issues come in the way of corporate entities drawing on the funds available

in the market, such controls will need to be reviewed and the scope for simplification explored. It seems however, that the absence of interest in new issues is due to the long gestation of many of the investment projects, difficulties in the supply of basic inputs such as power and transport which postpone the prospects of profitable production, a low rate of return compared with the relative rewards available on fixed interest instruments and the general lack of innovation in the issue of new kinds of instruments which might suit the investors' needs. There is clearly need for improving the investment climate and broadening the new issue market so as to reduce the dependence of private industry on public financial institutions.

7.82 The activities of the term-lending institutions themselves, on the other hand need to be directed more than in the past to programmes germane to the implementation of the Plan targets. These institutions are operating under general guidelines issued by Government with respect to priorities they have to observe in their lending operations. If the efforts to revive the new issue market bear success, the term-lending institutions will be better able to concentrate on priority areas. The contribution that these institutions make in promoting systematic project formulation and monitoring is of particular value for investments in critical sectors of the economy. The resource position of the term lending institutions, their capital base and their ability to raise resources from domestic and foreign sources will be kept under constant review during the Plan period.

REGIONAL DISPARITIES

7.83 An important objective of the Plan is to bring about a progressive reduction in regional inequalities in the pace of development and in the diffusion of technological benefits. It should be generally accepted that the fulfilment of the objective requires upgrading the development process in the backward regions rather than curtailing the growth of these regions which have acquired a certain momentum. Thus the measures to be pursued for reduction of regional inequalities have to be consistent with the general objective of achieving a 5 per cent growth rate in the economy as a whole. The fact that there are vast areas of the country which have remained backward over the years is both a challenge and an opportunity. Diffusion of skills and technology to these areas should bring forth a proportionately greater improvement in productivity. Their resource base is low; and many of them face one or the other of the adverse natural factors which inhibit the prospects of growth: scanty rainfall, frequency of floods, difficult terrain, desert areas and so on. Specific programmes meant to deal with these deficiencies are already in operation and they will need to be strengthened. Backwardness does not recognise State boundaries; and it may be necessary, over time, to take account of this in the policies concerning resource transfers. Relatively richer States need to pay adequate attention to the backward areas within their territories and the claims of

the backward States must also be sustained on the basis of proven programmes for the benefit of the backward regions. District and blockwise planning will bring to light the nature of the specific problems in each area and the manner in which they need to be dealt with.

7.84 Central policies with respect to resource transfers will need to be suitably tailored to the benefit of backward regions and broadly in relations to the effort made by the States in this regard. The IATP formula introduced in 1979 and the doubling of the segment for backward States in the Gadgil Formula for allocation of Central assistance for State plans illustrate the effort made in recent years to modify the distribution of resources in favour of the backward States. There are, however, obvious limits to the role of Central assistance in the promotion of backward areas and reduction of regional imbalances in development. The problem of regional disparities has several dimensions and action on several fronts is indicated if there is to be a perceptible decline in such disparities. Moreover, an increase in the flow of resources to the backward States does not necessarily imply that adequate provisions will be made for the backward regions. State Governments have a crucial role to play in evening out inter-State disparities, identifying local development potential and providing the administrative and financial support needed for local programmes. It must also be remembered that the special programmes for backward regions have to be dovetailed with the overall development plan in order to make them cost effective. Thus mechanisms of area planning have been adopted to provide an integrated approach to the problems of regional inequalities, and the sub-plan approach has been promoted so that the area plans are fully integrated with the national development plan. Special Tribal Component Plan, Hill Area Schemes and specific programmes handled by the North East Council have all been evolved from these approaches. Greater emphasis is placed on all these in the Sixth Plan.

7.85 The exact content of the development programme will vary between different types of backward areas. However, with regard to modalities of implementation, there are certain common problems. Some of them are the weakness of the administrative structure, both in the hierarchical insufficiency of technical personnel and in horizontal coordination, diversion of sectoral provisions to more developed areas where they can be more readily spent, insufficient delegation of power to local authorities and unwillingness of staff to serve in the area. The special programmes for area development will come to nought unless these problems are tackled. The National Committee on Development of Backward Areas (NCDBA) has recently recommended that the following features should form a part of financial arrangements for the development of backward areas.

(i) Sub-Plan Approach: The concept of a sub-plan has been developed in the Integrated Tribal Development Programme. There

should be a 'Sub-Plan' for the development of backward areas both at the State and Central levels. In the Plan of every development department there are programmes which are divisible. In the Sub-Plan approach, weighted allocation is proposed to be given to the backward area from the divisible part of the plan of the development department.

- (ii) Project fund for local planning and special additive fund: Even though the divisible part of the State Plan is allocated to the projects the sheer inertia of on-going programmes will leave very little scope to the local planning group to adjust the funding to local requirements of an integrated development approach at the local level. Special steps will, therefore, have to be taken to force gradually a discretionary allocation to the local planning and implementation group to enable them to bring in local planning of greater and greater magnitude gradually. In addition, as development of backward areas has to be expedited, a special allocation of Rs. 5 lakhs per year for each block in the project area should be available as a special additive for the plan period.
- (iii) Financial discipline: In view of the tendency to divert funds intended for backward and difficult areas to more forward areas and easier programmes, financial discipline will have to be imposed to ensure that the funds included in the Sub-Plan for the development of backward areas and allocated to the projects in the backward area by various departments and the additives are spent properly within the year in that project area.

7.86 According to the NCDBA, the effective implementation of the special programmes will require the adoption of the following organisational features:

- (i) Project-based implementation: The development programmes for backward areas should be implemented through projects authorities created by an executive order for groups of 2 or 3 blocks, the actual size being left to the States, depending on the local conditions. The chief executive of the project should coordinate the work of all development functionaries in the project and should have the powers to issue orders to them for action on agreed programmes.
- (ii) Incentives for staff: The most serious problem of backward areas is that the hierarchies of development departments that should be working in those areas generally have lots of gaps because of the unwillingness of staff to go to those backward areas. The Committee has identified lack of housing, health and educational facilities for children as three serious constraints to free movement of staff to those areas. In addition, a mix of incentives and penalties will have to be

tried to ensure that the backward areas get their fair share of development staff and technical aid.

Many of these organisational features have been incorporated in some schemes like the Tribal Sub-Plan programmes and according to NCDBA they need to be extended to all backward areas development schemes.

7.87. The recommendations of the NCDBA on special areas development programmes will be considered by the Government and the required changes in scope coverage and organisational modalities will be introduced during the Sixth Plan period.

7.88. Apart from resource transfer and public sector programmes of development aiming specifically at the development of backward regions, Central policies have also been designed to provide incentives to private entrepreneurs through schemes of concessional finance, seed/margin money scheme, Central investment subsidy schemes, tax reliefs, specific interest subsidies for engineer entrepreneurs and so on. The experience of these schemes will be evaluated and the required modifications made so as to make these programmes more effective. The National Committee on Development of Backward Areas has also submitted a report on industrial dispersal which makes a number of recommendations concerning the development of backward areas through industrialisation. The Committee's evaluation of the existing policy for industrial dispersal shows that the Central investment subsidy and the scheme of concessional finance have benefited a small number of districts, mostly in close proximity to relatively developed industrial centres;

that with a few exceptions the industrial estate programme has not helped relocate industries away from developed areas; that licensing policy is only a negative instrument and cannot by itself promote industrial development in backward regions; that the availability of concessional finance and subsidy has been a significant motivating factor in persuading entrepreneurs to locate their units in backward districts. Having regard to this experience as also the natural tendency of industry to congregate at certain locations the Committee has recommended a policy of encouraging location of industry in suitable growth centres with due weightage for such centres in industrially backward States. The Committee has suggested establishment of an Industrial Development Authority in such selected centres which will work on a commercial basis to provide the necessary infrastructure and to channel development funds which might be allotted by Central or State Governments. The Authority will provide a Master Plan on the basis of which financial institutions would be able to assist development of the area. The Committee has also made recommendations regarding modification of some of the existing schemes of incentives. The Committee's recommendation will be examined and a suitable policy frame evolved.

7.89. The transmission of growth impulses from the developed to the backward regions is **only one** part of the process of reduction of regional disparities; generation of growth impulses within the backward regions is an equally important part. It will be necessary to strengthen the arrangements for area planning so as to enable financial institutions, commercial banks and cooperatives to augment substantially their lending in the backward regions in agriculture and allied activities as well as for village and small industries.

PLAN IMPLEMENTATION, MONITORING AND EVALUATION

Successive five year Plans have stressed the importance of strengthening the implementation machinery so that the projects and programmes included in the Plan move according to time schedules and targets. It has also been recognised that implementation needs to be supported by adequate monitoring and current and post-evaluation of major programmes so that lessons of experience enable improvements in the design of programmes themselves. There is further indication from experience that deficiencies in implementation may also be due to inadequate planning of projects at the initial stage causing slippages in schedules, cost over-runs and poor performance generally. Thus when one talks of failures of implementation, one should look upon planning, implementation and evaluation as an integral process, each deriving strength from the other (and transmitting its weaknesses all the way through the process). The problems in all these three areas—planning, implementation and evaluation—differ from sector to sector. In the sectors, such as industry, power and transport, project formulation techniques, as well as methods of appraisal, monitoring and evaluation are more advanced than in the poverty removal and social services sectors.

IMPLEMENTATION OF PROJECTS/ SCHEMES

8.2 In the public sector of the Sixth Plan, the targets in respect of projects/schemes will have to be implemented within the fixed time-frame and with full achievement of the programme content particularly in such programmes as NREP, IRDP, Minimum Needs, Family Planning, etc.

8.3 To achieve the optimum results out of investment, care has to be taken to ensure that the following points with regard to the implementation of the various schemes/projects, etc. included in the Plan are given adequate attention.

(i) The Sixth Five Year Plan like the previous Plans is a plan of action for the national economy which is drawn up after very careful consideration and exhaustive consultations with the State Governments, Central Ministries and various other organisations concerned with the Plan formulation and its implementation. Consultations have also been held with a wide variety of professional organisations as well as

individual experts and mass media and trade union representatives. It may be difficult to include new schemes without sacrificing essential programmes which have been included in the original Plan. It would, therefore, appear desirable that after the Plan has been accepted and approved, no new scheme/project etc. should be introduced in the Sixth Five Year Plan by any agency unless there are some compelling considerations that such a scheme/project should be introduced during the operation of the Plan; but in that case these new proposals should be very carefully considered by the concerned authority, whether it be the State Government or the Central Ministry and the Planning Commission. This is with a view to ensure that the resources which have been calculated while drawing up of the plan are indeed spent over schemes/projects etc. which are included in the Plan. This, in fact, would ensure that on-going schemes/projects are completed expeditiously and the resources earmarked for them are not spread over a large number of other schemes resulting in neither the on-going schemes being productive, nor the new ones progressing satisfactorily due to sub-critical investment.

(ii) It is essential that for each scheme/project included in the Sixth Plan, whether in the State sector or in the Central sector, a firm time-table is drawn up consisting at least of the following major components:

- (a) The date on which the project report will be firmed up taking into account various parameters specified in the Plan.
- (b) The dates on which the sanctioning authority, whether it is the State Government or the Central Government (as the case may be) will be ready with the formal sanction separately in respect of each of the schemes/projects, whether it is in the industrial, irrigation, power, education, transport or any other sector of the national economy.
- (c) The dates on which different contracts for various schemes/projects will be finalised and the contract documents signed.

After these critical landmarks are determined, which may be called the pre-implementation stages of each of the projects/schemes, the Departments/organisations concerned with the implementation of the Plan should be under an obligation and made responsible

to adhere to the time table as determined in the above formulations.

(iii) In order to ensure that the time table as mentioned above is strictly adhered to, the delegation of authority for investment decisions, clearance of contracts etc. should be considerably enhanced, and indeed a good deal of trust be placed on those who are directly responsible for implementing the schemes/projects etc. included in the Plan.

(iv) After determining the exact date of physical start-up of the projects, a PERT network should be drawn up for each scheme/project, no matter in what discipline such a scheme or project exists, and the end date of the completion of the scheme be determined. After this end date has been determined, there should be no revision backwards of the end date, and all performance should be judged against the final targets.

(v) Experience gained over the last thirty years has shown that it would be highly desirable that before a project is included in the Plan and later on taken up for implementation, a very detailed examination of the scheme/project be undertaken. Detailed site investigations, geological investigations, testing of raw materials, technology assessment, etc. should be undertaken in all cases. Expenditures on these investigations are very necessary and should be sanctioned liberally.

(vi) With regard to major projects in the field of industry, power, irrigation, etc. a good deal of controversy tends to surround matters like exact location, choice of technology etc. The time taken to resolve these controversies is inordinately long and the economy loses very valuable benefits in the meantime. It is necessary, therefore, that the procedures used for resolving these controversies are simplified and made expeditious.

(vii) Public sector projects funded from the budget have to obtain funds on an annual basis. Under our budgetary procedures, unutilised funds have to lapse towards the end of the financial year. The possibility of funding on a long term basis, at least in critical sectors, will have to be examined as against the present system of annual funding. This will avoid delay in the implementation of projects.

(viii) Persons responsible for the implementation of the Plan should be made to feel a sense of involvement in fulfilling of the Plan targets. Every impediment which thwarts initiative, and sense of expedition in operating the Plan schemes ought to be removed. For this purpose, the existing procedure would need a very careful examination so that proper formulations are drawn up quickly, and implemented.

(ix) Experience has shown that when the project is undertaken, and even before the first phase of the project has been completed, expansion schemes have been introduced with the result that neither the objectives of the first phase were achieved, nor the various expansion projects which were loaded on to the original projects were productive. Such arrangements have also resulted in considerable time and cost overruns as also financial resources originally envisaged have seldom been achieved. It has also diluted

responsibility. It would, therefore, be imperative that no expansion projects should be taken up unless the original project is completed, and is fully stabilised, and has given the desired results both in regard to the physical and fiscal performance.

(x) Project consultancy and design engineering organisations in the country would need considerable strengthening in such disciplines and type of projects where such consultancy organisations do not exist. Proper consultancy organisations would need to be developed and, if necessary, financed in the initial stages by the Government. The requisite expertise where it is not available in the country could be drawn from amongst highly experienced and motivated Indians abroad. In fact, such Indians who are abroad and who are capable to set up consultancy organisations in India should be encouraged by way of financial incentive and other measures.

IMPLEMENTATION OF RURAL DEVELOPMENT AND EMPLOYMENT PROGRAMME

8.4 While the problems of project preparation and execution in the sectors of industry, power, transport and the like are capable of being dealt with broadly within the present administrative structure i.e. through public sector organisations adopting the methods and practices suggested above, there is need for a major modification of the administrative arrangements for the implementation of rural development and employment programmes. It will be necessary to identify the deficiencies encountered in different States and areas and take corrective action to strengthen the arrangements. Some broad areas of action in this respect are indicated below:

Employment

8.5 Detailed micro-level planning of manpower development and employment generation, to start with at the district level, has been suggested. The District Manpower Planning and Employment Generation Councils will be effective in discharging their mandate only if adequate professional back-up for making a realistic assessment of the opportunities for salaries, wage and self-employment is available. The cost-return-risk structure of self-employment enterprises will have to be carefully worked out and individual and group self-employment promoted. The Employment Exchanges in the district will have to provide the necessary data input and all the professional and credit institutions in the area will have to be harnessed in finding a meaningful solution to the problem of unemployment both among the educated and illiterate. This will call for non-formal staffing patterns involving the employment of part or full-time consultants drawn from academic and voluntary organisations and other appropriate agencies in the district. The proliferation of formal staff should be kept to the minimum and local people employed to the maximum possible extent in the creation and utilisation of assets of value to the local community.

Rural Development

8.6 The rural development programme during the Sixth Plan period will cover all the blocks of the country so that every block can develop its potential for growth according to the genius and efforts of the people and the resources of the block. The IRDP programme envisages a household approach to the alleviation of poverty. This will involve a considerable restructuring of input delivery systems. The "Training and Visit system" of extension already introduced in agriculture provides a methodology for organising visits by extension personnel to all families in the area at least once in a fortnight and for arranging for the timely supply of the needed inputs. Similarly, credit-cum-input supply means can help the economically weaker sections of the rural community to get credit in the form of the inputs for which the credit is intended without bureaucratic delays. Economic emancipation of the family, education of children and the voluntary adoption of the small family norm are the three principal components of the household centred poverty alleviation strategy. This calls for horizontal coordination among the agencies dealing with agriculture and village industries, education and other minimum needs, health and family welfare. The block level administration will have to be so structured that the desired degree of horizontal coordination is achieved. Obviously, this task is a difficult one; fortunately however, the necessary infrastructure for successfully implementing this programme already exists. What is needed is a determined effort to put all the pieces together and to measure the progress made in rural development, among other things, by the extent of reduction in poverty and in the drain of resources from the village to the city.

Agriculture

8.7 Organisations of relevant services which would help small and marginal farmers and sharecroppers to derive economic benefits from new technology and diversification of farm income through mixed farming, agro-industries and small scale industries are two of the major thrusts of the agricultural Plan. The effective implementation of this programme will call for greater efforts in the field of scientific land and water use planning and in linking production with processing, storage and marketing. Improved management through a flood of cash and non-cash inputs will have to be achieved. Both internal and external markets will have to be properly served through well-planned linkages between co-operative marketing federations, Civil Supplies Corporations and foreign trade agencies. Structured linkages involving forward planning will have to be developed among the concerned agencies. Scientific management of agriculture will require a highly orchestrated effort in policy formulation and implementation on the part of the agencies concerned with the development of packages of technology, services and public policies. Both at the State and national levels, this aspect will have to receive attention if the desired growth rates

in agricultural production and exports are to be achieved.

Irrigation

8.8 The maximisation of production and income from every available litre of water will be one of the important objectives of the Plan. This will call for detailed attention to on-farm management of water jointly by the farmers in the command area of an irrigation project and the project authorities. Command area management in irrigated areas, watershed management in unirrigated areas and catchment area management in the catchments of major river systems will all have to be designed in such a manner that the people concerned and the administration can work together as partners in elevating and stabilising yields without damage to the eco-system.

Small and Village Industries

8.9 Next to agriculture, the small and village industries sector provides the major avenue of employment in rural and semi-urban areas. The management of the various enterprises in this sector through detailed attention to (a) the supply of raw material in adequate quantity and of proper quality, (b) design improvement on the basis of analysis of preferences of consumers both in the home and foreign markets, (c) skill upgradation, (d) energy supply and (e) producer-oriented marketing will all demand a much greater management and organisational input into this sector than hitherto. In this sector also, extension and training methods based on the T & V system could be introduced. This sector in particular will provide opportunities for group self-employment and for home employment for women and will hence be vital for improving the income of families without land and/or livestock assets.

Special Component Plan for Scheduled Castes

8.10 Since the special Central assistance has been introduced for the first time, concerted efforts will be needed for preparing worthwhile projects. The Development departments and the Scheduled Caste Development Corporations need to work closely. Unless the requisite degree of co-ordinated effort can be generated, it will be difficult to fulfil the objectives of the Special Component Plan.

Tribal Sub-Plans

8.11 Several authorities have adversely commented on the introduction of a complex system of administration and new laws and rules for tribal society which was formerly used to a very simple administration. The present distinction made between regulatory and developmental administration has led to a multiplicity of authorities with whom they have to deal and causes confusion and mistrust among them. These activities need to be combined and brought within the purview of the

Integrated Tribal Development Projects (ITDP) and extended to the village level. The Project Administrator, ITDP should combine in himself the quasi-judicial and revenue powers of an additional District Magistrate and the Additional Collector. The relationship between the Block and the ITDP should be clear with the Project Administration having full control over the Block Development Officer, the Block should be an integral part of the command—chair which may be State-Division-District-ITDP-Block-Gram Panchayat-Village. The Public Distribution System should function through LAMPS (Large Area Multipurpose Cooperatives) organised at the village market level and under the supervision and control of the Project Administration. Other appropriate devices like the organisation of mobile fair price shops operating both on a cash and barter basis will have to be introduced to prevent the tribal from being exploited by the traditional market system.

Anti-poverty Programmes

8.12 The organisational framework of anti-poverty programme calls for careful planning on the basis of the socio-cultural and socio-economic features of each area. If greater decentralisation is to be achieved so that programmes are made responsive to local problems, needs and potentials, district and block-level implementing agencies will have to be given much greater flexibility. Greater use of such institutional devices as registered societies or corporations at the district level offer a means of accomplishing this. These agencies should be given greater freedom to reallocate funds in accordance with local priorities and even to innovate new programmes as long as these subserve objectives already agreed upon. Greater flexibility in recruitment will also be required so as to facilitate the induction not only of short-term consultants for specific tasks but of young professionals including social scientists keen to participate in rural development. This will serve to strengthen the analytical capabilities of rural development agencies, an area they tend to be weak at present. The effective organisation of a Rural Resource Corps consisting of professionally qualified youth will also help to bridge the growing gap between professionals in the modern, mostly urban, and the rural sector. The governing body of these agencies could serve as a forum for the direct representation of target group beneficiaries. Such representation will help to prevent the frustration of the distributional objectives of these programmes. The representation of local credit, educational and voluntary agencies on these bodies would facilitate coordination and encourage wider public participation.

8.13 It should be recognised that anti-poverty programmes need to be projectised to the extent possible. This will facilitate appraisal, phasing, coordination, monitoring and all the other components of successful programme management and implementation. Thus it is not enough to distribute milch cattle without simultaneously organising marketing, providing health cover and artificial insemination

services, promoting fodder cultivation and organising fodder and feed banks. Project appraisal techniques, network and survey methods are just a few examples of tools and techniques that need to be simplified in a responsible manner so that they can be placed within the reach of district level planners and managers. They need to be made relevant to the day-to-day experience of district level personnel and to the type of project planning and management tasks our rural development will increasingly throw up. All this calls for a systematic and comprehensive programme of training of district level planners and managers, a task which State Planning machinery and research institutions could undertake.

8.14 However, the new anti-poverty programme will also place new demands on the patience, persistence and skills of our grassroot development functionaries as they reach out to target group families who have by and large remained untouched by development programmes so far. In order to elicit the required degree of dedication and effort, renewed attention will have to be paid to questions of motivation, morale and orientation of the extension services, which have undergone a decline since the earlier days of the community development programme. Attention will have to be paid in particular to inculcating a greater degree of honesty in appraising achievements and identifying problems, and in developing a new culture of openness in communication between different levels of the development hierarchy. Only then are we likely to ensure the necessary feedback required to make programmes practical, productive and truly responsive to the needs of the poor.

District Administration

8.15 As already stated, it will be necessary to make arrangements for horizontal linkages at the block level. The task of planning and implementation for development programmes at the district level is acquiring greater complexity.

It will be necessary therefore to strengthen the district level administration by the appointment of District Development Officers who should have complete authority and responsibility with respect to development work and should enjoy the same rank and status as the District Magistrate/Collector. Some State Governments have already acted in this direction and there is need to adopt this practice all over the country. The DDO's must have professional expertise and his continuity should not be disturbed at least during a plan period, if found to be effective and dedicated.

MONITORING OF IMPLEMENTATION

8.16 Adequate organisation and systems at present do not exist for monitoring and evaluation of plan projects and programmes at different levels. At the Central level, monitoring systems have been established and are in operation in respect of major projects

in certain key sectors only like chemicals and fertilisers, steel, petroleum, coal, power and irrigation. For other sectors there is need to develop organised monitoring arrangements. Major public sector undertakings of the Central Government have their own monitoring systems. For projects and programmes within the jurisdiction of the State Governments, monitoring systems for use at the Central level have been designed for certain sectors like tribal development, development of backward classes, primary and adult education and water supply.

8.17 The implementation of the plan both by the State Governments, as well as the Central Ministries would need to be effectively monitored with a view to ensuring that for each scheme various targets relating to time and cost, production of goods and services, social and economic benefits relating to the individual projects in the industrial, agricultural, education, irrigation, family planning, health or any other sector of the economy are achieved.

8.18 Implementation of the Annual Plans has to be very effective, and for this task, various Departments concerned in the State Governments, State Planning agencies, Ministries concerned at the Centre as well as the Planning Commission will have to be strongly geared. It would be desirable to have a report every six months with regard to the implementation of the State Plans, as also the Plans of various Ministries at the Centre. This report should be drawn up by the above groups with regard to the schemes/projects etc. concerning them, and these could be examined by the Planning Commission.

MACHINERY FOR PLANNING

8.19 The present position is that there has been a general lack of effective machinery for appraisal of investment proposals with the exception of certain categories of major products in selected sectors; the lack is more pronounced in the agriculture and social services sectors. A project included in the plan needs to be appraised in terms of its techno-economic feasibility and social costs and benefits. At present such appraisals are generally confined to Central Government projects costing Rs. 1 crore and above. In the case of State projects and schemes the appraisal machinery is inadequate in most States except for medium and major irrigation and power projects appraised by the Central Water Commission and Central Electricity Authority respectively. The financial institutions and concerned State Government agencies also appraise some of the smaller size State projects in certain sectors.

8.20 The State Planning machinery would need to be strengthened in the areas where deficiencies exist with regard to their role in supervising project formulations, drawing up of the Plans, and also the monitoring and implementation of the Plan projects. It would be desirable that the State Planning agencies co-ordinate effectively with the Planning Commission in respect of formulation of the Five Year Plans, as well as the implementation of the Plans.

8.21 Planning at the local level has an important role to play in investment decisions in agriculture, minor irrigation, animal husbandry, fisheries, marketing and processing, cottage and small scale industries, local infra-structure and social services including water supply, housing, health, education, sanitation and local transport. During the Sixth Plan, planning at the block level will be further strengthened. The programmes will be made area specific at the grass root level based on local endowments and potential for growth and fuller employment. It is proposed to formulate comprehensive block level plans and identify programmes for development of the area which aim at making full use of local endowments. The object of these plans will be to integrate various programmes for optimal utilisation of local endowments with plan objectives and local needs.

8.22 The block level plans would need to be in harmony with the District and State Plans. The investment decisions at the local level would need to take into account the effects of Central/State Plans in that area and of neighbouring localities. The block is intended to be the primary area for local planning. As further experience is gained on the nature of local resources and socio-economic factors, programmes will be refined through local planning. Area specific development programmes will help deal with the problems of regional imbalances and intra-regional variations. The area level planning project would, however, require specific skills and manpower resources and considerable delegation of powers to area planning bodies within a framework of guidelines formulated at the State level. The Central scheme for assisting the States for strengthening their planning machinery would be continued during the Plan period. Other State level agencies for promoting location-specific research and action plans should include State Councils of Science and Technology and of Environmental Protection. The State Land Use Boards should become effective.

PEOPLE'S INVOLVEMENT IN PLANNING AND IMPLEMENTATION

8.23 Apart from decentralisation of the administrative machinery and provision of adequate coordinating mechanisms at the local level, it will be necessary to ensure that at every stage of planning and implementation there is full participation and involvement of the people. Allocations of public funds for schemes in these sectors, whether by the Central or the State Governments are on the basis of certain patterns of funding designed to achieve the targets of the Plan. The selection of the specific tasks, however, is governed by local conditions and in assigning priorities it might be necessary to involve both the administration at the local level as well as the representatives of people particularly of the beneficiary groups.

8.24 The institutional mechanism for this purpose will need to be adapted to changing requirements. The Panchayati Raj institutions should be strengthened

in order to become institutions of democratic management of rural development both at the district and block levels. Some State Governments have already established systems where at the district level the development work is entrusted to an officer of the rank of the district magistrate and who acts as the chief executive of the Zila Parishad. The district and block level representative institutions will, however, have to give adequate voice in their affairs to the weaker sections of the society who are the major beneficiaries of the programmes of development. The welfare of women and their economic emancipation should receive special attention.

8.25 Special emphasis would need to be placed on involving the youth. More imaginative ways will need to be devised to tap the potential and idealism of the youth for constructive action. For instance, while pursuing household approach to poverty elimination, it would be possible to induce active participation of the youth. Similarly it would be desirable to encourage villagers to obtain energy (from decentralised sources) as well as plant nutrients from organic and biological sources in a sustained manner and partially to solve the problems of rural unemployment and under-employment. Involvement of people for this purpose will be achieved by persuasion, mass education, consultation, demonstration and by assisting peoples' own organisations for development. Student organisations like NSS and NCC and non-student youth organisations like Yuvak Mandals and Nehru Yuvak Kendras should be assigned specific tasks in each block.

PERSONNEL POLICIES

8.26 Personnel policies require careful review at all levels so as to bring about a proper match between job requirements and the competence and dedication of the personnel employed for implementation. In this context, personnel policies relating to staff posted in tribal, hill and backward regions require attention so that competent staff can be attracted and retained in such regions. Personnel policies should also provide for getting specific jobs done in such areas through individual and institutional consultations and through part-time employment of local people. For developing special institutions in neglected regions like agricultural, medical, engineering colleges, etc. consortia of Universities with commitment to seconding competent staff members for 2 or 3 years or until locally trained staff become available, will have to be formed. The aim should be to maximise the benefits from existing institutions for accelerating the development of backward areas. Another key area in personnel policies is the need for merit promotion systems, which can help to retain persons doing good work in the same job. Considerable mobility takes place among professionals just for the sake of salary improvement. Conversely, those who are misfits in key positions should be shifted before irreparable damage is done to the programme. While it is difficult to build good enterprises and organisations, they can be destroyed in no time by ineffective or corrupt management. Personnel policies should not be so

rigid as to impair project implementation. Decentralisation of powers down the line will also have to be insisted upon if a sense of identification is to be fostered in all staff members.

8.27 The Five Year Plans have provided for considerable investments in the rural, tribal and other neglected areas. There were, however, lags in the utilisation of plan outlays in these mainly because of lack of adequate administrative framework. A major difficulty has been the disinclination of government employees to be posted in those areas, due to lack of basic amenities like housing, education, health and communication and in some cases even security. Those posted tend to leave behind their families in the urban areas where facilities are available and live alone in the place of posting; inevitably the job suffers. Thus posts in these areas either remain vacant for long periods or they are manned by unwilling persons who do not give of their best. The fact is that the present personnel policies do not provide adequate incentives for taking up postings in rural and tribal areas. What is required is a package of monetary and non-monetary incentives for attracting the right type of personnel in the rural and tribal areas and some administrative restructuring. All the rural and tribal areas do not lack the facilities uniformly and therefore the incentives will have to be graded taking into account factors like remoteness from urban centres, inaccessibility, unhealthy surroundings, lack of residential accommodation, medical, educational and entertainment facilities. A special group had made a number of recommendations with particular reference to the needs of tribal and backward areas and these have been sent to the State Governments by the Home Ministry for implementation. These recommendations could be made applicable to remote rural areas lacking in housing and other facilities. Other incentives can also be provided e.g., weightage for service rendered in rural and backward areas while considering secretariat posting, rent-free accommodation, certain preferences to wards of such employees in hostel accommodation in urban areas, additional travel allowance combined with education of children and the like.

PROGRAMME EVALUATION

8.28 The Programme Evaluation Organisation which was set up in 1952, has been carrying out studies particularly of programmes affecting large sections of our population, such as small and marginal farmers, rural artisans, agricultural labourers, women and children. The feed-back from such evaluation studies is of crucial importance for mid-course corrections in the operational framework so that the desired objectives are achieved. Although, an evaluation machinery exists both at the Centre and in almost all the States, the need for improving the machinery so as to promote concurrent and continuing evaluation is much greater than what available resources permit. A Committee on Review and Strengthening of Central and State level Evaluation Organisations has made recommendations of far-reaching importance in developing evaluation work. One of its recommendations is that the programmes which account for a major

share of plan allotment of funds should be evaluated every year. During the Sixth Plan, efforts would be directed to strengthen the State as well as the Central level evaluation organisations and locate the areas in which joint evaluation studies should be conducted. Efforts would be strengthened during the Plan period to constantly and effectively use the findings of these evaluation studies in formulating the development projects. Full use will be made of the scope available for involving appropriate consultancy organisations in such work.

8.29 The strengthening of the evaluation organisations at the Centre and in the States to a large extent would depend upon the training and skill formation of the personnel for evaluation of a variety of developmental projects. There is need for a suitable training strategy so that the right type of training may be imparted to improve the quality of evaluation. There is ample scope, for example, for improvement in skills needed in methodological aspects such as designing, field work, tabulation, analysis, interpretation and reporting which are basic to an evaluation study. The evaluation personnel have been functionally categorised into three levels *i.e.*, senior supervisory and junior levels and there is need for suitable training programmes for each of these categories.

8.30 As a follow up of the recommendations of the Committee, the Central Programme Evaluation Organisation has already organised four Regional Workshops for the senior level evaluation personnel and two training programmes for the middle level. During the Sixth Plan period, it is proposed to train all the evaluation personnel numbering about a thousand in the country. The strategy during the Sixth Plan would thus be to strengthen the evaluation capacity both qualitatively and quantitatively at the Centre as well as in the States.

8.31 The total outlay for strengthening of the Programme Evaluation Organisation at the Centre including its training and activities would be Rs. 2 crores during the Sixth Plan. In the States and Union Territories also, some outlay has been proposed to strengthen their evaluation machinery during the Sixth Plan period.

INFORMATION SYSTEM, DATA BASE FOR PLANNING

8.32 At present the data base for planning at different levels according to specified objectives is inadequate and information systems required for appropriate formulation of plans in different sectors have not been evolved in all the concerned organisations. During the Sixth, Five Year Plan, steps will be taken to improve the data base for planning and policy making. The National Informatics Centre under the Department of Electronics is developing computer based information systems for data storage, retrieval and processing of certain Government Departments and sectors. During the Sixth Plan period, Management Information Systems would be established in all the Central Ministries and the State Governments

would be helped to develop similar systems for their use.

8.33 Timely and reliable statistics are a basic prerequisite for effective planning. Although, the statistical system in India has made strides since the inception of planning in the country, it has not always been possible for the statistical system to keep pace with the ever-growing requirements in many areas. A recent review has revealed that the data base is still rather weak in some of the important sectors and the information at present is not detailed enough for undertaking purposeful action in respect of such vital issues as price control, removal of poverty, eradication of unemployment, reduction of social and economic disparities, etc. There is also an urgent need for greater vigilance in maintenance of accepted standards in collection, processing and dissemination of statistics.

8.34 The development plans for the system have generally been guided by the inadequacies in the data base of the economy as identified by the Data Improvement Committees, National Commission on Agriculture, Committee on Regional Accounts, seminars organised by the Indian Econometric Society, National Seminar on Social Statistics and the Conference of Central and State Statistical Organisations. A Committee set up by the Government of India in July 1979 to review the National Statistical System has made a number of recommendations to strengthen the existing statistical system and re-structure it so that it could meet adequately the requirements of planning and decision making. During the Sixth Plan (1980—85) efforts will be made to implement the recommendations of this Committee after careful consideration.

8.35 In the Central sector, the major tasks to which attention will be given are conduct of economic census and follow-up surveys for collecting vital information pertaining to unorganised segment of the non-agricultural sector, survey of urban non-manual employees, providing estimates of national sample surveys at regional and lower levels, increasing the sample size of sample registration system with a view to providing reliable estimates of vital rates at the State level, electronic processing of data collected under various censuses and national sample surveys, setting up a data bank etc. Programmes will also be undertaken to develop the methodology for collection of data on wholesale and retail trade and improve the statistics of services sectors. The State Governments will undertake development programmes aimed at strengthening the statistical machinery at lower levels, collection of data on prices and wholesale trade, training of statistical personnel and setting up of data banks etc.

8.36 An allocation of Rs. 95.44 crores has been made under the head 'Other social surveys' for the development of a sound data base at various levels to provide a more scientific basis for plan formulation and evaluation. Allocation for development of statistics have also been provided under the respective sectoral heads, *e.g.*, for Agricultural Statistics, under 'Agriculture'.

TRAINING

8.37 The training programmes for personnel engaged in developmental activities would be further strengthened during the plan period. The Central scheme initiated in 1976-77 for Government and project personnel would be continued during the Sixth Plan period with a provision of Rs. 2.28 crores.

NATIONAL EFFICIENCY DRIVE

8.38 The Sixth Plan aims at a higher growth rate in all sectors of the economy. This is both possible and essential in the national interest. Improved

management of all projects, appropriate reorganisation of organisations dealing with anti-poverty programmes and diversification of employment opportunities in rural areas will have to be achieved speedily, if the social and economic objectives of the Plan are to be realised.

8.39 A national efficiency drive is the need of the hour. Attention to detail in project formulation and implementation and promotion of a work culture where there is pride in performance are the twin instruments of achieving efficiency. This is the task to which everyone involved in implementing the Sixth Plan should give utmost attention.

AGRICULTURE AND ALLIED SECTORS

The agricultural growth pattern during the Sixth Plan period has to take into account the immediate as well as the long-term needs of agricultural commodities both for domestic consumption and for export. The highest priority will be accorded to bridging the gap prevailing between actual and potential farm yields even at current levels of technology through the removal of the constraints responsible for this gap. The untapped yield reservoir is quite high in most of the farming systems in the country and thereby serves as a source of optimism for achieving accelerated growth. Both agriculture and fisheries will have to receive concurrent attention through the development of appropriate packages of technology, services and public policies, which can help to enhance production from the soil as well as the sea and thereby improve the income of farmers and fishermen. For achieving greater efficiency of farm management, attention to non-monetary inputs is as essential as to cash inputs.

9.2 The pathway of agricultural advance so far adopted in the developed nations as well as in parts of India relies heavily on increasing consumption of non-renewable forms of energy. It is obvious that finite sources cannot be exploited in an exponential manner. Agriculture, being the most important solar energy harvesting enterprise, is an invaluable source of renewable wealth. However, even this resource will become non-renewable if damage is done to basic life support systems like soil and water and the environment. The highest priority should hence go to the protection and improvement of basic agricultural assets. Genetic diversity in plants, animals and fish will have to be conserved and studied with regard to the use of genes present in such collections.

9.3 The agricultural strategy during the eighties will place increasing emphasis on integrated approaches to pest control, nutrient and energy supply, and also to production, conservation, consumption and trade. The triple alliance of weeds, pests and pathogens will have to be fought through an appropriate blend of genetic, agronomic, biological and chemical methods of pest control. In the area of nutrients supply, organic and biological sources of fertilisers will have to be harnessed in addition to increasing the supply of mineral fertilisers. Phosphorus management and recycling require special attention since phosphorus is a non-renewable resource. The care and maintenance of soil health as well as plant and animal health will have to be carried out with the help of the

local community. Integrated energy supply systems will have to be based on the use of solar and wind energy, biogas, village wood lots in addition to electricity and petroleum products. These systems will also be so designed as to reduce energy losses.

9.4 Three major groups of factors influence stability of production—weather, pest epidemics and public policies. Pest epidemics can be kept under control through proper pest surveillance and plant protection measures. Public policies in the area of agrarian reforms and pricing, marketing and distribution can also be tailored to stimulate production. Weather aberrations are, however, beyond human control. Therefore, it is essential that contingency plans are developed, particularly in areas which are prone to drought and floods for meeting different weather probabilities. The overall strategy for minimising the adverse impact of aberrant weather will be: (a) to introduce crop life-saving techniques, (b) to popularise alternative cropping patterns based on weather conditions; and (c) to introduce compensatory production programmes in irrigated areas and in off-seasons. Steps will have to be taken during the Sixth Plan period to systematise efforts in the field of disaster management with regard to human, animal and plant populations.

9.5 The Sixth Plan will thus present many challenges and opportunities. Since food occupies the first place in the hierarchical needs of man, we can neglect agriculture only at the risk of economic instability.

INDIAN AGRICULTURE IN THE EIGHTIES

9.6 Starting from the beginning of this century, three major phases can be identified in our agricultural evolution. The first phase from 1900 to 1947 was marked by a near stagnation in farming as is clear from a growth rate of about 0.3 per cent per annum achieved in agricultural production during this period. Phase-II extending from 1950 to 1980 has been marked by considerable advances in the process of modernisation of agriculture, thanks to the steps taken in the development and spread of (a) technologies based on scientific research; (b) wide range of services; and (c) public policies in land reform, pricing, procurement and distribution. As a result, agricultural production grew at an annual compound rate of 2.8 per cent during 1967-68 to 1978-79. The third phase which has begun in the eighties will be marked by the need for greater attention to mar-

keting and trade, and to institutional frameworks which can help to minimise the handicaps of small and marginal farmers and maximise the benefits for intensive agriculture offered by small holdings.

9.7 The agrarian structure of our rural economy is such that small and marginal farmers cultivate nearly 73 per cent of the operational holdings in the country although they handle only about 23 per cent of the cultivated area. Their total earnings from farming alone hence tend to be small and, in unirrigated areas, also uncertain. The long-term answer to this problem does not lie in steps like writing off loans and fixation of procurement prices at levels which will further reduce the already low levels of consumption of farm products. It is, therefore, proposed during this Plan to introduce a 3-pronged strategy to improve the economic well-being of small and marginal farmers and share croppers:

(1) Improving the productivity and income from small holdings through detailed advice on land and water use based on the following 4 criteria:

(a) *Ecology*: Integrating ecological considerations in land use patterns which would help to avoid the problems of waterlogging, salinisation, erosion, etc. in irrigated areas and to elevate and stabilise production in un-irrigated areas through water harvesting and conservation. Also, contingency plans to suit different weather probabilities will be prepared and introduced according to seasonal conditions.

(b) *Economics*: Since most of our farmers have low input purchasing and risk taking capacity, it is essential that the land use patterns suggested both in irrigated and unirrigated areas should be based on considerations of costs, returns and risks. Also, marketing opportunities will have to be carefully studied and appropriate advice given to farmers, so that their efforts are adequately rewarded. The economic issues involved in the entire production-trade-consumption chain will have to be gone into.

(c) *Energy*: The land and water use pattern should be based upon the optimum utilisation of the available forms of renewable and non-renewable forms of energy.

(d) *Employment*: The aim of land use should be to optimise the opportunities for gainful employment and to make it possible for introducing labour diversification and subsidiary occupations for landless labour families. State Land Use Boards assisted by a Central Land Use Commission will pay priority attention to the reorientation of current patterns of land use on the above lines.

(2) Farmers' own organisations for storage and marketing particularly of perishable commodities will be promoted since this will help to protect small and marginal farmers from exploitation by middlemen. Such organisations would be provided by Government with appropriate support in the areas of training and trade.

(3) Diversification of opportunities for income through the introduction of subsidiary occupations under IRDP as well as lean season employment through NREP will be undertaken so as to enhance and stabilise rural incomes.

9.8 In the eighties, public policy measures which can help to stimulate production by small and marginal farmers as well as consumption by the rural and urban poor will have to be developed carefully. *Ad-hoc* measures introduced without a proper action-reaction analysis as temporary palliatives, may in the long run do more harm than good. Since agriculture is a State subject, State Governments have a particularly important role as well as responsibility in this respect.

OBJECTIVES AND STRATEGY

9.9 The aims of the agricultural programmes during the Sixth Plan period would be:

- (a) to consolidate the gains already achieved;
- (b) to accelerate the pace of implementation of land reforms and institution building for beneficiaries;
- (c) to extend the benefits of new technology to more farmers, cropping systems and regions and to promote greater farm management efficiency through concurrent attention to cash and non-cash inputs;
- (d) to make agricultural growth not only an instrument of maintaining an effective national food security system but also a catalyst of income and employment generation in rural areas;
- (e) to promote scientific land wateruse patterns based on considerations of ecology, economics, energy, conservation and employment generation; and
- (f) to safeguard the interests of both producers and consumers by attending to the needs of production, conservation, marketing and distribution in an integrated manner.

9.10 In realising these aims we have to take cognisance of the basic socio-economic parameters governing agricultural growth during the eighties which are the increasing fragmentation of land holdings, imbalances in the diffusion of improved technologies in different areas and in the relative rate of growth of different crops.

9.11 The position with regard to the average size of a farm holding in all the States of India shows a trend towards a gradual reduction in the size of an operational holding (Annexure 9.1). Land consolidation has not taken place in many of the States in the country. Watershed management in un-irrigated areas, command area development in irrigated areas

and catchment area management in hilly regions which are the triple approaches to scientific water conservation and use have been rendered difficult due to fragmentation of holdings and absence of cooperative management.

9.12 An urgent pre-requisite for accelerating agricultural advance is the need for institutional arrangements for assisting small and marginal farmers to maximise the opportunities offered by a small farm for intensive agriculture and minimise the handicaps arising from the absence of land consolidation and levelling and the inability to invest on inputs and face risks. The major steps proposed to be taken during the plan period to help small and marginal farmers and share-croppers, both in irrigated and rainfed areas to derive advantage from improved technology, are the following:

- (a) Extend the benefits envisaged under the Integrated Rural Development Programme to farming communities in all the blocks of the country (this has already been done with effect from 2 October, 1980);
- (b) Help to organise farmers' agro-service centres which can provide relevant services in the area of tillage and farm operations, water conservation and management, plant protection, processing and marketing;
- (c) Promote group management of soil, plant and animal health care without affecting the individuality of farm holdings;
- (d) Organise effective input supply services including credit;
- (e) Provide the necessary assistance in the areas of post-harvest technology, particularly with regard to marketing through the rural godowns project; and
- (f) Develop further on-going crop/animal credit insurance schemes to insulate farmers from losses due to reasons beyond their control.

9.13 Imbalances in regional development have partly resulted from disparities in progress in agriculture in different parts of the country. An analysis of the co-efficient of variation in per capita State incomes between 1960-61 and 1975-76 indicates that the maximum increase in disparities in per capita income occurred due to differential progress in the agricultural sector. States which have improved the relevant position with respect to per capita income have done so largely through their improved position with respect to agricultural incomes. The sharp contrast in productivity improvement in crops in different regions can be seen from the sharp differences in the progress made in increasing rice yields in different regions of the country since the introduction of the Intensive Agriculture District Programme in 1961. While the progress is striking in North-West India, there has been a near stagnation in rice yield

in Eastern India. Thus the crucial role of agricultural progress in minimising variations in per capita income and regional imbalances in economic development is obvious. It is, therefore, proposed to initiate during the Sixth Plan period the following steps to bring about more rapid development of agriculture in the areas with a large untapped potential:

- (a) It is proposed to strengthen further the research network in relatively less developed areas and to promote location-specific research. In addition to the 21 existing Agricultural Universities, 2 new Agricultural Universities—one in the Jammu and Kashmir State and one in the South Bihar region will be established. A national grid of co-ordinated projects will cover tribal and all relatively less developed regions. The ICAR Research complex in the North Eastern Himalayan region and the agricultural colleges in Nagaland and Manipur will be greatly strengthened.
- (b) The "Training and Visit System" of extension will be introduced in all the less developed areas in an appropriate form so that farming families are given adequate extension support. Mobile training teams will be organised where necessary. Additional Krishi Vigyan Kendras will be established in tribal, hilly and backward areas.
- (c) In ecologically handicapped regions like desert, drought prone and flood prone areas, suitable programmes for minimising the adverse impact of droughts and floods will be introduced. Steps will be taken to restore the damage done to fragile hill ecosystems and to contain salinisation, alkalinity and other processes of desertification (*i.e.* all man-made processes which either destroy or diminish the biological potential of land).
- (d) As more farmers begin to have products to sell in the market, their interest in scientific agriculture can be sustained only if there are opportunities for remunerative marketing. Therefore, the marketing infrastructure in the neglected areas will be developed in such a manner that both producers and consumers are benefited. Special attention will be paid to the storage, processing and marketing of horticultural and other perishable materials.

9.14 With regard to imbalances in the relative growth rate in different crops, the most urgent requirement today is the acceleration of the growth rate in the production of pulses and oilseeds. Poor plant population, inadequate plant protection, cultivation in marginal and un-irrigated areas under conditions of energy deprivation and lack of producer-oriented marketing are some of the factors which hinder the progress in improving the production of

pulses and oilseeds. It is proposed to introduce corrective measures and to popularise the cultivation of these crops in all irrigated farming systems. Plant protection will be organised on an area basis, and quality seed production will be greatly expanded. For achieving a rapid spread of improved technology, suitable clusters of villages in appropriate blocks will be developed into "pulses and oilseed crops villages."

9.15 Agriculture is an instrument for income and employment generation; when productivity improves, it would be possible to generate more diversified opportunities for employment. More and more workers can be involved in the post-harvest phases of agriculture and in agro-industries. It is proposed to introduce a systems approach to agricultural production, conservation, consumption and trade. Although programmes in these areas are being handled by different Departments and Ministries of Government, functional linkages will be brought about so that all the requirements of the production-consumption chain are looked into in an integrated manner. In order to enable the farmers to optimise their income from small holdings, advice on land use planning will be given by the State Land Use Boards assisted by a Central Land Use Commission which will be set up during the Plan period. The Land Use Boards and the Central Land Use Commission will try to assist farmers in bringing about desired improvements in land and water management based on considerations of ecology, economics, energy requirement and employment generation. The revised terms of reference of the Agricultural Prices Commission already stipulate that pricing of commodities could be used as an important instrument for bringing about desired changes in land use. Since land is individually owned, Government can only promote scientific land use through appropriate packages of incentives and disincentives.

9.16 Besides growth, the Sixth Plan will also lay stress on building a National Food Security System. Since there is no immediate prospect for the emergence of an International Food Security System, it is imperative that a National Food Security System is developed in the country. The National Food Security System will have the following major component programmes:

(a) *Ecological Security*: Any damage to the principal life support systems, such as soil and water, flora and fauna, would undermine the renewable base of agricultural wealth. Therefore, there is need for greater attention to all problems relating to soil and sea erosion, rising water table and the incidence of salinity and alkalinity and various other forms of desertification. The Central and State Land Use Boards will have to ensure that the long-term and short-term goals of agricultural production efforts are in harmony with each other.

(b) *Technological Security*: Growth with stability should be the major aim of technology development. In areas like the Punjab, which have already reached

high levels of production, there is need for ensuring the stability of production through improved soil and plant health care and post-harvest technology. In areas with untapped production potential, knowledge of the constraints responsible for the difference between potential and actual farm yields will have to be gathered through an inter-disciplinary constraints analysis. Above all, technologies for minimising the adverse impact of aberrant weather on agricultural production and for fighting the triple alliance of weeds, pests and pathogens will have to be developed for all major farming systems and farming regions.

(c) *Building grain reserves*: A minimum grain reserve of 15 million tonnes has to be maintained. In addition, all losses in storage both in rural and urban homes and in the fields and threshing yards should be minimised through an intensification of the "Save Grain Campaign". A national grid of rural storages will be established both for perishable and non-perishable commodities.

(d) *Social Security*: The availability of purchasing power in the hands of poor is as important as availability of food in the market. The employment generation programmes and particularly the National Rural Employment Programme should help all families to acquire the wherewithal to purchase food.

(e) *Nutrition education*: Several nutritional problems like vitamin 'A' deficiency leading to blindness, iron anaemia, etc. can be easily eliminated through suitable educational, horticultural and intervention programmes. The National Food Security System will be complete only when, all avoidable nutritional disorders are eliminated.

(f) *Stability of prices*: Prices of agricultural commodities exercise a dominant influence on the behaviour of the overall or general price level. Agriculture accounts for nearly half of the national income. Several of the essential articles of mass consumption such as foodgrains, edible oils, sugar, gur and khand-sari, cloth, tea and coffee, fruits and vegetables which account for a substantial weight in the cost of living index, are agriculture based. Agriculture and agricultural based products also account for more than half of the total weight in the wholesale price index. Apart from the fact that there exist imbalances in the demand and supply of agricultural commodities which are specially pronounced in case of pulses and oilseeds, the output of agricultural commodities is subject to year to year fluctuations. As the demand for these essential commodities is relatively inelastic, marginal rise or fall in their output leads to disproportionate variation in their prices specially in years of bad crop. Past experience suggests that relative stability in general price level has more often coincided with years of good harvest and, on the other, the inflationary pressures have more often been triggered by fall in agricultural output and consequent rise in agricultural prices. Agricultural production strategies in the Sixth Plan should hence be based on the need for increasing the production of commodities in short supply and thereby helping to maintain price stability.

TECHNOLOGY

9.17 The foundations of agricultural growth lie ultimately in advances in the technology used at the farm level. The basis for these technological advances lies in the system of agricultural research which has contributed very substantially to agricultural development during the planning era. Many of the fruits of agricultural research have been successfully transmitted to the field level but there are certain gaps which need to be filled. In the Sixth Plan period, apart from the general support for the system of agricultural research, special emphasis will be placed on dryland farming, scientific land and water management, recycling of organic matter and energy management. The approach in this plan with regard to agricultural research and technology is dealt with below.

RESEARCH AND EDUCATION

Research infrastructure

9.18 The Indian Council of Agricultural Research is an apex body at the national level with principal mandate to promote, aid and coordinate research in the areas of agricultural animal sciences, fisheries and agricultural engineering. The Council has also the unique feature of promoting higher agricultural education including extension education.

9.19 The triple function of research, education and extension education is implemented through 34 Central Research Institutes, the National Academy of Agricultural Research Management, five Project Directorates and 54 All India Coordinated Research Projects under the Council and 21 Agricultural Universities located in the State Sector. A national grid of cooperative research has thus been established in which the role of Central Institutes and the State Agricultural Universities, as equal partners, has been well-defined. The system aims to achieve maximum complementarity of resource use. With a view to strengthening mission-oriented research, National Research Centres with eminent scientists are to be established during the Sixth Plan period on the one hand and, on the other, a National Agricultural Research Project has been started to enhance capabilities of Agricultural Universities to do location-specific research in each of the agro-climatic zones.

Agricultural Universities

9.20 Starting with the establishment of Pantnagar University in 1960, a number of Agricultural Universities have been set up to bring about an integrated approach to education, research and extension, and for this purpose the responsibility of research has been transferred to the Agricultural Universities. However, in this process, the links between research and extension have tended to become weak in some cases. Therefore, during the Sixth Plan period, linkages between development departments and Agricultural Universities will be strengthened and Agricultural Universities will play a leading role in organising farmers' fairs, extension training and other "lab to land" programmes. The proposed new Agricultural University in Jammu and

Kashmir should deal with problems of temperate fruits, sheep and goat husbandry, sericulture, silviculture and relevant aspects of high altitude farming. The Agricultural University in South Bihar should specialise in tribal professions such as sericulture, lac-culture, horticulture, forest farming and allied activities. Such concentrated attention in relevant areas will enhance the impact of Agricultural Universities on the rural economy.

9.21 The Agricultural Universities have to act as catalysts and play a crucial role in plan implementation by providing appropriate R & D support for increasing and stabilising production and achieving the desired growth in agriculture. Universities' research would be oriented to develop the needed technology for agriculture, animal husbandry and fisheries programmes. The education and training programmes would also be reorganized to train the required number and high quality of students in different disciplines. Efforts would be made for energy harvesting from renewable sources by all possible means as agriculture today is an energy intensive process. Technology will have to be evolved for efficient use of soil and water so that investments made on irrigation and fertiliser projects benefit more farmers. In the area of post-harvest technology and marketing the Universities would take appropriate initiatives. The universities also should establish perspective planning cells and give lead in planning for better tomorrow. Agrometeorological research will be strengthened so that both early warning and timely action can be promoted when seasonal conditions become unfavourable. The strategy and priorities should be oriented to fulfill the mandate specified in the Sixth Plan.

Human Resource Development and Utilisation of R & D Manpower

9.22 With the increased need for field-oriented and problem-solving research it has become increasingly difficult to implement many of the research projects/programmes due to lack of competent technical manpower and specialists. The ICAR is therefore promoting advanced Centres of Studies in selected areas relevant to our agricultural development in order to train competent scientists. The Agricultural Universities and ICAR institutes have a special responsibility to shoulder in this regard. The problem is particularly acute in tribal and backward areas. A Comprehensive Project of additional compensatory benefits has, therefore, been sanctioned for scientists of the Council to attract them to such neglected areas. A Programme of Human Resource Development has also been started to provide financial assistance to deserving students from tribal and backward districts for higher studies upto post-graduate level, so that they may go back to their areas and help develop them. The educational programmes in the agricultural universities are being strengthened to improve their quality and to make them increasingly relevant to the developmental needs of the country. Higher educational programmes to train the required manpower for research in different branches will receive special attention during the Sixth Plan period. The Krishi Vigyan Kendra programme (KVKs) started towards the end of the Fourth Five Year Plan has

developed into an important means of filling the gap in the technical training programmes for transfer of technology in different branches of agriculture. The KVKs will be further strengthened during the Sixth Plan period. The need for imparting better managerial skill to research scientists was recognised when the National Academy for Agricultural Research Management (NAARM) was set up at Hyderabad during the Fifth Plan period. This Academy will be fully developed during the Sixth Plan period to train the new entrants and in service personnel at various levels in ICAR institutes, Agricultural Universities and in States and Central Government development departments. Improved management of both Agricultural Universities and ICAR institutions is essential for enhancing the per capita output of scientists/teachers. In this task NAARM has a key role.

Research Priorities and New Thrust

9.23 During the last three decades, the major objective of agricultural research and development was to achieve self-sufficiency in food. During the eighties, the goal would not only be to further improve productivity and stabilise and diversify production, but also to generate rural employment and enhance consumption by increasing the purchasing power of the people. High yield-cum-high stability production system will have to be developed, ensuring maximum utilisation of available resources of soil, water and sunlight. Land-use planning, water-shed management and farming system orientation to R & D efforts to maximise returns and minimise risks would be some of the approaches for efficient utilisation of resources. Special attention will be paid to strengthen research in oilseeds and pulses to improve their production potential and to develop location-specific technology so as to help increase production of these crops by about 50 to 100 per cent in the 1980s. Maximisation of biomass production, partitioning it along economically remunerative path-ways, recycling of organic wastes and efficient transformation of all forms of cultural energy (i.e. all forms of energy introduced by man) into food energy would be some of the complementary objectives. Emphasis will also be laid on strengthening research on vegetables and horticultural crops.

9.24 Research in energy management in agriculture would be a new area to receive concerted attention. Efforts to harvest as much solar energy as possible through agro-physical devices and biological systems will be intensified. Input utilisation efficiency would form an important component of energy management system. This would include water-use efficiency, fertiliser-use efficiency, etc. A massive effort will be directed towards harnessing organic and biological resources of nitrogen and developing technologies for recycling of phosphorous, a non-renewable source. Integrated pest management would be another direction of future research to reduce both cost and hazards of chemicalisation of our agriculture. Studies on dynamics of labour availability and costs would be undertaken to determine the desirability extent and kind of mechanisation of agriculture. Identification of constraints responsible for the gap between the potential and actual farm yields and causes of slow technology diffusion in some areas, would continue to

be the prime concern. This would require more basic biological, agro-physical and socio-economic research.

9.25 Fishery research will have high priority to develop relevant technology for production, processing and marketing of both inland and marine fisheries. Animal production will receive special attention in dry farming and hilly areas. Silvi-pastoral system and agro-forestry programmes would be given attention since they are a source of feed and fodder for live-stock. Incentive prices will have to be ensured by developing marketing and trade on producer-oriented lines. Special programmes will be initiated to give export-orientation to agricultural production after fully meeting internal requirements. Technologies for intensive agriculture on small holdings will have to be developed and the mis-match between production and post-harvest technology will have to be eliminated. Thus the research programmes of the ICAR and Agricultural Universities would aim at consolidation, coordination and selectivity. Improvement in productivity in pulses, oilseeds and sugarcane, development of technology against pests and diseases, risk-distribution agronomy, post-harvest technology, nutrition research, agro-forestry and development of commercial and plantation crops for export purposes will be given priority. Emphasis in dry land farming would continue on evolving water conservation methods and contingency land and water use plans to stabilise production. Agro-meteorology studies will be augmented to develop more dependable crop-weather forecast. Remedying regional imbalances by paying more attention to agriculturally backward and less developed areas by involving mixed farming systems would be resorted to.

Areas of inter-agency Collaboration

9.26 Appreciating the need for inter-organisational collaboration, ICAR has established a number of inter-agency scientific panels to develop research programmes of mutual interest. These programmes involve, besides ICAR, agencies like the Council of Scientific and Industrial Research, Department of Science and Technology, Indian Council of Medical Research, Indian Meteorology Department, Indian Council of Social Sciences Research, Central Water Commission and the National Dairy Development Board. The projects cover a wide range of areas such as energy management, post-harvest technology, medicinal and aromatic plants, utilisation of farm by-products and agricultural wastes, problems of food storage/preservation and food toxins including pesticide residues, weather forecast and warning system, etc. Some of the prospective areas of collaboration are reproductive biology, biological and physiological plant processes, immunology, agro-meteorology, integrated rural development, etc.

9.27 In the area of international collaboration, the Council will take necessary steps, on the one hand, to benefit by acquiring latest technologies from the developed nations and, on the other, by sharing some of the technologies developed in this country with other developing countries. There is immense scope for technical cooperation among developing countries in agriculture since these countries have been in most cases the centres of origin of crop plants.

Bi-lateral and multi-lateral programmes will be continued so as to fill the gaps noticed in the past and to improve the managerial skills.

DRYLAND FARMING

9.28 Nearly 25 per cent of the total cropped area in the country is irrigated by various sources, and the balance continues to depend on rains. The rain fall patterns are erratic and the period of rainfall and the number of rainy days in different areas vary considerably. Even though the rainfed areas account for 75 per cent of the cropped area, their contribution amounts to only about 42 per cent of the total food-grains production. Almost the entire quantity of coarse grains and pulses as also most of cotton and oilseeds are produced in the rainfed areas. Wide fluctuations in production, thus, occur in these areas year after year and these fluctuations adversely affect the total production and agricultural economy of the country.

9.29 A Centrally Sponsored Scheme of Integrated Dry Land Agricultural Development was launched in 1970-71 in 24 pilot projects to test and demonstrate on a large scale the technology developed by the All India Coordinated Research Project for Dryland Agriculture under the ICAR. The technology offered to the farmers under these projects has proved that a significant increase in production of the dry land/rainfed crops can be achieved. A large number of field demonstrations conducted have also shown that the yields can be stepped up considerably on the farmers' fields. The Centrally Sponsored Scheme has since been transferred to the States Sector.

9.30 The Sixth Plan lays great emphasis on increasing agricultural production on dry land/rain fed arable lands. The efforts will be directed towards rain-fed/dry land farming on watershed basis. The programme will be flexible in approach to meeting the local needs. Areas with annual rainfall of 750 to 1125 mm will be covered under these efforts with some exceptions to meet specific local situations. In selecting such areas, availability of technical know-how based on research and development and recommendations for crop planning either from ICAR's dryland research centres or from Agricultural Universities will be relied upon. Also, areas having representation from tribal and scheduled classes of the society will be preferred in undertaking this programme.

9.31 A programme of propagation of water harvesting technology in medium rainfall areas will be introduced in order to conserve available moisture and utilise it for supplementary irrigation. The run-off of water collected into farm ponds, bundhies, etc. can be used in the following situations:

- (a) saving of standing kharif crops from drought effect;
- (b) providing pre-sowing irrigation for rabi crops;
- (c) extending the growing season for the benefit of long duration crops, *i.e.*, red gram, castor, etc., and

- (d) providing a minimal irrigation for growing vegetables, fruits or fodder in small areas.

SOIL AND WATER CONSERVATION

9.32 Soil and Water conservation programmes were initiated during the First Plan period and they have been progressively intensified over the successive Plan periods. Till 1979-80, an area of 23.40 million hectares was treated by various soil conservation measures against 18 million hectares at the end of Fourth Plan period (1973-74) and 21.7 million hectares at the end of Fifth Plan period (1977-78). During the First and Second Plan periods, soil conservation works mainly constituted of contour bunding and some afforestation of denuded areas. Under the Third Plan, a centrally sponsored scheme of soil conservation in Catchments of 13 major River Valley Projects was undertaken. This was extended to another 8 Catchments during the Fourth Plan period, and today this scheme is covering 21 Catchments. From the Fifth Plan onwards, soil and water conservation programmes are being taken up on water-shed approach. Other significant achievements of the previous Plans include the setting up of the All India Soil and Land Use Survey Organisation and State Land Use Boards to take an overall view of the land use, conservation problems, etc. Thus, the organisational capabilities for undertaking this programme have been strengthened and also augmented in most of the States.

9.33 According to available estimates, substantial areas of land in the country are affected by soil erosion or land degradation. The area so far covered by soil conservation measures is only 23.40 million hectares. Therefore, there is a vast area yet to be covered. Small water-sheds with an area of 1000—2000 hectares, treatment of which is practicable and manageable, will have to be increasingly taken up during the Sixth Plan period. There is also need to evaluate the results for assessing the effectiveness of various soil conservation measures and, with this in view, continuous monitoring of the programme at various stages of implementation will be very essential.

9.34 Considering the magnitude of the problem of land degradation, its regional and inter-State ramifications and high national priority accorded to tackle it, the Sixth Plan aims at a target of an additional 7.1 million hectares on the base of 23.4 million hectares. Adequate outlays have been made in the State Plans for implementing this programme. The Centrally sponsored schemes of soil conservation in the Catchments of River Valley Projects which at present cover 21 catchments will be continued in the Sixth Plan. A target of 3 lakh hectares is to be covered by this scheme. Another centrally sponsored scheme of integrated water-shed management in the Catchments of 8 Flood prone Rivers of the Indo-Gangetic Basin will also be taken up under the Sixth Plan. This would involve adoption of an integrated approach by combining water shed management up-stream with engineering and structural methods of diverting and controlling the flow of flood water downstream. The work of survey and investigation of the catchment

areas will be concurrently taken up for preparation of detailed water-shed management plans so as to form a sound base for integrated action programme. This programme will have a target of 5.5 lakh hectares for the period 1980—85.

9.35 Benefits of soil conservation programme accrue in the shape of development of land as also creation of employment opportunities. These benefits flow to scheduled castes/tribes particularly where these programmes are implemented in areas pre-dominantly inhabited by them. Particular mention may be made of the scheme for control of shifting cultivation which is exclusively for the benefit of tribal people. In the case of other schemes, nearly 10—20 per cent of the total investment is for the benefit of Scheduled Castes/Tribes.

ORGANIC RECYCLING

9.36 In India we have large quantities of biomass produced by our plant and animal systems, whose proper economic utility is not fully recognised. The biomass production under the tropical conditions is far more than under temperate conditions. It is estimated that about 1000 million tonnes of organic wastes in the form of crop residues and another 300 to 400 million tonnes of cattle dung and animal dropping are available annually in the country. These materials contain approximately 6 million tonnes of nitrogen, 2.5 million tonnes of phosphate and 4.5 million tonnes of potassium. Even if a significant portion of these plant nutrients are efficiently recycled, not only our agricultural economy would improve but also crop land would become much better. It is estimated that the total rural compost, which could be prepared from these rural wastes, would be about 50 million tonnes; similarly urban wastes could also contribute about 15 million tonnes of compost. Besides, if the organic materials are utilised for biogas production, before the residue is used as manure, nearly 50 per cent of the rural domestic fuel requirements would be met. The utilisation of these natural manures in addition to chemical fertilisers is an important element in our agricultural strategy. Organic recycling not only helps in the beneficial utilisation of organic wastes but also helps to improve the environment of human habitat.

9.37 It is essential that organic recycling should be linked with improving the ecosystems. Organic recycling would depend upon the nature of the material, such as crop residues, tree wastes, weeds, urban and rural wastes, animal wastes including the dung, litter, droppings and carcasses, marine landings and sea weeds and their location and method adopted for their utilisation. While the organic residues of plants reach the soil and water sooner or later, the manner it is incorporated into cultivated soil and the values of plant nutrients contained therein would help in improving the dynamic equilibrium in soil-plant-animal relationship.

9.38 During the Sixth Plan period steps will be taken to use on a large scale the technology of com-

posting based on locally available materials, including the designing of simple and low cost composter for rural areas as well as economical big composter for urban areas. In addition, intensive research work will be conducted to improve the quality of the compost by enriching it with plant nutrients. Steps will be taken to use sewage and sludge on a large scale for soil productivity as well as for energy (biogas). Detailed investigations will be carried out to find out the reliable data on the availability of organic wastes and to conduct a comparative study of the various procedures used in the utilisation of these wastes for the production of fuel and fertilisers. Research will also be undertaken for designing of machines for processing of bio-mass available locally for chopping, pellet making, pyrolysis, gasification, etc. and for the production of oil, methane or methanol, etc. from the materials available locally. In view of the energy crisis and likely increase in the cost of inorganic fertilisers as well as their possible shortage, organic recycling will be given high priority during the plan period.

BIOGAS DEVELOPMENT

9.39 The energy needs of the country have been growing rapidly, both due to increasing population and also modernisation of our various human activities. The shortage of fossil fuel being felt all over the world has awakened us to look for renewable sources of energy. A recent survey of the energy needs and uses of the nation has brought out that in rural areas upto 80 per cent of the needs is met from fuelwood, cowdung and other organic materials, whereas in the urban areas the percentage is around fifty. This means that we are cutting down the valuable trees and plants to obtain the fuelwood and also burning the cowdung which would otherwise become high value organic manure to crop fields. Considering that there will be greater demand for fuel during the coming years, unless we take corrective steps, the present methods of cutting down the forest and burning the cowdung will increase to our dismay. While conservation of forests together with planting energy and fuel forests have to be intensified, more of economic use of cowdung to meet the fuel needs and the organic manurial requirements will have to be adopted. In this respect a massive programme for use of biogas in rural areas becomes important and urgent.

9.40 Biogas technology is based on the phenomenon of anaerobic decomposition of organic material, resulting in methane production which serves as a source of fuel for cooking, lighting, propelling engines, etc., and the residual organic matter as rich manure containing plant nutrients in a concentrated form. In India about 300 to 400 million tonnes of animal excreta is available as base for biogas production, besides bulk quantities of plant residues and other organic wastes which could also be mixed with the animal excreta for biogas production. It is estimated that if all these materials are utilised, about 70,000 million cubic meters of methane gas equivalent to about 160 million tonnes of fuelwood could be produced.

9.41 During the past few years some steps have been taken to popularise setting up of biogas plants in farm homes. So far about 75,000 family size plants and three or four larger community biogas plants have been set up in the country. The experience gained in this field so far is encouraging, rich and useful. It is desirable to conduct extensive R&D on biogas. Studies should be conducted on the improvement of the efficiency of biogas plants by pursuing research on microbiology and biochemistry of fermentation so that greater quantity of biogas and better quality of manure may be obtained from them. Extensive research is needed to explore the possibility of large scale and economic use of organic wastes as a source of biogas and manure, especially to develop suitable strains of methane producing anaerobic bacteria from these materials. In addition, investigations would be performed for the enhancement of the efficiency of biogas plants in cold climatic conditions and for designing of biogas plants with low cost technology from the materials available locally. For popularising biogas plants, further steps will be taken to establish suitable organisational infrastructure, to make adequate arrangements for post-installation services and to perform extensive extension work. Considering the various advantages obtained through biogas plants, including less expensive renewable source of energy for cooking and lighting, etc., improved organic manure, better sanitation and better conservation of natural resources including a reduction in felling of trees, a massive biogas development programme to set up about one million family size plants and 100 community plants during the Sixth Five Year Plan period is contemplated.

INPUTS AND SERVICES

9.42 Agricultural production requires a variety of inputs and services for sustaining and expanding production-fertilisers and manures, improved seeds, plant protection chemicals and modern implements and machinery. The targets with regard to these inputs and for the extension of irrigation (which is dealt with in Chapter 10) are indicated in Table 9.1. Apart from these material inputs, a variety of other services like credit, insurance, storage, marketing and processing are also required. The measures that are proposed to be taken to increase availability of these inputs and services and to improve the delivery system are dealt with below.

Table 9.1
Targets of Inputs

Sl. No.	Item	Unit	Assumed base level 1979-80 (Actual/Anticipated)	Plan target 1984-85
(0)	(1)	(2)	(3)	(4)
I. Seeds				
1	Certified	Lakh Quintals	13.71	54.00
2	Foundation	Do.	0.92	3.00
3	Breeder	Do.	0.06	0.12
II. Fertilizer Consumption				
1	Nitrogenous (N)	Lakh tonnes	35.00	60.00
2	Phosphatic (P)	Do.	11.50	23.40
3	Potassic (K)	Do.	6.10	13.10
	Total N+P+K		52.60	96.50
III. Pesticides (Tech. grade material)			60.00	80.00
IV. HYV Programme			Million Hectares	
1	Paddy	Do.	13.60	25.00
2	Wheat	Do.	13.50	19.00
3	Maize	Do.	2.00	2.00
4	Jowar	Do.	3.00	5.00
5	Bajra	Do.	3.10	5.00
	Total HYV		35.20	56.00
V. Gross Cropped Area			Million Hectares	
			171.00	181.00
VI. Irrigation				
1 Minor Irrigation				
(a)	Surface water	Do.	8.00	9.00
(b)	Ground water	Do.	22.00	29.00
	Total		30.00	38.00
2 Major & Medium			22.60	28.20
	Total Irrigation (1+2)		52.60	66.20
VII. Command Area Development				
	Construction of field channels	Million Hectares	3.10	7.10
2	Land levelling and shaping.	Do.	1.00	2.00

NOTE:—State-wise break-up of Plan targets of HYV and fertilizers input are given in Annexure 9.5

FERTILISERS AND MANURES

9.43 Fertilizers and manures are a crucial input in agricultural production. Consumption of fertilizers in the country has been increasing steadily, thanks to better availability through increased domestic production and streamlined distribution coupled with measures taken by Government for increasing its demand. At the beginning of the First Plan, fertiliser consumption was only about 0.9 million tonnes of nutrients and in 1979-80 it was nearly 5.3 million tonnes. In 1974-75, there was a set-back in consumption of fertilizers due to the rise in prices. After recovering from this set-back, the consumption of fertilizers has continued to rise and the average annual increase during the three years ending 1978-79 was 20 per cent.

9.44 This increase has been facilitated by reduction in their prices. This appreciable increase has, however, led to increase in the burden of subsidy on the one hand and higher import bill on the other. The trend continues to be towards a more balanced use of different nutrients. There are, however, wide differences in per hectare consumption in different States, ranging from 2.04 kg. in Assam to 108.5 kg. in Punjab with the average for the country being about 31.5 kg. (nutrient) in 1979-80. Further, fertilizer consumption continues to be concentrated in about 60 districts (out of a total of 405), which account for about 50 per cent of the overall fertilizer consumption.

9.45 Weather conditions being favourable, consumption of fertilizers is likely to go up further during the Plan period. One important point to be borne in mind is in relation to efficiency of fertilizer use. It has been observed that a large percentage of nitrogen applied to low land paddy fields gets lost through denitrification, volatilisation and leaching. Losses also occur in respect of upland crops like wheat. There is, thus, need for improving the efficiency of fertilizer use.

9.46 The objectives of the Sixth Plan are (a) to have equitable and efficient fertilizer distribution system in the country accompanied with a proper infrastructural and organisational support; (b) to reduce regional disparities in fertilizer consumption; (c) to ensure that benefits of fertilizer use are received by all sectors of the farming community, especially the small and marginal farmers; and (d) to promote integrated nutrient supply system by better and increased mobilisation of organic and bio-fertilizer resources in order to supplement and optimise use of chemical fertilizers as also to maximise efficiency of fertilizer use.

9.47 In order to cope up with the distribution of about 22 million tonnes of fertilizer material by the end of the Sixth Plan, the distribution system will have to be considerably augmented and streamlined. Port handling capacity will have to be increased considerably through high speed mechanical unloading plants, port storage, portable bagging machines, etc. The irreversible trend towards rail movement in block rakes to single point destinations calls for suitable

infrastructural arrangements like sidings, platforms, storage space, etc. at identified nodal centres from where further distribution by road can take place. Movement of fertilizers in bulk from ports and plants for subsequent bagging near the consumption centres will receive further emphasis. Improvement of the distribution system will involve opening of additional storage depots in the states, increasing retail sale points in the interior, introducing multi-agency competitive distribution system and making arrangements for adequate supply of credit to farmers for purchasing fertilizers. A good monitoring system would also be necessary to ensure timely and adequate availability of fertilizers in all parts of the country.

9.48 One of the reasons for the skewed pattern of fertilizer consumption in the country has been the fact that retail outlets have tended to cluster around rail-heads since fertilizers were hitherto supplied to distributors on FOR rail head destination basis. In order to tide over the problem the Central Government has recently introduced a scheme to meet the cost of transportation of fertilizers from all the rail heads upto all block headquarters in the country. The scheme, when implemented, will make fertilizers adequately available in all blocks in the country (even in the blocks which do not have rail head facilities).

9.49 Extension support for guiding the farmers in the proper use of fertilisers so as to achieve maximum benefits will be further strengthened. Soil testing facilities will be strengthened and expanded. Besides, greater attention will be given to popularisation of fertilizers in non-conventional unirrigated areas presently under the dry farming system where fertilizer use is almost negligible.

9.50 The consumption of fertilizers is expected to go up from 5.3 million tonnes in terms of nutrients in 1979-80 to 9.6 million tonnes by the end of Sixth Plan. This would call for suitable investment in the fertilizer sector. Simultaneously, steps will have to be taken to promote the conservation and use of all organic wastes and biological sources of nitrogen fixation and supply. Bio-fertilizers programme involving the popularisation of rhizobium, blue green algae, azolla and other sources will have to be greatly expanded. Also, steps to improve soil fertility and to reduce leaching losses of nitrogen will have to be taken.

IMPROVED SEEDS

9.51 The area under high yielding varieties of seeds has been showing a progressive increase from year to year. The Sixth Plan aims at covering an additional area of 20.8 million hectares over the 1979-80 base of 35.2 million hectares. The total area of 56 million hectares will include 25 million hectares of paddy, 19 million hectares of wheat, 2 million hectares of maize and 5 million hectares each of *jowar* and *bajra*.

9.52 The National Seeds Projects (Phase I and II) launched during the Fifth Plan period and still under

execution is a major effort in meeting the requirements of improved seeds. The project covers the States of Haryana, Punjab, Andhra Pradesh, Maharashtra Bihar, Karnataka, Orissa, Rajasthan and Uttar Pradesh. State Seeds Corporations have been set up in these States. Augmenting infrastructural facilities like setting up of processing plants, seed certification agencies, seed testing laboratories, etc. are some of the important programmes of the project. Creation of Seed Technology Units in 12 agricultural universities and a few ICAR institutions for breeder and foundation seeds is also part of the project. The project, in brief, aims at placing the seed industry on a scientific footing by reorganising the functions of various institutions in a systematic manner.

9.53 It has been felt that it would be very difficult to produce large quantities of breeder seed in case only 3 stages of multiplication up to the stage of certified seed are adhered to as has been the practice so far. Hence, two stages of foundation seed—Stage I and Stage II are being introduced. Taking into account the requirements of reserve stock of seeds for foundation and certified seeds, the total requirements in the terminal year of the Sixth Plan would be about 54.0 lakh quintals of certified seed, 3.0 lakh quintals of foundation seed and 12,000 quintals of breeder seed. These figures include a massive increase in the production of seeds of pulses and oilseeds keeping in view the national priority for increasing production of these crops and the vital role that quality seed would play in promoting good plant population and performance.

9.54 It has been observed in the past that the production of certified seeds has been limited on account of non-availability of adequate volume of breeder and foundation seeds. Plan provisions have been made to strengthen the National Seeds Corporation to enable it to assume direct responsibility for production of breeder and foundation seed so that the shortage exhibited at the national level in the past can be eliminated. The National Seeds Corporation is also proposed to be strengthened for production of vegetable seeds.

9.55 The State Farms Corporation of India will also play a bigger role in the production of certified seeds of important cereals and other crops especially oilseeds, vegetables, etc. on their large and scientifically managed farms.

PLANT PROTECTION

9.56 Recurrent attacks of pests and diseases have been causing considerable damage to the crops. Unless these are kept under check, efforts to boost up agricultural production will not succeed. Recent studies have revealed that in the year 1976-77, 19.8 per cent of the cropped area suffered from pests and diseases but the area treated with pesticides was only 7.2 per cent. The crops that suffered most were groundnut (47 per cent), cotton (28 per cent), paddy (24 per cent) and sugarcane (25 per cent). Even conservative estimate of loss of 10—15 per cent in

the total agricultural output should amount to thousands of crores of rupees in a single year.

9.57 Consumption of pesticides in the country was negligible in the early fifties. Starting from a low figure of 100 tonnes of pesticides consumed in agricultural sector at the beginning of the First Five Year Plan, the country is now consuming 60,000 tonnes of technical grade pesticides in the agriculture sector alone (1980-81). However, the consumption varies considerably from State to State. Whereas Tamil Nadu consumes more than 1.8 kg. of formulated pesticides on each hectare of cropped area, Madhya Pradesh hardly consumes 1/10th of a kg. of formulated pesticides on an equal area. The high rainfall areas in the eastern part of the country, which are more prone to the attacks of weeds, pests and diseases do not consume any sizeable proportion of the pesticides.

9.58 The objectives during the Sixth Plan period will be to—

- (a) minimise the losses arising out of pests and diseases;
- (b) expand the area under plant protection from 80 million hectares to 100 million hectares;
- (c) increase the consumption of pesticides from 60,000 tonnes to 80,000 tonnes of technical grade material;
- (d) strengthen surveillance against pests and diseases and determine economic thresholds with a view to having more efficient use of pesticides. Surveillance in the tribal areas will be given special attention;
- (e) strengthen quality control arrangements and set up Central Insecticides Laboratory and Regional Laboratories;
- (f) expand the work on "Integrated Pests Control" and intensify the control of Pests by biological means; and
- (g) continue the Scheme of "Control and Eradication of Pests and Diseases of Agricultural Importance including Weed Control in Endemic Areas".

IMPLEMENTS AND MACHINERY

9.59 A number of programmes were initiated during the previous plan periods, but their size and coverage have not been commensurate with the increasing needs of agricultural development. At the same time programmes of research and development taken up by the agricultural universities have enabled identification of implements suitable for the different areas. What is however lacking, is the programme of demonstrations to motivate the farmers in the use of improved implements and infrastructure at the state level to coordinate demand with production, quality control, distribution and supporting services of farmers' education, credit, repair and maintenance facilities. State Agro-Industries Corporation have been set up in different States to strengthen these activities.

Another programme is establishment of agro-service centres to be handled by self employed engineers. This was taken up to achieve the objectives of employment generation and provision of supplies and services to farmers in the rural areas. Under this programme, about 3,160 centres were set up. The State Agro-Industries Corporations have taken up a wide range of activities with a bearing on production of inputs for agriculture and in the processing of agricultural products. The funds available to them have, however, been utilized for activities connected with the supply of inputs and services. On the financial side, their performance leaves great scope for improvement.

9.60 In the Central Sector, attention has been given to training of personnel in the operation, maintenance and management aspects of agricultural machinery and in the testing of different types of machinery for functional performance and durability at the two central institutions at Budni and Hissar. These institutions are to be strengthened so as to meet regional needs of training and testing. Development of hill areas through a programme of training in the selection and use of tools and equipments, appropriate for these areas, would also receive high priority.

9.61 Keeping in view the constraints and requirements of the programme of agricultural machinery, the strategy for the Sixth Plan aims at (i) introduction and popularisation of selected implements particularly those which benefit the small and marginal farmers with emphasis on the needs of ecologically handicapped areas and areas where higher potential for improvement of agricultural production exists; (ii) strengthening of the supporting services and infrastructure for demonstration and popularisation; (iii) testing and quality control; (iv) training and (v) promotion of agro-industries and agro-services.

9.62 Farmers' Agro Service Centres will be set up for training and assistance to entrepreneurs, groups of farmers, personnel of cooperatives, etc. through adopting a multi-agency approach. It is proposed to set up 500 such centres in different parts of the country during the Sixth Plan period. Their main objective will be to organise supplies and services for the benefit of small and marginal farmers. This programme will be supported by national and regional centres for technology transfer.

AGRICULTURAL EXTENSION AND TRAINING

9.63 It is well known that there is a wide gap between production potential and actual field harvests in most agricultural crops. There is adequate technology available for transfer from the research laboratories and experimental stations to the farmers' fields and homes. Besides, agricultural technology is also developing fast. In order to keep pace with such a development and to improve the economy of the farmers, the machinery involved in the transfer process needs to be strengthened and tuned to meet the

growing and changing needs. In the past the agricultural administration had not received adequate attention in most States, with the result the policy goals were not often supported with an implementation machinery. Recent experiment in reorganisation and strengthening of the agricultural extension service under the 'Training and Visit' system in Rajasthan and Madhya Pradesh has given very encouraging results. This T & V system is already working satisfactorily in 10 States. During the Sixth Plan period this system would be introduced on a nation-wide basis, so as to improve the education and technical competence of the extension functionaries and also to bring better linkages between Agricultural Universities, Extension Wings of the State Governments and farming communities.

9.64 The need for training of women in agriculture cannot be over-emphasised since more than fifty per cent of the agricultural operations are carried out by them. In order to improve their technical competence and economic conditions in agriculture, more intensive training programmes for women in agriculture will have to be organised. There are four categories of labour involvement by women and they are (i) field labour like sowing, transplanting, harvesting, threshing, etc., (ii) skilled operations like plant protection, plant propagation, hybridization as in cotton, processing and vending of various agricultural commodities; and (iv) farm management and supervision of farm operations. In all these areas farm women need to be given technical training to improve their efficiency.

9.65 The labour force in many areas belong to the lowest strata of the society. Almost the entire lots of scheduled castes and tribes depend on their meagre earnings from working on farm lands. The tribal people also depend mostly on farm lands and more so on horticultural crops. Their skills in agriculture are mostly inherited through generations. There is ample scope to improve their skills through specially organised training programmes to suit their background and culture, so as to reduce drudgery in agricultural operations and improve their economic status. Some sectors of society such as ex-service personnel who enter into agriculture need special attention in our training programmes. They have to be given tailor-made courses to meet their requirements. Likewise, progressive farmers and farm youths should be trained to take to new crops under export promotion, multiple and mixed cropping, etc.

9.66 In some respects the agricultural sector can provide opportunities for gainful employment of the physically handicapped. This is because of a wide variety of operations involved in agriculture and post-harvest processing. This would need specialised training for the handicapped persons taking into consideration the needs of the situation.

9.67 During the Sixth Plan period not only will the extension machinery be strengthened in its structure and quality to carry out better programmes of trans-

fer of technology but also selected sectors of farmers and farm labour force will be given different types of training to improve their skills and also to diversify such skills to enable them to be more fully employed and to earn better living.

AGRICULTURAL CREDIT

9.68 The cooperative structure with its country-wide network of primary cooperatives, the commercial banking sector with 14444 rural and special agricultural branches (at the end of December 1979) and the Regional Rural Banks numbering 65 with 2420 branches are the three main agencies involved in provision of credit for agriculture and allied sectors. Of the three, it is the cooperatives which still continue to have the predominant role in terms of both volume and territorial coverage.

9.69 Though the growth of credit through different credit institutions has been fairly rapid in the past few years, they have still a long way to go to meet the growing credit needs of a modernising and expanding agriculture and allied activities. The share of agriculture in Gross Commercial Banks Credit at June end 1979 was only 11.8 per cent. The share of rural branches in the total deposits at December end 1978 was 10.4 per cent but in credit advanced only 8.4 per cent. The share of semi-urban branches in deposits and advances was 21.9 and 15.4 per cent respectively. Thus the rural and the semi-urban branches collected more from and advanced less in the rural areas. The rate of growth of cooperative credit has also slowed down in the last few years. The factor most responsible for decelerating the rate of credit expansion is the mounting overdues both in the short and medium/long term credit. The problem of overdues has, in fact, been agency neutral and is common whether the agency is cooperative commercial banks or the government. The overdues in the cooperatives have reached about 42 per cent of the demand. The recovery performance of commercial banks has been even worse and was only 50.20 per cent in the case of public sector banks at June end 1978. There are also considerable regional imbalances in the supply of credit. Five States of Andhra Pradesh, Gujarat, Maharashtra, Punjab and Tamil Nadu accounted for 52 per cent of the total agricultural credit supplied. In the matter of credit availability to weaker sections, their percentage share in cooperative credit has risen at a higher rate than in the commercial banks' credit, though in either case it remains short of the needs.

9.70 The main objectives of the institutional credit policy under the Sixth Plan would therefore be to:

- (a) secure an increase in the total volume of institutional credit for agriculture and rural development;
- (b) direct a larger share of the credit to the weaker sections;

- (c) reduce the regional imbalances in the availability of credit;
- (d) bring about greater coordination between different credit institutions under the multi-agency system; and
- (e) improve the recovery of institutional loans to ensure continuous re-cycling of credit.

9.71 The availability of institutional credit to agriculture and allied activities has been projected to expand from the base level of Rs. 2550 crores in 1979-80 to Rs. 5415 crores in the terminal year (1984-85) of the Sixth Plan. An almost four-fold step-up is projected in the commercial banks' short-term loans. The share of priority sector in the total advances by commercial banks is to be increased to 40 per cent, of which the share of agriculture and allied activities will again be at least 40 per cent, *i.e.*, 16 per cent of the total advances. Separate sub-targets will be laid down for the weaker sections and further within this group for the landless labourers, artisans, etc., namely, those who do not have a land base and for whom additional income generation will have to be through endowment of new productive resources. Endeavour will be that at least 50 per cent of the total institutional credit goes to the weaker sections. Special attention will be given to preparing viable economic projects for women and credit made available to them accordingly. With a view to reducing the regional imbalances in the availability of credit, it is proposed to substantially expand the number of rural branches in under-banked areas and establish Regional Rural Banks in more districts. The programme is to take the number of Regional Rural Banks from the base-year level of 65 to 170 during the Plan period to cover 270 out of 405 districts. Besides, efforts will be made to so coordinate the operations of the cooperative and commercial banks that the latter supplement the former in meeting the needs of areas with large credit gaps, as was originally intended in the multi-agency approach. It has been noticed that the commercial banks' credit has also tended to flow largely to the very areas where cooperative credit structure was strong enough, with areas of low credit availability continuing to remain deprived. The district credit plans are expected to bring about such coordination and specifically apportion the relative roles and responsibility in this behalf to the various credit institutions operating in the area. The State-wise targets will be broken down into district and block-wise targets in conformity with the development needs of the area and of the special anti-poverty programmes like the Integrated Rural Development Programme. The poor recovery performance of both the cooperatives and commercial banks particularly in some States of the country has been due partly to internal organisational inadequacies and partly to the general environment. The State Governments would be expected to take necessary measures to ensure an appropriate climate for recovery and suitably assist the credit institutions, both cooperatives and commercial Banks, in the recovery of loans. Any pres-

asures for the general writing off of overdues must be resolutely resisted.

9.72 With a view to bringing about better coordination in the credit policies impinging on short, medium and long-term financing of agriculture and allied activities, including marketing, processing and storage, as well as rural industries, it is proposed to establish a National Bank for Agriculture and Rural Development (NABARD). The necessary legislative action for establishing the Bank is already under way. The Bank will be the apex re-financing institution in the country for these activities and will combine the developmental and financial roles which were hitherto being performed by the Reserve Bank of India and Agricultural Refinance and Development Corporation (A.R.D.C.).

9.73 The level of credit support during the Plan period projected for different credit agencies is indicated below:

Table 9.2

Targets of Agricultural Credit by different institutions

Agency	(Rs. crores)	
	Anticipated advances in 1979-80	Level to be reached in the year 1984-85
(1)	(2)	(3)
Cooperative		
Short term	1300	2500
Medium term	125	240
Long term	275	555
Commercial Banks (including Regional Rural Banks)		
Short term	450	1500
Term loans	400	620
TOTAL	2550	5415

CROP INSURANCE

9.74 Farming in India is prone to various adverse climatic conditions, leading to several risks and economic losses to the farmers. Both rain-fed and irrigated farms are subject to the vagaries of nature resulting in damage to crops and thereby causing losses to the farmers, affecting their economic status. The vulnerability of the farmers and the hazards and risk arising from factors beyond their control underscore the need for devising an arrangement to protect the farmers from such crop losses. It is in this context that the need for having a crop insurance scheme is being urged in different forums from time to time. From 1979 onwards, a pilot Crop Insurance Scheme is being implemented in the States of West

Bengal, Gujarat and Tamil Nadu. The scheme is based on area approach and it covers the loss of production due to drought, excessive rain, flood, freeze, frost, hail, snow, windstorm, cyclone, insect infestations, plant disease and any other unavoidable cause of losses due to adverse weather conditions. The Insurance Policy is issued in favour of the financing institutions and insurance is based on crop loan of the cultivator. The State Governments are co-insurers with General Insurance Corporation of India and share the premium and the indemnity to the extent of 25 per cent. The Government of India subsidises the premium payable by the small and marginal farmers in the special programme areas like IRD, SFDA, etc. upto 25 per cent and the concerned State Governments share another 25 per cent. The experience of West Bengal, Tamil Nadu and Gujarat brings out the benefit that could be derived under the scheme. During the Sixth Plan period, it is proposed to extend the coverage of the pilot insurance scheme to more states in the country.

STORAGE AND WAREHOUSING

9.75 With the availability of increasing marketable surpluses in agriculture, inadequacy of storage has emerged in the last few years as one of the more serious problems of post-harvest management. The problem has been further compounded by the inability of the railway system to evacuate the procured food stocks from the surplus to the deficit areas at a fast enough pace and the inadequacy of rice milling capacity in Punjab and Haryana entailing prolonged storage capacity putting thus further strain on the existing storage capacity. The Rural Credit Survey Committee (1954) had recommended a three-tier storage system at (a) the National level, (b) State and district level, and (c) village and rural level. In accordance with its recommendations, the Food Corporation of India and Central Warehousing Corporation were required to create storage facilities at centres of all India importance, the State Governments and State Warehousing Corporations at Centres of State/district level importance and the rural storage needs were to be looked after by the cooperatives. Owned and covered storage capacity with various public agencies increased from 118.72 lakh tonnes on the eve of the Fifth Plan to 185.78 lakh tonnes on 31st March, 1980 as under:

Table 9.3
Storage Capacity

Agencies	(lakh tonnes)	
	31-3-1974	31-3-1980
(1)	(2)	(3)
Food Corporation of India	51.47	75.87
Central Warehousing Corporation	11.65	19.65
State Warehousing Corporations	5.60	24.10
State Governments	18.00	19.16
Cooperatives	32.00	47.00
TOTAL	118.72	185.78

9.75A Scientific storage capacity of another 48 lakh tonnes has been created in the private sector under a scheme of the ARDC on guaranteed utilisation by FCI for a stipulated period. Even so, the shortage of storage capacity has been such that the FCI has silt to maintain its make shift CAP (cover and plinth) storage of upto 70 lakh tonnes. The storage programme of the cooperatives is mainly related to their own commercial needs at the village societies' and the marketing societies' levels, i.e., for temporary storage of their members' produce for marketing and for stocking of fertilizers and other farm inputs and consumer articles.

9.76 A national programme of storage will be promoted with a view to developing a well spread out storage grid right from the farm to the national level. In this context, it is proposed to have at the base a net work of rural godowns so as to have at least ten to fifteen godowns of appropriate capacity in each block within the course of the next five years. Bulk of these rural godowns will be in the cooperative sector. Each village cooperative will be assisted to have a godown of at least 100 tonnes capacity under a phased programme of coverage. According to the programme 52,000 village cooperatives will be having such godowns by 1984-85. To augment the storage capacity with village cooperatives, a Centrally Sponsored scheme of Rural Godowns has been initiated where under assistance will be given to Market Committees or State Warehousing Corporations or Cooperatives to build godowns of somewhat larger capacity of 200 to 1000 tonnes in rural areas to facilitate storage of produce by farmers and also to meet the needs of decentralised local storage of commodities under public distribution system. The total capacity planned under this scheme is two million tonnes.

9.77 The next two higher tiers of storage organisation are the State Warehousing Corporations (SWCs) and the Central Warehousing Corporation (CWC) besides the Food Corporation of India which as the buffer stock organisation has to have substantial storage capacity of its own. While the owned capacity of the F.C.I. is almost wholly used for stocking of foodgrains procured by it, only about 50—60 per cent of the capacity of the S.W.Cs and the C.W.C. is generally taken by foodgrains and the rest by other agricultural commodities. The storage capacity owned by the marketing cooperatives, which is at the market level, is generally used for their own trading purposes or on behalf of their members and for stocking of fertilizers and other commodities which they deal in. The storage programme envisaged for the S.W.Cs., C.W.C. and the F.C.I. during the Sixth Plan period is based on a realistic assessment of the storage requirement of procurement operations for a buffer stock of 15 million tonnes, in conjunction with the needs of the public distribution system and demands on storage of other agricultural commodities and inputs. A larger programme of construction, though justified, is not permitted by the constraint of resources. Consequently recourse will continue to be taken to hired and CAP storage during the Plan period.

9.78 To promote scientific storage at the farm level among the small and marginal farmers, subsidy will be given to them under the Integrated Rural Development Programme for storage bins. In some States, special promotional staff has also been appointed to demonstrate to the farmers proper storage and handling practices, besides the 17 'Save Grain Campaign' teams which are functioning in close collaboration with State Governments.

9.79 An outlay of Rs. 259 crores has been provided in the Sixth Plan for creating additional 76.60 lakh tonnes of storage capacity by C.W.C., S.W.Cs and F.C.I. and for the strengthening of Indian Grain Storage Institute, Hapur and Farm level Storage. Another 55 lakh tonnes of storage capacity would be created during the Plan period by the Cooperatives and under the Rural Godowns scheme, the financial provision for which has been reflected in the outlays for Cooperation and Rural Development. Besides, another million tonne capacity is expected to be added in the private sector under the ARDC assisted scheme. Agency-wise targets of construction of additional storage capacity are as under:

Table 9.4

Additional Storage Capacity		(lakh tonnes)
Agency	Capacity	
(1)	(2)	
Food Corporation of India	35.60	(excluding spill-over works of 10 lakh tonnes to next Plan)
Central Warehousing Corporation	16.00	
State Warehousing Corporations	25.00	
Cooperatives	35.00	
Rural Godowns Scheme	20.00	
TOTAL	131.60	

AGRICULTURAL PROCESSING AND MARKETING

9.80 The motivation to produce more finally comes from the prices that the farmer is able to get for his produce. Production gluts leading to depression in prices received by the farmer have in the past frequently led to set-back in production in succeeding years. This has been more so in the case of perishable commodities like onions, potatoes, sugarcane, etc, where, for want of adequate preservation and processing facilities, the farmer has been wholly exposed to exploitative trading forces, without the consumer benefiting in any way. A marketing system

which protects the interests of both producers and consumers is, therefore, the backbone of agricultural development. It must have three essential elements: (i) a suitable structure of support prices for various agricultural commodities adjusted from time to time in the light of cost of production so as to ensure fair return to the farmers; (ii) adequate arrangements for procurement of agricultural produce on support prices if the prices fall below that level; and (iii) a well spread-out and regulated infrastructure of marketing which will ensure fair price to the producer in open market conditions and help eliminate non-functional marketing margins of inter-mediaries.

9.81 Reference has already been made in the Chapter on Economic Policies in regard to the commitment of the Plan to the fixation of remunerative support prices for various commodities. Over the years, the number of commodities covered under support prices has been considerably enlarged. It is proposed during the Sixth Plan to keep reviewing from time to time the need for inclusion of more commodities, both perishable and non-perishable, in the support price structure. In recommending the support prices, the Agriculture Prices Commission will take into account the cost of production so that the prices recommended are such as are remunerative to the farmer.

9.82 The principal public agencies involved in support price operations (procurement) on behalf of the Government are the Food Corporation of India, Cotton Corporation of India, Jute Corporation of India and the Cooperatives with NAFED as their apex organisation. Besides, some State Governments have also been procuring agricultural produce, particularly food-grains, on support prices, either departmentally or through their own Civil Supplies Corporations. Necessary financial support will be given to these agencies during the Plan period so that they are well equipped to undertake these operations as and when called upon to do so. The Storage facilities, both with the FCI as well as the Central and State Government Corporations, will be considerably augmented during the Plan period, the details of which have been given elsewhere in the Chapter, to enable them to effectively handle procurement and distribution operations.

9.83 National Agricultural Cooperative Marketing Federation of India (NAFED) has been playing a useful role in stabilising market prices of perishable commodities like onions and potatoes in principal producing areas by strategic market interventions at times on its own and sometimes as an agency of the Government. Their role in the procurement of soybean has also been noteworthy. It is proposed during the Plan period to put the procurement role of NAFED in such commodities on a stable footing and for that purpose to strengthen its capital base so that it is able to undertake these operations on the necessary scale.

9.84 An adequate amount of cold storage and processing facilities is critical for perishable commodities. It has been considered desirable that these facilities may be increasingly provided in the coopera-

tive sector so that these are owned by the farmers themselves and operated to their benefit. Considerable expansion is, therefore, envisaged in the cooperative cold storage and processing capacities. In the North-Eastern Region, where the cooperative structure is weak, the marketing and processing of fruits and vegetables is proposed to be done through a corporation to be established in the Public Sector. In Jammu & Kashmir, a corporation for the marketing of fruits has recently been established which will be given the required financial backing during the Plan period to expand its activities.

9.85 There are at present 4452 regulated markets in the country, comprising 1906 principal markets and 2546 sub-market yards. In addition, there are about 22,000 'nats' or 'shandies', which for a great majority of farmers in India, particularly the small producers constitute the focal points for disposal of farm produce as well as sale and purchase centres for non-agricultural products. A number of steps have been taken over the last thirty years, aimed at regulating the marketing practices, standardising weights and measures, developing suitable infrastructure facilities in assembling markets, introducing quality standards through "Agmark" certification, etc. Though the legal framework has been provided through Agricultural Produce Markets Act in most States, the progress in the development of markets and in the enforcement of the Act has, however, been very uneven. For want of proper enforcement of the Act, the actual trading practices and the various deductions and charges that a producer-seller has to pay still continue to remain unchanged in a large number of markets in many States. This is particularly so where the department or wing for agricultural marketing and/or the State Agricultural Marketing Board is not equipped with the necessary machinery for acquisition of land, and planning and supervising the development of markets, and for enforcing the market regulations. The main thrust, therefore, of the Sixth Plan will be on (a) further expansion of the regulated markets system in terms both of more markets and commodities to be brought within the scope of regulations; (b) strengthening and streamlining the arrangements for enforcement/and inspections, to ensure a regulated system of open auctions, trading practices and margins of inter-mediaries (commission agents); and (c) development of rural markets and shandies and establishment of rural markets in areas where such facility is not available within a reasonable distance.

9.86 In expanding the regulated markets system, particular emphasis will be given to bringing within the fold of regulation as many of the primary markets as feasible, so as to confer the benefit of regulation on them. Development and establishment of new rural markets on a sufficiently wide-spread basis is of particular relevance to the small producer who for want of a viable marketable surplus is unable to go to the market town and is, therefore, obliged to sell his produce at lower rates to the local traders. Assistance will be provided under a Central Sector Scheme for the development of terminal markets, markets in command areas of irrigation projects and rural

markets. Recourse will also be taken to an increased extent to institutional finance from A.R.D.C. and commercial banks for the development of infra-structural facilities in the markets.

EXPORT MARKETING

9.87 One of the important objectives of the Sixth Plan is to increase production of export-oriented agricultural and agro-based commodities so as to double our income through foreign exchange earnings. This we have to do, out of necessity, to earn the much needed foreign exchange to meet the import bills. Our entire capacity of monitoring international trends in agricultural trade will have to be greatly improved. *Ad-hoc* arrangements in the export and import of agricultural commodities should give way to well-planned and nationally relevant thrusts. We must plan and produce agricultural commodities for export rather than exporting what is available in excess in the country. Care must be taken not to export goods and commodities such as raw forest products, animal feeds, etc. which are best utilised for promoting village level enterprise and value added products. The table below indicates export targets visualised for the selected agricultural commodities for the Sixth Plan.

Table 9.5
Export projections of selected agricultural Commodities for the Sixth Five Year Plan

Sl. No.	Commodity	Unit	Export projections (1984-85)
(0)	(1)	(2)	(3)
1	Rice	Lakh tonnes	30
2	Sugar	000' tonnes	600 to 1000
3	Cotton	Lakh bales of 170 Kgs. each	3*
4	Oil seeds (HPS groundnut etc.)	000' tonnes	160
5	Castor Oil	000' tonnes	90
6	Tobacco	Million Kgs.	105
7	Spices	000' tonnes	185
8	Cashew	000' tonnes	45
9	Tea	Million Kgs.	260
10	Coffee	000' tonnes	94.1
11	Cardamom	Tonnes	4100
12	Marine products	000' tonnes	150 to 160

*Possibility of exporting larger quantities will be kept under review depending on domestic output and consumption.

9.88 To achieve these export targets, we have to back our efforts with a well thought of strategy and also to generate investment. In the international mar-

ket, there is intensive competition both in terms of quality and prices. There are various other inhibiting factors like tariff and non-tariff barriers in the importing countries. Effort requirement to generate substantial additional exports will thus have to be much greater than what is needed for increasing production. Another important fact to be noted is that the exports of agricultural commodities have not received the same degree of promotional effort as the industrial products. This is in spite of the fact that most of the commodities exported are produced by small farmers, who, in fact, need much greater support than well organised industries and business houses. It is also worth noting that small amount has been spent during the last two-three decades on research and development of the agricultural commodities which have export potential as compared to the large sums spent in industrial sectors. Finally, in the export marketing effort also, agricultural commodities have been left far behind. The fact that export of agricultural commodities has continued and even shown some increase does not mean that without adequate effort and investment the same trend will continue in future. A number of countries have now emerged exporters of agricultural commodities and some of them are making rapid progress. The modern technology on post harvest handling, processing and packaging has been adopted in a number of developing countries, the area in which we are far behind. Cost of packaging in India is so high that most of our products are out of reach of the domestic consumers and cannot compete in the international market. A large potential for the development of agro-based industries has remained unexploited.

9.89 Some of the traditional items like tea and coffee have made good progress and further promotional efforts would yield rich dividends. It has become necessary to identify new areas where the growth rate can be much higher. In this regard items like rice, cotton, vegetables, fish and fish products, eggs, meat, processed foods and minor spices can be mentioned. In some of these areas we are yet to make a mark as potential exporters. It should be our endeavour to give an export orientation to agriculture after ensuring that the basic needs of our population for various food items are fully met. Full advantage needs to be taken of growing opportunities for international agricultural trade. For this purpose it will be necessary to strengthen arrangements for transport and shipping in addition to packaging and forwarding. In short, in order to have exportable surpluses, we need to adopt aggressive policies to induce suitable investments in production, storage, transport and other marketing infrastructure. Stability of supply, quality of produce and price competitiveness will determine our success in becoming an important country in international agricultural trade.

AGRICULTURAL STATISTICS

9.90 For meaningful formulation of the Agricultural Plan the role of agricultural statistics cannot be over-emphasised. Out of the total reported area of 304 million hectares, estimates for 85.4 per cent of the area are based on complete enumeration, 9.3 per cent on sample surveys and the remaining 5.3 per cent on conventional methods. In regard to foodgrains, 94.5 per cent of the production of cereals and 73 per cent of the production of pulses are based on crop estimation surveys. As for commercial crops, these percentages are 99 for jute, 94 each for sugarcane and groundnut and 75 for cotton. The areas of fruits and vegetables, irrigation, livestock, milk, fish and forestry products leave much to be desired in the collection of reliable statistics. Even in the case of foodgrains and commercial crops there is great scope for improvement, especially in respect of sample surveys and use of crop cutting experiments.

9.91 Under the Sixth Plan efforts will be directed towards (a) collection of land utilisation statistics for non-reporting areas in the North-Eastern Region; (b) coverage of Soybean and sunflower as also major pulses in the field of forecast crops; (c) availability of more reliable statistics on important fruits and vegetables; (d) collection of statistics on production of major livestock products on the basis of sampling techniques already developed; (e) streamlining the arrangements for collecting statistics on inland fish production on the basis of methodology recommended to the States; (f) evolving a unified system of conducting sample surveys for collection of statistics on marine fish production by the Central Marine Fisheries Research Institute (CMFRI), Cochin and the concerned States; and (g) setting up of statistical units equipped with qualified/trained staff for collection of forestry statistics in different States and ensuring proper co-ordination among various field agencies entrusted with this responsibility. The Directorate of Economics and Statistics, Indian Agricultural Statistics Research Institute and National Sample Survey Organisation would examine these recommendations for early implementation under the Sixth Plan. Necessary financial and technical support could be provided, if considered necessary.

9.92 Further, the on-going centrally sponsored schemes of (i) timely reporting of estimates of area and production of principal crops; (ii) improvement of crop statistics; (iii) establishment of an agency for collection of agricultural statistics on complete enumeration basis in the States of Kerala, Orissa and West Bengal; and (iv) the Central schemes for improvement of irrigation statistics, agro-economic research and farm management studies would be implemented with greater vigour and proper supervisory support. The Agricultural Census operations, another important continuing central scheme, would need whole time guidance and supervision.

PUBLIC POLICIES

9.93 The activities of the Government in the field of agricultural research in the promotion of appropri-

ate technology and in the provision of inputs and services are essentially in the nature of assistance provided to an individual farmer or to fairly specific categories of farmers. There are, however, certain other elements in the agricultural policy package which are more wide ranging in their motivation and in their impact. One such element is the policy on land reforms which is based not merely on the requirements of production but on larger considerations of distributive justice. Another element is the policy on agricultural prices which affects land use, production and income distribution in a profound way. A third element is the approach of the Government on mitigating and coping with disasters like droughts and floods in what follows the approach of the Sixth Plan with regard to these general elements in the policy package is described.

LAND REFORMS

9.94 Land is the primary resource on which agriculture is based. The pattern of ownership of this asset has to be just and rational if we are to secure growth with social justice. The objectives of the land reforms policy over the successive Plans have been to remove such impediments to agricultural development as arise from the agrarian structure inherited from the past and to eliminate exploitation and social injustice within the agrarian system so as to ensure equality of tenurial status and opportunity to all. The main elements of the land reforms policy have been five-fold, viz., (i) abolition of intermediary tenures; (ii) tenancy reforms comprising regulation of rent, security of tenures and conferment of ownership rights on tenants; (iii) ceiling on land holdings and distribution of surplus land; (iv) consolidation of holdings; and (v) compilation and updating of land records. Intermediary tenures have by and large been abolished all over the country through the abolition of zamindari, jagirdari, inams etc., as a result of which, about 20 million cultivators are estimated to have come into direct contact with the State. Legislative measures have been taken for providing to the tenants security of tenure and for regulating rates of rent payable by them. The maximum rates of rent have been fixed at levels not exceeding 1/4th to 1/5th of the gross produce in all the States except in Andhra Pradesh (Andhra Area), Haryana and Punjab. However, in regard to the conferment of ownership rights on cultivating tenants, the existing legislation in the States of Andhra Pradesh, Bihar, Tamil Nadu, Haryana and Punjab still falls short of the accepted national policy. In West Bengal, while all under-raiyats have been brought directly in relationship with the State, this does not include Bargadars (share-croppers) though they have been protected against eviction at will.

9.95 Laws on ceiling of agricultural land based on the national guidelines on land ceilings have been enacted and are being implemented in practically all the States of the country where land ceiling is relevant, i.e., except Nagaland, Meghalaya, Arunachal Pradesh and Mizoram where land is generally held by the community. However, the progress of taking over and distribution of ceiling surplus land has been tardy. Out of about 15.74 lakh hectares declared surplus

in different States, as in March, 1980 only about 9.56 lakh hectares have been taken possession of by the States and about 6.79 lakh hectares distributed. Distribution of ceiling surplus land has benefited nearly 11.54 lakh landless persons, of whom 6.13 lakh beneficiaries belong to the scheduled castes and scheduled tribes. However, not much effort seems to have been made to assist the allottees to develop the land, as would be evident from the fact that the centrally sponsored scheme of assistance to assignees of ceiling-surplus land has not been fully made use of. The implementation of the ceiling laws has been often hampered by slow disposal of appeals and revision filed by land-owners against the orders of the revenue authorities. The State Governments have been advised to restrict the number of appeals and revisions against orders of the land reform agencies to a total of two and also to strengthen the appellate machinery dealing with such reform cases at all levels. In most of the States now only one appeal and one revision is allowed. Steps have also been taken for the reduction of the permissible time for the filing of appeal and revision petitions, and in some States the administrative machinery dealing with land reform cases has been strengthened and additional Tribunals constituted. Besides the distribution of ceiling surplus land, 2.1 million acres of Government waste land were distributed during 1975-78 to the landless, majority of whom belong to the scheduled castes, scheduled tribes and other weaker sections.

9.96 The national policy on land reforms right from its inception has continued to press the need for consolidation of holdings. Most of the States in the country have enacted legislation to undertake consolidation of holdings. It is estimated that by now, nearly 45 million hectares of land, i.e., about 1/4th of the consolidable land has been consolidated all over the country. However, the implementation has been extremely patchy and sporadic. Only in Punjab, Haryana and Western Uttar Pradesh, the work is complete. Even a beginning has not been made in the Southern States and Rajasthan. In the Eastern States, some work has begun only in Orissa and Bihar.

9.97 It has been recognised that updating of land records is essential not only for implementation of land reforms but also for access to agricultural credit which relies heavily on title to land. The status of land records varies from State to State. While in some States the records are fairly up-to-date, in some States, specially in the Eastern Region where Zamindari System operated earlier, there was little relationship between entries in the records and the realities in the field. A systematic programme of compilation and correction of land records had, therefore, been undertaken all over the country to reflect up-to-date position about ownership and the rights of the tenants, share-croppers and other holders. Though considerable work has been done, much ground still remains to be covered in respect of this programme. Constraint

of resources and organisational inadequacies have been some of the limiting factors.

9.98 Conferment of ownership rights on home-stead tenants who belong to the poor sections of the rural community has been one of the objectives of the land reform policy. Security of tenure and ownership rights have been conferred on home-stead tenants in all States. There has been a separate Plan scheme under the Minimum Needs Programme for provision of house-sites to the landless in rural areas since 1971, under which 7.7 million house-sites have so far been allotted to landless families in rural areas.

9.99 The land reforms policy, outlined above, which has been under implementation, is a comprehensive one and has been nationally accepted. If the progress of land reforms has been less than satisfactory, it has not been due to flaws in policy but to indifferent implementation. Often, the necessary determination has been lacking to effectively undertake action, particularly in the matter of implementation of ceiling laws, consolidation of holdings and in not vigorously pursuing concealed tenancies and having them vested with tenancy/occupancy rights as enjoined under the law. The main strategy of land reforms under the Sixth Five Year Plan, therefore, would be to ensure effective implementation of the already accepted policies.

9.100 The implementation of various elements of this policy, more specifically the following, would be taken up during the Sixth Plan period on a time-bound basis;

- (i) States which do not have legislative provisions for conferment of ownership rights on all tenants except for specified exempted categories (serving defence personnel, minors, disables, etc.) shall introduce appropriate legislative measures to do so within a period of one year, i.e., by 1981-82.
- (ii) The programme of taking possession and distribution of ceiling-surplus lands would be completed within a period of 2 years, i.e., by 1982-83. Priority in allotment of surplus land would be given to scheduled castes and scheduled tribes among the landless.
- (iii) A systematic programme would be taken up for compilation/updating of land records, to be phased for completion within a period of 5 years, i.e., 1980-85. In States where the backlog is heavy, aerial survey techniques may be employed for expeditious survey operations. Each cultivator would be given a pass book indicating his status/title to land, description of the land (areas, class, etc.) along with a copy of the khasra map and such other details as are considered necessary. Appropriate provision will be made in the revenue laws to confer legal status on this document as proof of title and rights in land.
- (iv) Programme of consolidation of holdings would be taken up by all States, phased for

completion in 10 years, with priority to be given to command areas of irrigation projects where it should be completed in 3 to 5 years. Legislative measures for preventing fresh fragmentation of holdings after consolidation) below a minimum size would also be considered.

- (v) The programme for the provision of house-sites to the landless will be completed.

9.101 Apart from these, certain other measures will be necessary. Necessary action would be taken to bring before the Parliament Land Reforms Acts, not yet included in the Ninth Schedule of the Constitution, for immediate inclusion in the said schedule and the same would be done in the case of future Acts without delay, so that these laws are protected from challenge in courts. Revenue machinery would be strengthened appropriately in each State to ensure effective implementation of land reform laws, more specifically the tenancy and ceiling laws. Greater initiative will need to be taken by the State Governments to force the pace of development of Bhoodan lands, particularly such lands as are available in compact blocks.

9.102 In many States, the choice for using available water in the command areas of irrigation system for either or both the crops lies with the farmer. In many command areas of new irrigation projects, i.e., Tawa, Rajasthan Canal, Mahi, Kadanla, etc., fear of being hit by the ceiling law has been found to be one of the inhibiting factors for full utilisation of irrigation waters. It appears necessary to end this situation of 'laissez faire'. The ceiling laws should be automatically brought into force, in accordance with the stipulated water utilisation pattern of a particular irrigation system, so that the use of irrigation resources built at considerable cost is not withheld at the choice of individuals.

9.103 The centrally sponsored scheme of assistance to allottees of ceiling-surplus land, which was till now applicable only to areas other than where special programmes of SFDA, IRD, etc. were in operation, will be continued, to cover the whole country in conjunction with assistance available from the IRD programme. The State Governments will be required to work out a specific programme of development of allotted lands so that the funds available under the scheme are meaningfully employed.

PRICE POLICY

9.104 An appropriate price policy is a crucial factor in the strategy of agricultural development. This is so on account of several considerations. Firstly, modern agriculture increasingly involves the use of costly inputs as part of improved technology and hence an assured minimum price becomes a necessary underpinning for sustained agricultural production. Secondly, price policy is also an important tool for facilitating crop planning—an aspect which so far has not received adequate attention in this country. Finally, price policy can be geared towards ensuring

that the relevant income levels of the farming community are not eroded by continuing unfavourable terms of trade between agricultural sector and non-agricultural sector. For this purpose, the terms of reference of the Agriculture Prices Commission have been amended, and the Commission has been asked to take into account, along with other factors, movements in the terms of trade.

9.105 To provide cost of production data to the Agriculture Prices Commission, a scheme for estimation of cost of production was introduced in 1971. This scheme now stands extended to several important crops. Under the Sixth Plan the scheme is proposed to be further enlarged. Firstly, the sample in the scheme covers 6,000 farm holdings. Under the Plan, the sample holdings will be increased. Secondly, the same full sample will be repeated in subsequent years unlike the present practice when only a sub-sample used to be adopted. Finally, more prompt arrangements for analysis of the findings of the studies are proposed to be made.

9.106 While recognising the importance of price policy in the context of agricultural development, it is important to note its limitations also. While remunerative price is a necessary condition for sustained agricultural production, it is not a sufficient condition. The prices of certain crops such as pulses have been ruling consistently high, but this has not led to increased production. Price policy can be effective only when it operates in conjunction with a significant varietal improvement and other complimentary inputs and services. Finally, it is necessary that the agricultural price policy must be so framed that it ensures a careful balance between the need for providing incentive to the farmers for production with a suitable measure of protection also to the consumers. One must recognise that these consumers are not confined to urban areas only. In rural areas, there are a large number of agricultural labourers, artisans and others, who do not produce their own food requirements but have to buy from others. It is in this wide context that we must see price policy concerning agricultural development.

MANAGEMENT OF NATURAL DISASTERS

9.107 Recurrent natural calamities in the form of floods, droughts, cyclones and the like have ravaged various parts of this country and have caused untold havoc to its human and animal population. They have debilitated the agricultural and industrial economy and posed grave problems of relief and rehabilitation. To take only three recent examples:

- (a) The Andhra Pradesh cyclone of 1977 claimed nearly 10,000 lives;
- (b) The floods in Uttar Pradesh, Bihar and West Bengal during 1978-79 damaged 18 million hectares of cropped area, destroyed nearly 40 lakhs hutments, and took a toll of 2800 human lives and about 2 lakh cattle; and

- (c) The unprecedented 1979-80 drought in large areas of Northern and Eastern India affected more than 38 million hectares of cropped area and endangered the lives of 130 million heads of cattle and over 200 million people.

9.108 The magnitude of the relief effort involved can be easily understood from the fact that during the five years 1974-79 Rs. 631 crores of Central assistance was provided to the affected States to supplement the expenditure incurred by them.

9.109 Though these calamities have generally been tackled with vigour and dynamism, the approach to disaster control has been sentimental rather than rational. It has also been *ad hoc* and in the nature of a fire fighting operation. The time has come for the formulation of a long term strategy for anticipating, preventing and mitigating disaster. Such a long term strategy would naturally have to form an integral part of the National Plan, the objectives of which should be:

- (a) to bring about a scientific and rational approach in the assessment of disasters, their impact and costs of relief; and
- (b) to improve the quality of relief to the affected people in such a manner as to substantially alleviate the effect of the disaster.

9.110 The most important aspects of the long term strategy of Disaster Preparedness would be firstly, the development of contingency plans in disaster prone areas to meet different probabilities supported by appropriate seed, fertilizer and fodder reserves and monitored by the State Governments; secondly, the establishment of a Centre for training in Disaster Preparedness; and, thirdly, the forging of adequate linkages between the relief and other schemes for providing work and employment like Food-for-work, National Rural Employment Scheme, Special Area Programmes for Drought Prone, Backward and Hill areas, Food for Nutrition, etc., etc.

9.111 The insensible assault of man on nature and the indiscriminate exploitation of natural resources as well as the human life support systems have converted a symbiotic relationship between man and nature into one of confrontation and disharmony. The siting of human habitats on plains frequently inundated by very heavy floods and the encroachment and clogging of natural drains have had a cataclysmic effect on the normal behaviour of riverine and natural drainage systems. The depredations into forests and vegetative cover and the destruction of the natural ecological balance have not only denuded the benign deposits of silt and top soil, but have also deprived the land surface of its capacity to absorb rainwater and brought untold misery in its wake.

9.112 Experience here and elsewhere, has, however, shown that though natural calamities cannot be averted, their destructive impact in terms of loss of human and animal life and the upset of ecological balance can be considerably mitigated by taking (a) anticipa-

tory measures (disaster preparedness); (b) concurrent measures (disaster rescue and relief); and (c) post-disaster measures (rehabilitation and prevention). These measures are based on the socio-economic, administrative and technological appreciation of the situation and are the basic elements of the disaster management strategy for agricultural and industrial growth and the preservation of social security.

9.113 In brief, these measures relate to:

- (a) *Anticipatory action* including the conduct of vulnerability analysis and risk mapping, provision of anti-disaster shelters, food, medical aid, drinking water, etc., plans for evacuation and surveillance of protective works like dams, reservoirs, embankments, etc., crop stabilisation programmes involving crop life saving techniques, introduction of alternative cropping strategies to suit different weather models and measures for improving production in irrigated areas and non-traditional seasons through compensatory programmes;
- (b) *Early warning and timely action* against cyclones, floods and drought with the aid of hydrological, meteorological and agro-climatological data assisted by radar and satellite services;
- (c) *Rescue and Relief operations* through the co-ordinated efforts of Governmental and voluntary agencies; and
- (d) *Post disaster recuperation and rehabilitation* including reconstruction/repair of buildings, restoration of communications, salvaging of damaged crops, contingency crop plans and compensatory production programmes, provision of agricultural inputs like seeds, fertilizers, etc. and the opening of the employment generation works both of a productive nature as well as a prevention against future calamities.

9.114 For formulating the above measures, for co-ordinating the efforts of various implementing agencies, appraising from time to time the success of these measures and for arranging the training of officials and non-officials engaged in disaster relief, it is necessary to strengthen the existing High Level Committee in the Planning Commission. Suitable arrangements will have to be introduced in monitoring the expenditure of funds allocated for disaster relief.

9.115 The responsibility for undertaking various relief measures is mainly that of the State Governments. Nevertheless, it would be desirable to formulate a general policy and pattern for disaster relief as part of the national plan so that it may serve as a guideline to the State Governments. A national policy in this regard will also induce mutual confidence between the States and the Central Government and provide an earnest of their respective responsibilities in this matter. Natural calamities sometimes have the same disastrous effects as wars and,

therefore, where necessary, legislative measures may have to be taken for ensuring safety, enforcing evacuations from danger zones and adoption of practices for the preservation of human and animal life, Governmental installations and property and the like.

9.116 Natural calamities may have to be differentiated according to their typology, i.e., simple, complex or cumulative depending on their impact and also the magnitude of the damage created by them. Drought again should be differentiated from other natural calamities like floods, cyclones, land-slides or the like. The former is slow in developing, but can have very deleterious consequences on the industrial and agricultural economy. The latter may be sudden and spurt unexpectedly giving no time for advance preparedness. Its effects also may be wide-spread. But whatever the type of the disaster, people who suffer have a natural expectation that relief in adequate measure should be provided to them. It would also be correspondingly the duty of Government to ensure that such relief is in fact provided. The question whether legislative provision enshrining the right to relief is essential or not may be debatable. But under no circumstances should the confidence of the sufferers in the capacity and willingness of Government to provide relief be shaken.

9.117 There is at present considerable variation and even arbitrariness with regard to the quantum, scope and character of relief. National minima in terms of food supply, medical attention, shelter and drinking water, below which assistance will not be permitted to fall, should be prescribed. For example, in the matter of food supply, the nutrition value in terms of calories for different groups of people seeking relief, i.e., labourers on earth work, women, children and people at gruel centres can be fixed. Similarly, national minimum standards can be fixed in respect of medical facilities as well as shelter and drinking water. Such a prescription would inspire confidence in the suffering population and also result in the rapid restoration of normalcy.

9.118 There is a tendency on the part of the State Governments to withdraw relief prematurely at the very first appearance of the rains in case of drought or when there is a temporary lull/improvement in the flood situation. This is not only a short sighted view but may also have a long term debilitating effect. It would, therefore, be necessary to fix a minimum duration for which assistance in the case of different types of calamities would be available with the objective of restoration of physical health and psychological confidence.

9.119 The management of disaster in its several aspects calls for sound administrative knowledge, a dedication to hard work, an understanding of the different factors responsible for the onset of disasters and a compassion towards people who are the victims of such calamities. There is, therefore, an imperative need for the establishment of a corps of personnel who will be well-versed in the art of disaster management and capable of accepting the responsibility for such management, when the time comes. There are at present no facilities available for training poten-

tial relief administrators involved in disaster management, whether non-officials or officials, in the techniques of disaster anticipation, disaster mitigation or disaster prevention. The establishment of a National Institute for this purpose with faculty drawn from different disciplines for looking into the totality of disaster management from the socio-economic, agro-climatic, meteorological, administrative and engineering angles is of the utmost importance.

9.120 This Institute should, under no circumstances duplicate the activities of the existing training and research institutions but should act as a seed-bed of new developments, new concepts and new programmes which can be taken up by institutions at the Central or State level or by the various departments of Government. It could act as a focal point for the dissemination of all knowledge relating to disaster management and be the catalyst of development and relief activity. As the establishment of the Institute is part of the integrated national plan for disaster preparedness, it should function under the umbrella of the Planning Commission.

9.121 Both at the Centre and in various States, it is necessary to strengthen the relief organisation so as to introduce an element of anticipation of disaster preparedness, to meet disasters when they occur and formulate measures for prevention of such disasters. The two main angles from which disaster preparedness can be looked at are the restoration and/or strengthening of the agricultural and the industrial economy and the preservation of social security. For this purpose, various schemes, particularly at the Central level will be undertaken such as strengthening of the nodal organisation for disaster relief, establishment of National Institute for training and research studies, formulation of contingency plans, preparation of material for judging community response and for undertaking field publicity and efficient functioning of Agro-Meteorological Advisory Services at various levels from the Centre upto the village and for the formulation of a Crop Insurance Corporation with a view to undertaking insurance of crops likely to be affected by disasters.

9.122 An outlay of Rs. 15 crores has been provided in the Central Plan for implementation of the above mentioned schemes.

9.123 There are three aspects of disaster management which need to be emphasised very strongly. The first is the involvement of voluntary institutions which have a tradition of sustained and dedicated work in the relief of natural calamities. If the State and Central Governments adopt towards these agencies an attitude of sympathy, understanding and encouragement, their closeness to the people as well as their experience and compassion could be harnessed very effectively for formulating and implementing various schemes of disaster management. A consortium of voluntary agencies may be set up at the national level for the purpose. Similarly at the State and disaster-prone district levels consortia of voluntary agencies may be set up.

9.124 Secondly, the success of disaster preparedness programmes depends on the awareness of the

community and its preparedness to participate in the implementation of such programmes. Building up of community response and preparedness should be an integral part of the policy of disaster management. Anticipatory measures, relief action and preventive efforts can be carried on very smoothly if the community is prepared. Of even greater importance is the creation of an environment of cooperative and purposive endeavour in the field of disaster perception and relief and the outlaw of fear and panic which can be positive hurdles in the path of giving relief or taking preventive action.

9.125 Finally, and most importantly, there is need to decentralise administration and delegate authority to the lower levels of the administrative hierarchy with a view to promoting and encouraging the active involvement of the personnel engaged in disaster operations, building in them a confidence for handling similar situations in future and arousing in them an awareness of their importance as partners in a meaningful and patriotic activity.

PROGRAMMES FOR AGRICULTURAL PRODUCTION

9.126 The package of technology, inputs and services and public policies are the base on which the production programmes for different field crops and tree crops are formulated. In what follows the specific targets and the measures contemplated for reaching these targets are described.

CROP PRODUCTION

9.127 Trends in crop production and yield rates since 1950-51 are presented in Annexure 9.2. These data show the substantial progress that has been made in raising both the level of agricultural production and the productivity per hectare of land. The main contributory factors to the more stable agriculture of today are (1) increased irrigation potential, (2) increased use of fertilisers and pesticides; (3) better crop varieties and quality seeds; and (4) higher level of production technology for major cereals, cotton, sugarcane, etc. While we may feel justifiably satisfied over our past performance in agriculture, we should attempt to improve our efforts through the lessons of the past. The main strategy for crop production during the Sixth Plan period would be on the following lines:

- (a) a steady growth of foodgrains production to meet the growing needs and a substantial increase in pulse production to improve the nutritional quality of the diet of the people;
- (b) to aim at self-sufficiency in oilseed production so as to eliminate import of edible oil; and
- (c) to increase production of export-oriented crops like tea, coffee, tobacco, cashewnut, spices, etc., cotton, sugarcane, fruits and vegetables.

9.128 Agricultural production during 1967-68 to 1978-79 has grown at an annual compound rate of 2.8 per cent, whereas in order to achieve an overall annual growth rate of the economy around 5.2 per

cent during the Sixth Five Year Plan, it is crucial that annual rate of growth of production, which will vary for different crops, should be in the range of 4-5 per cent on the trend base in 1979-80. Considering that there exists a big gap between production potential and actual production of various crops, it should not be difficult to achieve such growth rate in crop production during the plan period.

9.129 Table 9.6 indicates the targets of crop production for the Sixth Five Year Plan along with the base levels:

Table 9.6
Targets of Crop Production—Sixth Five Year Plan
1980-85

Sl. No.	Crop	Assumed base* level 1979-80 (Trend Estimates)	Plan Target 1984-85	Compound growth rate of Col. 3 over Col. 2 (percentage per annum)
(0)	(1)	(2)	(3)	(4)
1 Foodgrains @ (million tonnes)				
1	Rice	51.24	63.00	4.2
2	Jowar	10.88	12.00	
3	Bajra	5.28	5.80	
4	Maize	6.23	6.80	
5	Ragi	2.85	2.70	
6	Small millets	1.83	1.90	
7	Wheat	35.64	44.00	4.3
8	Barley	2.30	2.90	
	Total Cereals	116.25	139.10	
	Pulses	11.61	14.50	
	Total Foodgrains	127.86 or (128.00)	153.60 or (154.00)	3.9
2 Oilseeds@ (million tonnes)				
1	Groundnut	6.12	7.30	
2	Castor Seed	0.24	0.30	
3	Rapeseed & Mustard	1.91	2.40	
4	Sesamum	0.49	0.55	
5	Linsed	0.56	0.55	
	Total 5 major oilseeds	9.32	11.10	
6	Niger seed	0.10	0.20	
7	Safflower	0.23	0.35	

*The base level figures for 1979-80 have been worked out on the basis of trend line compound growth rate of production for the period 1967-68 to 1978-79.

@ State-wise break-up of these crop targets are given in Annexure 9.5.

(0)	(1)	(2)	(3)	(4)
8 Soybean		0.40	1.00	
9 Sun Flower		0.15	0.35	
<i>All oilseeds</i>		<i>10.20</i>	<i>13.00</i>	<i>5.00</i>
3 Sugarcane@ (Cane) (million tonnes)		175.80	215.00	4.1
4 Cotton@ (million bales of 170 kg. each)		7.34	9.20	4.6
5 Jute (million bales of 180 Kg. each)		5.66	6.96	
6 Mesta (Do)		1.88	2.12	
Total Jute & Mesta@		7.54	9.08	
7 Tobacco (million kg)		465*	525	2.5
8 Cashewnut (000 tonnes)		180	300	
9 Coconut (million nuts)		6000	6750	
10 Arecanut (000 tonnes)		166	175	
11 Tea (million kg.)		564*	705	
12 Coffee (000 tonnes)		118*	159	
13 Rubber (000 tonnes)		144*	200	
14 Cardamom (tonnes)		4500*	5500	

@State-wise break-up of these crop targets are given in Annexure 9.5.

*Relates to average of 1977-80.

9.130 The following paragraphs give an account of review of performance of agricultural production along with strategy and programmes for the Sixth Plan period in respect of individual crops.

Foodgrains

9.131 For foodgrains as a whole, the growth rate of their production, area and yield during the period 1949-50 to 1978-79 has been 2.66, 0.84 and 1.52 per cent per annum respectively. For the more recent period 1967-79 these percentages are of the order of 2.77, 0.44 and 1.84. A major advance was achieved towards the end of the Fifth Plan period, with a production of 126.4 million tonnes in 1977-78 against 121 million tonnes in 1975-76, 108.4 million tonnes in 1970-71 and 99.5 million tonnes in 1969-70. The year 1978-79 witnessed further improvement and recorded a production of 131.9 million tonnes.

9.132 In the year 1979-80, however, there was a steep decline to about 109 million tonnes due to severe drought experienced in kharif season in many parts of the country. Despite this setback there is considerable evidence of growing strength and resilience in Indian agriculture. The agricultu-

ral sector has become increasingly capable to take better advantage of favourable weather conditions through the application of improved technology. Simultaneously, the experience of 1979-80 has shown that technology and the spread of irrigation facilities have enabled the farmer to withstand the ravages of weather in a much better manner than would have been the case a decade or so ago. We have achieved the self-sufficiency in respect of foodgrains, with a stock of about 15 million tonnes to meet the requirements of public distribution system as also the untapped situations and potential for marginal export. The Sixth Plan aims at a target of 153.6 million tonnes in 1984-85. Towards this target we have to intensify our efforts, both in research and development.

9.133 The production of rice has shown a significant increase in the past few years, touching a new time record of 53.8 million tonnes in 1978-79. However, it suffered a set back due to wide spread drought in 1979-80 and declined to 42.2 million tonnes. The increase in rice production has been possible through the expansion of area under High Yielding Variety (HYV) of rice with the help of minikit programme, timely transplanting of the crop through the community nursery programme, increased use of balanced fertilizers and adoption of better crop management practices through various extension and training programmes. In addition, the cultivation of rice has been taken up on a large scale in non-rice consuming States of Punjab and Haryana.

9.134 For 1984-85, the terminal year of the Sixth Plan, a target of 63 million tonnes of rice is contemplated against the assumed trend base level of 53.8 million tonnes. The additional production of 9.0 million tonnes will be achieved through (i) increase in area under HYV from 13.6 million hectares to 25 million hectares; (ii) increase in irrigated area by about 2.5 million hectares with the adoption of improved techniques of practices; (iii) intensification of existing practices of community nurseries of rice, minikit demonstrations and training; and (iv) intensive steps to increase the yield of upland rice through adoption of latest technology.

9.135 The production of wheat achieved in 1979-80 was 35.5 million tonnes. In 1979-80 wheat production had declined to 31.6 million tonnes. The irrigated area under wheat is about 62 per cent, of which two-thirds is under the command of tube wells and pumps and the balance under canal irrigation. Short duration varieties have been quite popular in the northern States. Production in Punjab and Haryana has increased considerably under assured tubewell irrigation. The per hectare yield has been almost twice the national average in several districts of these States than that of the national average of about 1500

9.136 The Sixth Plan aims at a target of 44 million tonnes against the base of 35.64 million tonnes. The strategy to increase production of wheat would comprise (a) increase in area under HYV from 13.5 million hectares to 19 million hectares along with step by step increasing up irrigated area; (b) greater use of chemical

fertilizers; (c) application of zinc and other micro-nutrients to correct deficiencies; (d) demonstrating on large areas the line sowing of wheat with drills by using proper seed rate for better germination and good stand of the crop; and (e) better transfer of technology with adequate extension service.

9.137' Coarse grains (jowar, bajra, maize, ragi, small millets and barley) contribute about 30 million tonnes to foodgrains production. Their production is subject to wide fluctuations depending on weather conditions. The area under coarse grains has shown a slight decrease particularly during the last three years, 1976—79. There has been some increase in production, which is mainly due to rise in productivity, resulting from greater coverage under HYV hybrids/varieties and improved agronomic practices.

9.138: The Sixth Plan aims at a target of 32 million tonnes of coarse grains. The strategy involves an increase of area of 1.4 million hectares (1 million hectares of kharif jowar and 0.4 million hectares of maize), and increase in productivity by enhancing the area under HYV, ensuring adequate availability of hybrid seeds, encouraging adoption of recommended package of practices and plant protection measures.

9.139) Pulses deserve special attention on the food front since the growth rate of their production, area and yield during the period 1949-50 to 1978-79 has been much below 1 per cent per annum. The area under pulses has varied between 22 and 24 million hectares and production between 10 and 13 million tonnes in the past. However, in 1979-80 it declined to 8.4 million tonnes. They are generally grown in rainfed conditions, with the result that the farmers hesitate to invest their limited resources in pulse cultivation.

9.140) Recognising the importance of pulses in the diet of the people and with a view to filling up the gap between its demand and supply and the scope for import being limited, a special thrust on raising pulse production will be given during the Sixth Plan period. The production target for the Sixth Plan is kept at 14.5 million tonnes against the base of 11.6 million tonnes. The strategy for achieving this increase in production will consist of:

- ((a) introduction of pulse crops in irrigated farming systems;
- ((b) bringing additional area under (i) short duration varieties of urd, moong, etc. in rice fallows by utilising the residual moisture in rabi season; and (ii) in summer season with irrigation after oilseeds, sugarcane, potato and wheat.
- ((c) Inter-cropping of arhar in soybean, bajra, cotton, sugarcane and groundnut both under irrigated and unirrigated conditions;
- ((d) Multiplication and use of improved pulse seeds;
- ((e) adoption of plant protection measures;

- (f) use of phosphatic fertilizers and rhizobial culture;
- (g) improved post-harvest technology;
- (h) public policies including pricing and marketing of pulses; and
- (i) organisation of "pulse crop villages" in various blocks both in irrigated and rainfed areas in order to promote an integrated approach to production, procurement and marketing of pulse crops based on the best available know-how.

Cotton

9.141 Growth rate of production, area and yield of cotton during the period 1949-50 to 1978-79 has been 2.64, 0.63 and 1.57 per cent per annum. Cotton occupies an area of about 8 million hectares, 25 per cent of which is irrigated. The average annual production during the last three years has been about 76 lakh bales. Production of short and medium staple cotton exceeds the present level of consumption while the production of long staple cotton including superior quality cotton is adequate to meet the current demand. There is, however, need to step up production further as the demand from the industry is expected to go up substantially. The industry now consumes as much as 10 to 11 lakh bales of man-made fibres, of which 6 to 7 lakh bales are imported. It is necessary to reduce the import of man-made fibres by providing adequate quantity of cotton at competitive rates. In fact, the aim should be not only to meet in full, the domestic requirements but also to export raw cotton by exploiting the potential available for raising cotton production in the country.

9.142 The cotton development effort during the Sixth Plan period will essentially aim at transfer of available improved technology to as large an area as possible with a view not only to stepping up the level of productivity per hectare but also to imparting better stability to production, particularly in the rainfed areas. For this purpose, a three-pronged drive will be undertaken to (i) bring in maximum area under intensive cultivation both in irrigated and rainfed tracts; (ii) step up the area under irrigated cotton; and (iii) maximise the area under high yielding hybrid cottons. The existing Centrally Sponsored Intensive Cotton District Programme which incorporates this strategy will be continued during the Sixth Plan period.

9.143 The Sixth Plan aims at a target of 92 lakh bales against the base of 73.4 lakh bales, showing a growth rate of 4.6 per cent. The staple-wise break-up

of cotton production for the Plan period is given in the following table:—

Table 9.7
Staple-wise production of cotton
(In thousand bales)

Category	1978-79	1984-85
(1)	(2)	(3)
Short (19 mm and below)	950	1150
Medium (20 mm to 21.5 mm)	750	950
Superior Medium (22 mm to 24 mm)	3300	3700
Long (24.5 mm to 26 mm)	647	850
Superior Long (27 mm and above)	2280	2550
TOTAL	7927	9200

9.144 The internal consumption of cotton for yarn production is expected to increase to 8.30 million bales during 1984-85. Taking ex-factory consumption, the requirements of khadi production and exports aggregating to 9 lakh bales, the Sixth Plan target has been set at 92 lakh bales.

9.145 Marketing of cotton is also of crucial importance. Before the start of the cotton sowing season in each State, farmers should be given proper advice about the marketing opportunities for different staple length categories based on a careful analysis of home needs and export possibilities. This would help to avoid stagnation and distress sale of the produce. Cotton cultivation planning should, therefore, aim at more detailed analysis of the staple length mix required each year and bring about a proper match between the varieties grown and the needs of the textile and handloom industry. Also, cotton cultivation in respect of varieties and staple length should be planned in such a manner as to meet the regional needs of the spinning and textile mills and thus to avoid the movement to and fro of cotton, yarn and textile.

Jute and Mesta

9.146 Jute and Mesta cover an area of about 8 and 3.5 lakh hectares respectively. The average production of raw jute during the last three years 1977-78 to 1979-80 has been of the order of 78.3 lakh bales. Besides stabilising annual fluctuations in jute production, efforts are required to be taken to increase the production for meeting the growing requirements of the industry. Equally important is the quality improvement of jute fibre for meeting domestic and export needs.

9.147 The Sixth Plan aims at a target of 90 lakh bales (Jute 70 and Mesta 20 lakh bales) against the

base of 75 lakh bales. The strategy for raising production would be (i) to bring an area of 13 lakh hectares under intensive cultivation in the rainfed areas; (ii) stepping up jute area under irrigation in multiple cropping programmes (about 1.5 lakh hectares); and (iii) improvement of quality by providing better retting facilities through construction of community and individual tanks. The existing Centrally Sponsored Intensive Jute District programme will be continued during the Plan period. For educating the farmers about the improved technology, a net work of problem solving demonstrations will be laid out on jute, mesta and sunnhemp in the programme areas.

Sugarcane

9.148 Growth rate of production, area and yield of sugarcane during the period 1949-50 to 1978-79 has been 3.41, 2.28 and 1.10 per cent per annum. Production of sugarcane has been rising gradually during the last three decades, though there have been year to year fluctuations. In 1950-51 it was 57 million tonnes from an area of 1.7 million hectares. In 1977-78 a record production of 177 million tonnes of sugarcane was achieved as against the Fifth Plan target of 165 million tonnes. This created a problem of glut and consequent reduction in the area under the crop. During 1973-79 production fell to 152 million tonnes as a result of inadequate application of inputs and neglect by the growers due to low realisation of price and delayed disposal of cane. In 1979-80 production of sugarcane came down further to a low level of 128 million tonnes. There are thus wide fluctuations in the production of sugarcane which need to be avoided.

9.149 For 1984-85 a target of 215 million tonnes is contemplated against the base of 175.8 million tonnes showing a growth rate of 4.1 per cent. The additional production of about 40 million tonnes will be achieved almost equally from an increase in area under the crop and stepping up of yield rates. The yield rate of cane is today about 52 tonnes per hectare and it is expected to go up to 62 tonnes per hectare by 1984-85 through implementation of intensive development programme. The yield of cane is to be stepped up by providing quality seed material, adequate supply of fertilizers specially in areas with assured irrigation, as also by taking suitable and timely plant protection measures. The programme also covers demonstrations in the farmers' fields in respect of management of ratoons, improved techniques of cane cultivation, etc.

Oilseeds

9.150 Oilseeds cover an areas of 16-17 million hectares. An analysis of the trend of oilseeds production during the past quarter of century (1952-53 to 1978-79) reveals that in the first half of this period (upto 1964-65) there was a high growth rate of 3.46 per cent per annum. In contrast, there was a substantial decline in the growth rate during the period 1967-68 to 1978-79, when it came down to as low as 1.62 per cent. Major cause for this decline was that there was practically no increase in area under oilseeds during the latter period. Further, the

growth in productivity of oilseeds was as low as 0.37 per cent per annum during the first period, i.e., 1952—65. In the latter period 1967—79 this improved to 1.26 per cent per annum though it is still lower than the growth rate recorded by other crops such as wheat, cotton, etc.

9.151 Edible oilseeds consist of groundnut, rapeseed, mustard, sesamum, safflower, niger, soybean and sunflower whereas non-edible oilseeds are castor and linseed. An idea of production of edible and non-edible group of oilseeds over the past 10 years can be had from the following table:

Table 9.8
Oilseeds Production

Year	(Thousand tonnes)		
	Edible oilseeds	Non-Edible oilseeds	Total
(1)	(2)	(3)	(4)
1969-70	7382	592	7974
1970-71	8931	610	9541
1971-72	8310	683	8993
1972-73	6460	573	7033
1973-74	8448	733	9181
1974-75	8099	744	8843
1975-76	9558	741	10299
1976-77	7569	598	8167
1977-78	8593	744	9337
1978-79	9171	749	9920

9.152 Oilseeds production fluctuate widely from year to year due to seasonal conditions, as only 8 per cent of the total area under oilseeds is irrigated. Further, a substantial part of the rainfed area under oilseeds consists of marginal lands. Plant population is mostly sub-optimal due to the use of seed of poor quality and wide spacing. The triple alliance of weeds, pests and pathogens causes great deal of losses both in the early stage of plant growth as also at crop maturity. Absence of rains at critical stage before maturity also causes significant losses in yields particularly in groundnut. Poor post-harvest technology including deficiency in marketing support and storage and processing arrangements also have adverse effect on returns to growers and incentives for production.

9.153 The Sixth Plan gives high priority to oilseeds for meeting consumer requirements of edible oils and reducing pressure on foreign exchange caused by imports. A target of 110 lakh tonnes of 5 major oil seeds is visualised for the year 1984-85 against the

base of 93 lakh tonnes. Groundnut alone accounts for 73 lakh tonnes of the Plan target. Taking into account the minor oil seeds (niger, safflower, soybean and sunflower) a total target of 130 lakh tonnes is proposed to be achieved during the Sixth Plan period and this amounts to a growth rate of about 5.0 per cent per annum.

9.154 The approach to increasing availability of vegetable oils during the Sixth Plan period comprises of:

- (a) strengthening of research;
- (b) strengthening of extension and training;
- (c) increasing production of annual oilseeds like groundnut, mustard, etc.
- (d) development of perennial oilseeds like coconut, oil palm;
- (e) Exploitation of oilseeds of tree origin like sal, neem, mahua, etc.;
- (f) Increasing oil availability through technological processes such as extraction from cotton seed, rice bran; and
- (g) provision of appropriate public policy support.

9.155 The Indian Council of Agricultural Research has established 62 centres of research in different parts of the country dealing with different oilseed crops under the aegis of the All India Coordinated Oilseeds Research Project. In order to overcome the priority gaps in terms of scientific manpower and additional working expenses, some of these centres are being strengthened. Some new centres are also proposed to be established under the Sixth Plan in areas which have not been covered so far. Further, with a view to intensifying research on breeding of groundnut varieties, a separate National Research Centre for groundnut has been established at Junagadh. This Centre will lay emphasis on basic research directed at increasing the yield potential of groundnut. In addition, for working out the oilseed cropping system suitable to irrigation command area programme, 16 research centres have been recently sanctioned. These centres have been linked up with the Krishi Vigyan Kendras so that the new technologies could be simultaneously disseminated through appropriate extension education programme. With a view to harnessing available new technology for increasing oilseeds production in dry land areas, 30 extension-cum-education centres linked with the All India Coordinated Research Project for Dry land farming have been sanctioned. The International Crops Research Institute for the Semi-Arid Tropics (ICRISAT) has also included groundnut in its research mandate. All these efforts will go a long way in strengthening research on oilseeds under the sixth Plan.

9.156 Oilseeds production technology will be major focus of training, farm communication and dissemination of farm information at all levels. The Directorate of Extension in the Department of Agriculture will

undertake specific training programmes in this major area. Farmers' exchange programme within the country will be undertaken in those areas which are important for oilseeds production. Krishi Pandit awards will be instituted to honour farmers who achieve maximum yields in oilseeds.

9.157 The production strategy for annual oilseeds like groundnut, mustard, etc. involves launching of an integrated oilseeds yield maximisation programme with emphasis on production and distribution of improved seeds, popularising application of fertilisers specially phosphatic fertilisers to groundnut and soybean crops, adoption of adequate and timely plant protection measures on an area basis, inclusion of oilseed crops in irrigated crop rotations, expansion of area under non-traditional crops like soybean and sunflower and demonstrations of improved practices. This strategy will be built into the on-going centrally sponsored scheme for oilseeds development which will be extended to 110 districts spread over major oilseed growing States during the Plan period. High Yielding and short-duration varieties of important oilseed crops are now available which would be introduced in the irrigated farming systems without disturbing the major crops of the area. Efforts would also be made to popularise intercrop patterns with leguminous oilseed crops like groundnut and soybean as these are both profitable and beneficial from the point of view of soil fertility improvement.

9.158 Soybean cultivation has made rapid strides in the country during the last few years because of the availability of the black seeded variety which can withstand both drought and excessive moisture. Madhya Pradesh offers the largest scope for soybean followed by Uttar Pradesh particularly the tarai and hilly areas. During 1979-80 the total area under the crop was estimated at about 4.3 lakh hectares as compared to 3 lakh hectares during 1978-79. It is proposed to raise this area to 10.5 lakh hectares by 1984-85, and this would yield about 2 lakh tonnes of oil. Area under sunflower crop would be increased to 7.5 lakh hectares from the present level of about 2 lakh hectares.

9.159 Cultivation of summer groundnut in irrigated areas deserves special mention. As a result of the campaign launched in irrigation command areas during 1979-80, summer groundnut area increased to about 8 lakh hectares against 5.5 lakh hectares in 1977-78. Efforts will be made to raise irrigated summer groundnut area to 14 lakh hectares by 1984-85. Similar efforts will be mounted in the case of mustard, sesamum and sunflower crops.

9.160 A project has been cleared for implementation by the National Dairy Development Board (NDDB) whereunder the techniques of cooperative organisation and marketing would be applied to the vegetable oil sector to achieve vertical integration of production, marketing and processing and thus help the farmers to adopt production techniques which will decrease the vulnerability of oilseed crops to climatic variations while raising yield and offering year to year price stability at remunerative levels. This project

envisages import of 160 thousand tonnes of gift edible oil from the Cooperative League of U.S.A. to generate funds required for the development of cooperative structure, increasing oilseeds production and improving returns to the farmers through better processing and marketing.

9.161 Among perennial oilseeds, mention may be made of coconut and oil palm. Production of coconut is currently about 6000 million nuts. The Sixth Plan aims at a target of 6,750 million nuts so as to achieve a balance between supply and demand. The strategy for increasing production of coconut will involve both long-term and short-term measures. The long-term approach will give priority to the rehabilitation of the existing gardens, especially the root wilt affected areas in Kerala and senile gardens in other States with hybrid planting material. The on-going centrally sponsored scheme for coconut development will be continued during the Sixth Plan period.

9.162 With a view to ensuring rapid development of coconut industry by integrating production, marketing and processing of coconuts at the farm level, an Act for setting up the Coconut Development Board was notified in March, 1979. The Copra Cess Act 1979, which is complementary to the Coconut Development Act has already been brought into force and the rate of cess at Rs. 5 per quintal of copra crushed is collected. It is expected that the enhanced copra cess will fetch a revenue of about Rs. 100 lakhs per annum which will be earmarked for the development of coconut industry in all its aspects.

9.163 Recognising the importance of oil palm in bridging the gap between the demand and supply of vegetable oils, the Department of Agriculture has taken up two projects for raising plantations of red oil palm over an area of 8400 hectare—6000 hectare in Kerala and 2400 hectare in Andaman and Nicobar Islands. These two sites have been selected keeping in view the rainfall requirement, namely, 220—280 cm. spread over a period of 8—9 months. In Kerala an area of about 1400 hectares out of 6000 hectares has so far been planted. A Public Sector Company called Oil Palm India Ltd., has been formed with equity participation by the Government of India to look after oil palm development. In Andaman and Nicobar Islands, about 160 hectares had been planted to red oil palm. The Forest and Plantation Development Corporation of the Islands has been entrusted with the development of the plantations. The 8400 hectares of oil palm plantations being developed are only in the nature of pilot projects and the objective is to bring much larger areas under oil palm. Maximum scope for development of oil palm plantations exists in replacing uneconomic forests which are not yielding much return or contributing to the gross national product. Suitable additional areas for expanding oil palm plantations in the country are being identified. This programme will receive adequate attention under the Sixth Plan.

9.164 Attention will also be given to proper exploitation of oil seeds of tree origin. Particular mention may be made of sal seed, the collection of which

increased from a mere 2000 tonnes during the year 1968 to about 178,000 tonnes during 1977. Mahua, neem, kusum and karanj have also great potential, especially in tribal areas. Other sources of vegetable oil which are not being exploited to the fullest possible extent are rice bran and cotton seed. These also call for greater attention under the Sixth Plan.

Tobacco

9.165 Though tobacco occupies hardly 0.3 per cent of the total cropped area, yet it is an important cash crop earning over Rs. 600 crores by way of Central excise and foreign exchange of over Rs. 100 crores annually through exports. Further, tobacco is a labour intensive crop and it provides employment opportunities to more than 4 million people in its farming, curing marketing, grading, packing, manufacturing and distribution of different tobacco-products.

9.166 The following table indicates domestic consumption and export demand for various types of tobacco.

Table 9.9

Consumption and Export of Tobacco

Type of tobacco	Million kg. (Dry weight)			
	Domestic consumption		Export demand	
	(1979-80) Base level estimates	(1984-85) Projected demand	(1979-80) Base level estimates	(1984-85) Target
(1)	(2)	(3)	(4)	(5)
Virginia Flue Cured (VFC)	45	60	65	85
Other types of Cigarette tobacco	30	35	5	7
Bidi tobacco	130	138	2	3
All other types	80	80	8	10
Total	285	313	80	105

9.167 Particular mention may be made of the V.F.C. tobacco which accounts for nearly 85 per cent of the total export of tobacco from India. The present level of production of this variety of tobacco is about 125 million kg (1979-80). This would be raised to 165 million kg. by the end of Sixth Plan. The strategy for increased production would be to expand V.F.C. tobacco cultivation in new light red soil areas (about 55000 hectares) and improve the productivity by adopting new technology and package of practices. This programme would be undertaken in the States of Andhra Pradesh, Karnataka, Gujarat and Uttar Pradesh.

9.168 Tobacco Board under the Ministry of Commerce has been entrusted with the task of organising tobacco marketing on systematic lines and also to undertake price support operations through the STC. There is need to streamline the production, marketing and export aspects of tobacco more effectively, and for this purpose a greater coordination between the Tobacco Board and the Department of Agriculture is considered essential. An outlay of Rs. 2 crores has been provided for the Tobacco Board under the central Plan of the Ministry of Commerce.

HORTICULTURE AND PLANTATION CROPS

9.169 Horticulture has an important role in improving the economic status of the growers, removal of malnutrition, protection against diseases, conservation (soil and environment), employment generation and exports. Fruits, vegetables and flowers did not receive the scientific and developmental attention they deserved till the end of Fourth Five Year Plan. It was only in the Fifth Plan when an outlay of Rs. 2 crores was allocated for development of horticulture in different States as against a small outlay of about Rs. 5 lakhs under the Fourth Plan.

9.170 Tea, coffee, rubber and cardamom are the important plantation crops, both from the point of view of earning foreign exchange through exports as well as for providing gainful employment to a large number of people. Development of these crops is handled by the respective Commodity Boards under the Ministry of Commerce.

Fruits

9.171 Area and production of some important categories of fruits in 1978-79 was of the following order:—

Table 200
Area and Production of major fruit crops in 1978-79

Name of Fruit	Area in 000 ha.	% of total	Production in 000 tonnes	% of total	Production per ha./tonnes
(1)	(2)	(3)	(4)	(5)	(6)
Mango	942.56	42.33	8216.51	40.31	8.80
Banana	281.57	12.64	4924.61	24.15	17.49
Citrus	195.81	8.79	1638.39	8.04	8.36
Apple	146.48	6.58	544.72	2.67	3.72
Guava	133.44	6.00	1177.61	5.78	8.82
Pine Apple	43.95	1.98	500.30	2.46	11.40
Grapes	9.56	0.43	192.16	0.94	20.12
Other Fruits	473.10	21.25	3188.15	15.65	6.74
Total	2226.47	100.00	20382.45	100.00	9.15

9.172 The productivity of fruits in Assam is 3.87 tonnes per hectare as against 16.33 tonnes in Tamil Nadu and 13.85 tonnes in Karnataka. The national average is 9.15 tonnes per hectare. The grapes have the maximum productivity of 20.12 tonnes per hectare followed by banana (17.49 tonnes). The low productivity in case of apple (3.72 tonnes/hectare) is partly on account of the fact that most of the apple plantations are new and young and have yet to reach full maturity. There is, however, immense potential for increasing the productivity of not only apples but most of the fruits. In several countries, the productivity of some of the fruits is as much as 50 tonnes per hectare in large blocks. The National Commission on Agriculture also recommended that the production of horticultural commodities can be increased by 100 per cent. This should not be difficult if concerted efforts are made in view of the large gap between potential and actual yields.

9.173 It is proposed to achieve during the Sixth Plan period an additional production of at least 2.5 million tonnes of fruits and 4 million tonnes of vegetables through—

- (a) productivity improvement by supply of improved seeds and planting material and promotion of better management practices;
- (b) expanding the area under fruits by about 5 lakh hectares and under vegetables by 3 lakh hectares;
- (c) organisation of appropriate services both at the production and post-harvest phases; and
- (d) promotion of a systems approach to production, storage, processing, transport, marketing and consumption.

9.174 The programme will be organised at the level of—

- (a) home-kitchen gardening;
- (b) social forestry programmes involving appropriate fruit trees;
- (c) market-shed planning around major towns and cities; and
- (d) introduction of better storage, processing and distribution arrangements including socially relevant marketing and delivery systems.

9.175 The potential for the export of fresh and processed fruits and vegetables will be fully exploited. Also, production, packaging and marketing of horticultural produce will be treated as an integral system so as to take care of the interests of both growers and consumers. Further, besides the direct use of fruits for human consumption, subsidiary industries could be built around certain plant parts such as mango kernels for oil extraction, citrus skin and other fruit Coats, etc. for a wide variety of uses. Also, several root vegetables like tapioca could become sources of ethanol production. Thus a dynamic horticultural research and development programme could play a significant role in economic and nutritional progress.

Cashewnut

9.176 Cashewnut is another important foreign exchange earner having great potential for exports. During the earlier Plan periods major attention was given to the scheme of laying out demonstration plots for improved practices in cashew cultivation on growers' orchards. The scheme on improvement of cashew by vegetative propagation was taken up for improvement in the quality of cashew

plants; Another scheme for establishment of progeny orchards was started during the Fifth Plan period.

9.177 Special mention may be made of the multi-State cashew project covering four States, namely, Kerala, Karnataka, Andhra Pradesh and Orissa which has recently been started. This project envisages a total target of 60,275 hectares, of which new plantings will be 52,775 hectares and improvement of existing plantations over 7,500 hectares. It is further subdivided into two categories, accounting for 26,275 hectares to be covered by the State Corporations and 34,000 hectares under the small holder programme to be executed by the State Departments of Agriculture, Horticulture and Soil Conservation. All these developmental programmes are expected to result in increasing the production of cashewnut from 1.80 lakh tonnes at present to 3.0 lakh tonnes by 1984-85.

9.178 Arecanut is an important plantation crop grown largely in the States of Kerala, Karnataka, Tamil Nadu, Assam and Meghalaya. Its present production is about 166,000 tonnes which is quite adequate to meet the current demand. The Sixth Plan aims at a target of 175,000 tonnes which will be achieved through intensive management of the existing areas. Special attention will be given to seed production programme and provision of necessary extension service as also the basic infrastructure for effective implementation of arecanut development programme.

Cocoa

9.179 Cocoa is grown as an inter-crop in coconut and arecanut gardens. Present area under this crop is about 18000 hectares with a production potential of 9000 tonnes annually at the full bearing stage. The current annual requirement of cocoa beans is reported at about 1500 tonnes and this is likely to go upto 4000 tonnes in the near future. It has a great potential for export in the form of cocoa beans and cocoa products for which international demand is steadily rising. Since the production has exceeded the internal requirement, it has become necessary to export the surplus. It is essential to maintain high quality standards for the produce to match the international markets.

Care should be taken to see that the existing areas under cocoa are maintained scientifically by providing the required technical knowledge to the farmers. The programme of demonstrations and training of farmers to impart technical skills should also be intensified.

Spices

9.180 Pepper is the most important spice produced and exported from India. Considering that India's share in the international trade in pepper has been about 25 per cent, our export requirement by 1985 will be about 38,000 tonnes. The internal consumption is at present nearly 10,000 tonnes and this may rise to 12,000 tonnes by 1984-85. Thus, the total requirement of pepper by the end of Sixth Plan period will be about 50,000 tonnes.

9.181 With a view to introducing the high yielding hybrid pepper into large scale cultivation a pro-

gramme for multiplication and distribution of this variety was taken up during the Fifth Plan period as a centrally sponsored scheme. Progeny gardens were established in the important pepper growing States and about 30 lakh cuttings were produced and distributed. Another programme implemented during the Fifth Plan period was organising of field demonstrations for popularising the hybrid pepper. Also a package programme for promoting intensive cultivation was undertaken in Kerala. While a few varieties including the hybrid have been identified as high yielders, the existing nurseries are inadequate to meet the requirement of planting materials. It is, therefore, necessary to take urgent steps to promote adoption of intensive cultivation practices including re-planting and gap filling with high yielding varieties.

9.182 The strategy for development of pepper under the Sixth Plan would aim at: (i) large scale multiplication and distribution of planting materials of high yielding varieties by establishing Central nurseries; (ii) implementation of a package programme for promoting intensive cultivation practices including replanting and gap filling in the existing areas; and (iii) extension of cultivation in traditional as well as non-traditional areas with stress on inter-cropping in coconut, arecanut and coffee plantations.

9.183 Minor spices are ginger, turmeric, chillies, coriander, cumin, fennel, fenugreek, celery, etc. They are mostly consumed within the country, but they also have some potential for export. Clove and nutmeg also deserve attention because in their case the existing production is insufficient to meet the internal demand and, therefore, imports are, at times, to be made to make up the deficiency. Lack of planting materials of high yielding varieties has been the major constraint in respect of ginger, turmeric and chillies. In case of other minor spices, the high yielding varieties which have been identified have not become popular with the farmers mainly due to inadequate availability of seeds. These problems would require necessary attention.

9.184 Targets of production of some important spices to be attained by the end of Sixth Plan period are given in the following table:—

Table 9.11
Targets of Production of some important Spices

Name of the Crop	Present Production (tonnes)	Projected Production at the end of Sixth Plan (tonnes)
(1)	(2)	(3)
Pepper	26,100	40,000
Turmeric	1,46,800	1,60,000
Chillies	6,37,900	7,00,000

All development efforts have to be made to achieve these targets.

Tea

9.185 Production of tea has increased from 285 million kg. in 1950-51 to 556 million kg. in 1977-78. For the year 1979-80, it is expected to be lower at 546 million kg. as against the likely level of 570 million kg. in the preceding year, largely due to drought in north eastern region. Internal consumption of tea has been rising from 73 million kg. in 1950-51 to 338 million kg. in 1979-80.

9.186 The Sixth Plan aims at a target of 705 million kg. of production, 438 million kg. of consumption and 260 million kg. of export, showing a growth rate of about 5 per cent. The production target is to be achieved through adoption of long, medium and short term measures. Among the long-term measures are included new plantings, replantings and replacement plantings. The medium term measures include rejuvenation and infilling of vacancies. Improved cultural practices in the existing plantations and creation of drainage and irrigation facilities are expected to show results over a short term period. In regard to new plantings, the Board has done an assessment regarding the availability of land. Based on this assessment a total area of 52,250 hectares in North India and 15,350 hectares in South India would be available for new plantings. The proposal is to utilise 25,000 hectares during the Sixth Plan period at the rate of 5,000 hectares per year. As tea is a long gestation crop, it will take 3 to 4 years for a newly planted area to come into economic bearing and therefore extension plantings undertaken during the Sixth Plan period will show results in the next plan period. As for replanting, replacement, rejuvenation, etc. coverage during the Sixth Plan period is likely to be of the same order, i.e., 5000 hectares per year.

9.187 It is also proposed to aim at providing a break through for tea culture in the non-traditional areas, namely, Manipur, Mizoram, Meghalaya, Arunachal Pradesh, Nagaland and Sikkim. Preliminary surveys on availability of land suitable for tea cultivation in these areas have already been undertaken in some parts and are also underway in others. The Tea Board proposes to cover an area of 2600 hectares under tea in these States during the Sixth Plan period. Initiative for bringing larger area under tea cultivation will have to come from the concerned States. Establishment of Development Corporations has been suggested as the means to this end.

Coffee

9.188 Production of coffee has increased from 18,890 tonnes in 1950-51 to 125,000 tonnes in 1977-78. On an average annual production during the Fourth Plan period was 84,000 tonnes and during the Fifth Plan period it rose to 100,000 tonnes. Despite fluctuation in production and consequential constraint on marketing, adequate supplies to the internal market have been maintained, without affecting the export market. Export of coffee was 49,960 tonnes in 1973-74, rising to 61,954 tonnes in 1978-79.

9.189 The total demand for coffee in 1984-85 is estimated at 152,100 tonnes, consisting of internal consumption of 58,000 tonnes at the growth rate of 3 per cent per annum, and export requirement of 94,100 tonnes on the basis of 5.5 per cent annual growth. The target of production for the Sixth Plan is visualised at 159,450 tonnes. The programme for increased production envisaged in the Sixth Plan will be achieved through (i) further increasing the existing productivity of the small grower sector and low yielding pockets in the large holdings through various extension and developmental measures; and (ii) extension of coffee area in traditional and non-traditional States including the north eastern region. In order to cope up with the increased production and to ensure efficient marketing of the commodity, steps will be taken to strengthen further marketing and promotional infrastructure. The processing and storage capacity will also be suitably strengthened.

9.190 Coffee, being a perennial plantation crop involving a gestation period of five years before reaching the production stage, the Coffee Board has prepared a long-term expansion programme to meet the demands for coffee by the turn of the century. The perspective plan envisages expansion of area under coffee to the extent of 130,000 hectares by 1993-94, of which 72,000 hectares would be in the non-traditional States and the balance of 58,000 hectares in the traditional States. Action to implement this perspective plan should be initiated and taken into consideration in executing the programme for Sixth Plan.

Rubber

9.191 An intensive rubber production drive was launched by the Rubber Board in October, 1978 to step up the production from the existing plantations through adoption of appropriate technology. The extensive village level campaign was mounted to transfer the technology from the research centres to the plantations. Further, a scheme for the new planting of rubber in small holding sector was taken up in 1979 for the first time and the target of planting 4000 hectares is expected to be fully achieved. Another campaign for training tappers/small holders with a view to rectifying the defects in the existing tapping system and thus to improve the productivity of small holders has been initiated during 1980.

9.192 Research activities have been intensified. Clones with high production potential have been evolved and good planting materials have also been introduced from different rubber growing countries and suitable ones released for planting. Poly-clonal seed gardens have been established for producing superior quality hybrid seeds. Recently, a Regional Research Centre has been established in Tripura to exploit the potential for development of rubber in the north-eastern region. Production target to be achieved under the Sixth Plan is 200,000 tonnes as against the projected demand of 230,000 tonnes.

Cardamom

9.193 The total area under cardamom in India is around 3,000 hectares, spread over Kerala (59 per cent), Karnataka (31 per cent) and Tamil Nadu

(10 per cent). Of this, about 70,000 hectares is estimated to be at the yielding stage on account of the process of replantation of uneconomic areas. While no substantial increase in the area under cardamom is contemplated, the emphasis for increasing its production would be through intensive cultivation.

9.194 Production of cardamom has increased from 2900 tonnes in 1974-75 to 4000 tonnes in 1978-79. The per hectare yield has also shown an increase from 42 kg. in 1974-75 to 58 kg. in 1978-79. Research and development activities of the Cardamom Board have played an important role in increasing production of cardamom. Particular mention may be made of supply of high yielding planting material, disease control programme, credit facilities for replanting and irrigation, extension and advisory services.

9.195 The Sixth Plan aims at a target of 5500 tonnes with the per hectre yield of 79 kg. As internal consumption of cardamom is more or less stable, any increase in production will enable more exports especially in the context of world demand outstripping world supply. Hence concurrent with the increase in production, a higher quantum of exports is envisaged. However, keeping in view the production programme in other countries in the coming years, aggressive export promotion measures coupled with efforts for finding new markets and new end-uses for cardamom are required. Export target of 4100 tonnes is visualised against the production of 5500 tonnes in 1984-85.

PROGRAMMES FOR ALLIED SECTORS

9.196 Field crops and tree crops are the primary land based activities in agriculture. However, there are certain other activities like animal husbandry, fishery and forestry which do not involve the use of cultivable land except in a limited way. These activities contribute substantially to rural economy particularly of the weaker sections and the Sixth Plan lays great stress on them. In what follows programmes for these sectors allied to agriculture are described.

ANIMAL HUSBANDRY AND DAIRYING

Review

9.197 An increase in the productivity of cattle and buffalo received continuing emphasis since the advent of Five Year Plans. The progressive introduction of artificial insemination technique using superior breeding bulls was the main plan for such development under the key village scheme and the intensive cattle development projects. Cross-breeding in cattle with exotic dairy breeds was taken up on a large scale since the beginning of the Fourth Five Year Plan. Under the Fifth Five Year Plan, use of frozen semen technology was introduced through the establishment of frozen semen stations. An integrated project on cattle breeding, farm forestry and food for work programme was given a start to benefit mainly the

weaker sections of farmers in the states of Gujarat, Maharashtra, Uttar Pradesh and Orissa. The total milk production which was estimated at about 17 million tonnes in 1951, is estimated to have reached a level of about 30 million tonnes in 1979-80.

9.198 Growing in the modern poultry farming in India was given a start with the initiation of intensive poultry production programme. During the early years, five regional central poultry breeding farms and a number of State poultry farms were established for the production and distribution of superior poultry birds for breeding and production purposes. The private entrepreneurs were also encouraged to set up franchise hatcheries in collaboration with poultry breeding organisations abroad. Intensive egg and poultry production-cum-marketing projects were started in different States around urban markets. Scientific poultry breeding programme for evolving genetically superior strains of birds and production of commercial high producing chicks was undertaken both at the Central and State Government farms and under the ICAR's all-India co-ordinated research projects on poultry. One major development was the commencement of research and development in poultry breeding through private hatcheries using purelines imported from abroad. These steps provided a beginning to achieve the objective of attaining self-sufficiency in chick production in the country. As a result of these measures, the annual egg production increased from 2,880 million in 1960-61 to 12,320 million in 1979-80.

9.199 There were 1450 veterinary hospitals and dispensaries before the beginning of the First Five Year Plan. As many as 10,890 veterinary hospitals and dispensaries were added during the successive Five Year Plan periods, reaching a total of 12,340 hospitals and dispensaries by the end of 1979-80.

9.200 For development of ducks a Central Duck Breeding Farm at Hesserghatta and a Regional Duck Breeding Farm in the north-eastern region were established. In order to support programmes for increasing the productivity of indigenous sheep, one large Central Sheep breeding farm at Hissar and eight large sheep breeding farms in different states were set up for producing and distributing purebred and crossbred rams. For promoting sheep and wool production and marketing to benefit the sheep farmers state level organisations have been set up in Rajasthan and Gujarat.

9.201 Special livestock production projects through small and marginal farmers and agricultural labourers were formulated based on the recommendations of the National Commission on Agriculture. Under this programme, 99 projects for subsidised rearing of crossbred heifer calves, 68 poultry production projects, 51 sheep production projects and 50 pig production projects were taken up in different States. Minikit programme for distribution of fodder seeds to the farmers was also initiated.

9.202 The Operation Flood-I project launched in 1970 was continued and a sum of Rs. 112.60 crores

was generated upto the end of March, 1980 and the total average daily throughput in the expanded and the new dairies in the four metropolitan cities reached a level of 20.16 lakhs litres. Capacity has been created at feeder balancing dairies for handling about 30.00 lakh litres of raw milk a day. A new dairy development project for milk production and marketing on the lines of Operation Flood-I was started in Sikkim. Three integrated cattle-cum-

dairy development projects were started in the States of Rajasthan, Madhya Pradesh and Karnataka. Under these projects a large number of primary milk producers societies and district dairy unions have been started on Anand Pattern. In the project areas existing dairy plants were expanded and new dairies and cattle feed mixing plants were started. Achievements in respect of important programmes during 1960-61 to 1979-80 are given in the table below:—

Table 9.12
Livestock products and Programmes Targets and Achievements

Livestock products/Programmes	Unit	1960-61	1973-74	1977-78	1979-80 Anticipated Achievement
(1)	(2)	(3)	(4)	(5)	(6)
Milk	Million tonnes	20.00	23.20	27.60	30.00
Eggs	Million Nos.	2880	7700	10280	12320
Wool	Million Kgs.	N.A.	30.10	31.80	34.00
Intensive Cattle Development Projects	Nos.	..	63	100	119
Annual inseminations with exotic bull semen	Million Nos.	..	1.40	3.20	4.70
Frozen Semen Stations	Nos.	1	8	19	25
Intensive Sheep Development Projects	Nos.	..	1	20	21
Intensive Egg & Poultry Production-cum-Marketing Centres	No.	..	81	112	115
Vety. Hospitals/Dispensaries	No.	4000	9495	11395	12340
Liquid Milk Plants	No.	21	90	127	133

Objectives

9.203 Livestock production and dairying programmes have to be viewed as an effective instrument of social change through supplementing the income and providing employment to weaker sections of people in the rural areas. Special emphasis will be laid on projects for increasing the productivity of various species of livestock through genetic improvement and better health cover. Adequate attention will be given to feed and fodder production integrating these into mixed farming systems, crop rotation and agro-forestry programmes. One other important consideration will be the organisation of producer oriented cooperative marketing systems. Animal Husbandry programmes will form an integral part of dry farming systems and area development projects intended for drought prone and desert areas, hilly areas and tribal development. Special attention has to be given to preservation and rehabilitation of species of animals like camels in Rajasthan and yaks

and mithuns in the farmers' economy in some of the north eastern states. Attention will be given to make available reliable and timely livestock statistics in order to facilitate taking decisions in perspective planning as also for implementation, monitoring and evaluation of projects on Animal Husbandry and Dairying.

Targets of Livestock Production

9.204 Against the base level production of 30.00 million tonnes of milk estimated in 1979-80, it is proposed to reach by the end of Sixth Plan an annual production level of 38.00 million tonnes, implying a growth rate of 4.8 per cent. The target for annual egg production by 1984-85 would be 16,300 million. An additional production of 5 million Kg. of wool would be aimed at, taking the total production of wool to 39.00 million Kg. by 1984-85. The projected targets of livestock products are given in the table below:—

Table 9.13
Targets of production of Livestock products

Item	Unit	Base level 1979-80 (anticipated)	Target 1984-85
(1)	(2)	(3)	(4)
Milk	Million tonnes	30.00	38.00
Eggs	Million Nos.	12320	16300
Wool	Million Kgs.	34	39

Note:—State-wise details given in Annexure 9.5

Programmes

9.205 Cattle and buffalo development: For increasing the productivity of cattle and buffaloes, concerted efforts will be made to contain the increase in the population of cows and she buffaloes and to change the structure of these populations by replacing non-descript local stock by high producing cows of indigenous breeds, crossbred cows and improved buffaloes. For bringing out such a change, each State should lay down definite breeding policies. The aim will be to bring at least 10 million cows under crossbreeding programme to raise the number of crossbred cows from 3 million in 1979-80 to about 8 million and increasingly introduce the use of frozen semen technology for artificial insemination in cows and she buffaloes. This programme will be continued started in all areas covered by intensive cattle development projects, Operation Flood Project, integrated cattle-cum-dairy-development projects and other cattle development and dairying programmes in the States.

9.206 As crossbred bullocks have been found quite useful for work compared to the vast majority of non-descript type of bullocks, promotion of use of cross bred bullocks for work through demonstration and extension methods would be built into the crossbreeding projects. Programmes for development of important indigenous breeds of cattle would also continue. In all these programmes, emphasis will be laid on progeny testing of bulls.

9.207 Buffaloes constituting about one third of the total bovine milch stock will continue to remain important dairy animals in most parts of the country. Therefore, research and development programmes on buffaloes would receive increasing attention. Efforts will be made to identify, pool and multiply superior buffalo germplasm through establishment of large buffalo farms. Research will be intensified to evolve improved technology for larger use of frozen buffalo semen in artificial insemination at the field level. A new Institute for research in buffaloes will be established and research work under the coordinated project on buffaloes will be intensified with a view to solving problems relating to production, reproduction in buffaloes, nutrition in buffaloes, economic production of buffalo meat, etc.

9.208 Poultry Development: Poultry farming practices have been more or less well established on scientific and organised basis and the future emphasis will be on promoting poultry production mainly through weaker sections of people and to bring about qualitative improvement in the inputs and services required for poultry farming. In view of the policy to discontinue import of grand parent stock, research and development will be intensified both in the private and public sectors for evolving high yielding strains and lines within the country. Setting up of new pureline breeding farms would be encouraged.

9.209 Production of poultry meat through broiler industry has been accelerated in the recent past. Broiler strains capable of attaining 1200 gm. in 8 weeks and 1500 gm. in 10 weeks have been evolved. Development of new lines of broilers would be taken up both in the public and private sectors. The requirement of broiler chicks is expected to increase to a level of about 35 million by 1984-85.

9.210 Marketing of eggs and poultry both for internal demand and for export would be channelised through the organised sector. Major thrust in this direction would be the organisation of primary producers cooperative societies/unions and organisation of poultry corporation/federation at state level. NAFED would be assisted to continue its efforts to take a commanding share of marketing of eggs and poultry at regional and national levels and in exports. An aggressive consumer education programme will form a major component of market promotion activity. Market surveys within the country and abroad will be conducted from time to time.

9.211 Duck development will be intensified in potential areas, particularly in the north eastern states. Scientific rearing and breeding of ducks will be taken up in large duck farms and crossbreeding of ducks will be introduced in rural areas for enhancing productivity in respect of both eggs and meat.

9.212 Sheep and Wool Development: The gap between the availability and requirement of wool for all the textile sectors, viz., worsted yarn, carpet manufacture and khadi and woollen manufacture continues to remain. The present trends indicate large export potential for carpets. There is good export market for live sheep for mutton. There is acute shortage of mutton for internal consumption with a consequent upward trend in prices. Therefore, there is immediate need for launching a massive programme of improvement in sheep for wool and mutton. It is proposed to implement intensive crossbreeding programmes with suitable exotic fine or medium wool (dual type) breeds in different States through the establishment strengthening of large scale sheep breeding farms and setting up of additional intensive sheep development projects. To augment mutton produc-

tion, extensive crossbreeding with breeds like Corriedale and special efforts to increase the number and quality of indigenous mutton type sheep would be organised through co-operatives of sheep breeders at the district level and Wool Boards/Corporations at the State level.

9.213 The approach to carpet wool sheep improvement in the Sixth Plan would have two objectives, viz., to improve quality and to increase quantity of the fleeces by adopting selective breeding among the carpet wool breeds. Selective breeding of goats of indigenous breeds and crossbreeding with exotic dairy breeds to get types which could be stall-fed will be undertaken. Pelt and fur production through introduction of Karakul sheep, and Pashmina goats and Angora rabbits would be promoted in suitable areas.

9.214 *Other livestock:* Crossbreeding in pigs would be concentrated around bacon factories, urban markets and tribal areas. Intensive pig breeding-cum-marketing schemes would be taken up in the North Eastern States which are high consumption and high price areas for pork. Horse breeding farms and stud centres would be set up for development of horses and ponies for sport and transport. For improving the economy of the desert areas, camel development would be organised through camel breeding farms, camel stud centres and organisation of breeders co-operatives. Programmes will be taken up for the preservation and multiplication of yaks and mithuns in the eastern Himalayan region. Studies will be undertaken on the possibilities of domestic rearing and crossbreeding with these species for work, milk and meat purposes.

9.215 *Meat Processing:* There is necessity for development of meat industry in the country mainly for internal consumption and to some extent for export. For the production, processing and marketing of wholesome meat and effective utilisation of animal by-products, modernisation and improvement of slaughter houses in the major cities would be taken up. A separate organisation would be developed for promoting and regulating domestic production, internal marketing and export of meat and meat products.

9.216 *Feed and Fodder Development:* Feeds and fodder constitute 60 to 70 per cent of the cost of production of various livestock products. The area under fodder crops has remained more or less static during the last one or two decades. The emphasis will continue on the promotion of fodder production as an integral part of crop husbandry so that a mixed farming system is promoted, particularly on the small land holdings. An effective farmer-oriented extension programme will be taken up by the State Governments for evolving and popularising high yielding varieties of fodder crops, introduction of fodder crops, especially leguminous fodders in existing crop rotations. Production and distribution of high quality

fodder seeds will receive priority attention. Appropriate agencies will be assisted for production of breeder, foundation and certified seeds. Fodder seed production farms will be expanded and new ones established to augment production and supply of improved seeds. Development of extensive grass lands and creation of grass reserves would be taken up by the State Forest Departments. Under the social forestry programme, the Forest departments would allocate a fair share of the marginal lands and degraded forests for cultivation of fodder trees. Silvopastoral practices would also be introduced in suitable hilly areas. In arid and semi-arid regions, large blocks of land would be developed as rangelands for rotational grazing of livestock and for collection and storage of hay in fodder banks to be utilised in times of drought, famine and floods.

9.217 Efforts will be made for the increasing use of agro-industrial by-products and wastes in the manufacture of compounded feeds and research will be continued for the use of various unconventional feed ingredients for incorporation in compounded livestock and poultry feeds.

9.218 Proper collection and utilisation of carcasses of dead animals and slaughter house wastes for conversion into meat meal, bone meal, blood meal, etc. would be taken up in all areas, wherever such collections are economically feasible.

9.219 *Animal Health Cover:* Under the Rinderpest Eradication Scheme, the strategy will be to eliminate the residual foci of infection through intensive vaccination, surveillance of the disease and adoption of a stamping out policy. Programmes for control of diseases, like foot and mouth disease and contagious bovine pleuro pneumonia in cattle, Marek's and pullorum diseases in poultry, swine fever in pigs and rabies in dogs would receive special attention. Production of biologicals against existing and emerging diseases would be augmented. Animal health control system would be strengthened through establishment of diagnostic and investigation facilities, strengthening of biological products stations and establishment of quarantine stations at inter-state and international borders. A certification service to promote export of livestock and livestock products would be organised. For providing prophylactic and curative treatment additional veterinary hospitals and dispensaries, polyclinics and mobile ambulatory clinics would be established. Disease free zones in respect of rinderpest and foot and mouth disease will be created in the Southern most and Northern most regions of the country on a pilot basis.

9.220 *Dairy Development:* The implementation of the Operation Flood-I project and the other major schemes in the past have established the operational validity of an integrated approach to dairy development, encompassing production, collection, transport processing and marketing of milk by all dairy deve

lopment projects in the public and the cooperative sectors. Special emphasis will be given to provision of technical inputs and services for enhancing milk production in the milk sheds of all dairy projects. By and large, dairying will be organised through a two-tier or a three-tier system of functional cooperatives starting from producers' societies at the village level.

9.221 The integrated cattle-cum-dairy development projects being implemented on the lines of Operation Flood-I project in the States of Rajasthan, Madhya Pradesh and Karnataka will be completed. The major programme in the dairy sector would be the Operation Flood-II project which is expected to cover practically all the States. This project would be implemented through a three-tier cooperative structure with a federation at the apex. Under the project, a national milk grid would be developed to cater to the milk supply of the four metropolitan cities and all towns having a population of one lakh and above. It is proposed to create milk processing and marketing facilities for 4.36 million litres per day in the four metropolitan cities and feeder balancing facilities in the rural areas for 20 million litres a day through the cluster federations. Other major works envisaged include developing aseptic long life milk system, establishment of a foot and mouth disease vaccine plant, introduction of bulk vending system, manpower development and consultation and management information services. These dairy programmes will provide economic benefits to about 10 million rural families. This coverage would be extended to 15 million families through other dairy projects, special livestock production projects and dairy cattle improvement schemes intended to help people in hill areas, tribal areas, backward classes, etc.

9.222 In the State Sector dairy development programmes will mainly be confined to completion of dairies under construction, creating additional facilities for increasing the throughput in the existing plants, training of personnel, assistance to dairy cooperatives and strengthening of dairy extension services in areas outside the Operation Flood-II project. It is anticipated that the share of marketing of milk through the organised sector would be raised to 15 per cent.

9.223 So far, organised dairy schemes have concentrated mainly on handling of fluid milk. During the Sixth Plan period, attention will be given to manufacture and marketing of traditional milk products. This will assist milk producers in remote areas who cannot be linked easily to fluid milk market projects.

9.224 *Insurance of livestock and poultry:* One of the important steps to help the farmers to improve their economy is to diversify the cropping system so as to cover dairy and sheep husbandry, piggery and poultry farming. Under the special programmes such as SFDA and IRID importance is given to assist the small and marginal farmers and landless labourers in taking up subsidiary occupations to improve their economic position. Since the animals and birds reared by the farmers are susceptible to various diseases, apart from providing

adequate health cover to them, it is essential to provide an insurance cover so as to protect the rural people from losses sustained due to livestock mortality. From 1974, cattle insurance schemes are being operated by the four subsidiaries of the General Insurance Corporation of India. The cattle insurance scheme provides for indemnity in the event of death of the insured animal due to accident and/or disease. Permanent total disability is also covered. Apart from milch animals, calves/heifers, reared under the special programmes and ploughing bullocks are also provided insurance cover now. In the special rural development programmes, the Government of India subsidises the premium payable by the identified beneficiaries. During the Sixth Plan period it is proposed to extend the coverage of insurance to other livestock and poultry.

FISHERIES

Review

9.225 Fisheries development has made significant progress over the successive Five Year Plans. Fish production increased from 7.52 lakh tonnes in 1950-51 to about 23.36 lakh tonnes in 1979-80. The value of exports rose from Rs. 4.13 crores in 1961 to Rs. 263 crores in 1979-80. The production trend is indicated in the table below:

Table 9.14
Trend of Fish Production

Year	('000 tonnes)		
	Marine	Inland	Total
(1)	(2)	(3)	(4)
1950-51	534.0	218.0	752.0
1960-61	879.7	280.2	1159.9
1977-78	1515.0	854.0	2369.0
1979-80	1481.0	855.0	2336.0*

*Trend line estimate based on data from 1967-68 to 1978-79.

9.226 The Fifth Plan envisaged a considerable increase in fish production. However, fish production fell short of targets largely due to shortfalls in the introduction of large deep sea fishing vessels, production of fish seed, establishment of nursery areas and water areas brought under fish culture. Survey of marine fishery resources beyond 40 fathoms could not be conducted due to paucity of large vessels. However, steps were initiated for the acquisition of large and adequately equipped survey vessels from abroad and construction of similar vessels in Goa Shipyard. The Exploratory Fisheries project operated with 25 vessels from 12 bases in the East and West Coasts. An area of 2.8 lakh sq. kms. was surveyed.

9.227 There has been considerable progress in mechanisation in the fishing industry. During 1979-80, 16100 mechanised boats were in operation against 2161 in 1961. The construction of fishing harbours at major ports of Visakhapatnam, Roychowk and Cochin have been completed. The construction of the harbour in Madras is still in progress. In addition, about 70 small and self-contained harbours were completed by 1979-80. The fishing harbours so far completed would provide landing and berthing facilities for about 9000 mechanised boats and 150 deep sea and medium fishing vessels.

9.228 The commercial deep sea fishing fleet comprised of 55 purchased vessels and about 50 vessels operated on charter basis in collaboration with foreign agencies. In order to promote introduction of a larger number of fishing vessels by private entrepreneurs and State Corporations, a Trawler Development Fund was created to extend financial assistance. This programme envisaged both import of fishing vessels from abroad and construction indigenously. Financial assistance to State Fisheries Corporations in Kerala, Tamil Nadu, Karnataka, Andhra Pradesh and Orissa was given for diversified fishing, processing and marketing.

9.229 Fifty Fish Farmers Development Agencies were set up during the Fifth Plan period to promote intensive aquaculture through fish farmers in selected districts. Before extending the scheme further, an evaluation of the project was undertaken by the National Council of Applied Economic Research. An integrated Inland Fisheries Project was finalised for implementation in selected areas in the States of West Bengal, Bihar, Orissa, Madhya Pradesh and Uttar Pradesh. In order to establish the economic advantages of brackishwater fish farming, a pilot project was started in all the coastal States.

Policies and Objectives

9.230 The main thrust of fisheries development will be on augmentation of fish production both in inland and marine sectors. The evolution and promotion of relevant technology of production, processing and marketing both in regard to inland and marine fisheries would be the basic approach in order to ensure availability of fish for local consumption at reasonable prices and to promote export of prawns and high priced marine products.

9.231 The principal objectives of fisheries development programme will be:—

(i) to step up considerably fish production both in marine and inland sectors; (ii) to promote inland fish production on scientific basis through extension, education, training and provision of inputs with a view to increasing the productivity of water areas; (iii) to organise intensive surveys on marine fishery resources assessment and ensure optimum exploitation of marine resources through a judicious mix of traditional country boats, operators of mechanised boats and deep-sea fishing vessels; (iv) to intensify efforts on processing, storage and transportation of fish, improve marketing, tap vast potential for export of fish and fish products; and (v) improve the socio-economic condition of fishermen.

9.232 In inland fisheries, special emphasis will be directed towards research efforts to maximise production and to follow it up with promotional programmes in the field to reduce the existing wide gap between yield potential and the actual farm pond production of fish. Consequent on the declaration of exclusive economic zone of 360 km from the coast line, special efforts to augment marine fisheries exploitation would be made. In addition, coastal fisheries exploitation, mari-culture and brackishwater fish farming would be given special attention in order to provide economic benefits to coastal fishing communities through a blend of culture and capture fisheries. Further, export marketing through production and test marketing of new fishery products prepared out of cheap and inexpensive fish will receive attention.

Target of fish production

9.233 There have been certain constraints in the introduction of large deep-sea fishing vessels, in implementation of programmes for fish seed production and promotion of intensive inland aquaculture. Steps have already been initiated to solve these problems and it is anticipated that a higher rate of growth will be attained and maintained in fish production in the coming years. The table below gives the targets of fish production and some selected input programmes.

Table 9.15
Targets of fish production and some selected input programmes

Fish production Programme	Unit	Base Level 1979-80	Target 1984-85
(1)	(2)	(3)	(4)
Fish Production			
Inland	lakh tonnes	8.55*	13.00
Marine	Do.	14.81*	22.00
Total	Do.	23.36*	35.00
Mechanised Boats	Nos.	16,100	19,000
Large deep sea fishing vessels	Nos.	105	350
Fry	Million	1048	2200
Nursery Area	Hectare	1454	2800

*Trend line estimates based on 1967-68 to 1978-79 data.

Programme Strategy

9.234 In marine fisheries, priority attention will be given to organising a National Fishery Survey in the areas covered by the Exclusive Economic zone by strengthening the Exploratory Fishery Project and integrating its activities with other Institutions studying the marine environment. The programmes for assisting coastal fishermen using country crafts to im-

prove their efficiency and economy through improvement in the design of boats and supply of modern gear material would be continued. Special emphasis will be given to develop infrastructural facilities for improving the handling, storage, processing and transportation of fish catches in as many coastal fishing landing centres as possible. Mechanisation of boats by groups of traditional fishermen would be encouraged, particularly in the sectors having a low fishing intensity. Selective assistance would be extended for diversification of mechanised fishing boat operations in order to exploit sizeable pelagic and midwater resources identified along the eastern and western coasts. Measures will also be taken in regulating the operation of such boats through a system of compulsory registration and licensing of fishing vessels. A sizeable increase in the deep sea fishing fleet through incentives for purchase and chartering and judicious selection of such vessels in respect of size and type would be encouraged.

9.235 Alongwith the introduction of large number of mechanised boats and deep-sea fishing vessels for exploitation of marine resources, it would be necessary to protect the interests of the small boat owners, who mainly fish in coastal waters. Conflicts between small fishermen operating traditional fishing crafts, mechanised boat owners and the operators of large fishing vessels will be sought to be avoided through suitable legislative measures and delimitation of fishing zones for each type of fishing vessels.

9.236 Development of berthing and landing facilities for fishing vessels through improvement at the existing harbours and construction of new fishing harbours will be continued.

9.237 *Inland Fisheries:* In spite of vast resources of culturable water areas available in the shape of ponds, tanks, lakes, bheels, swamps, estuaries, reservoirs, etc. and availability of improved technology for intensive culture of fish, the level of production has not been adequate and there is a large gap between the potential and the actual yields. Considerable attention is needed for demonstration and extension of the technology on a very wide scale. These would include augmentation of fish seed, its availability of the right type and in the right season, education and training of technical personnel and fish farmers in farm techniques, promotion of aquaculture, composite fish-culture etc. Leasing of water areas owned by panchayats and State Departments on long term basis would be encouraged in order to ensure high productivity. An Inland Fisheries Project will be implemented in the States of West Bengal, Bihar, Uttar Pradesh, Madhya Pradesh and Orissa. Similar programmes would also be taken up in suitable areas in the other States.

9.238 Brackishwater fish farming which has been identified as a potential source of augmenting the income of individual fishermen families and increasing production of prawns for exports would be consider-

ably expanded and organised mainly as a cooperative enterprise of fishermen in these areas. The Pre-Investment Survey of Fishing Harbours Project will be strengthened for survey, designing and preparation of project reports on brackishwater fish farms for the guidance of the State Governments.

9.239 *Training and extension:* Special attention will be given to training of personnel required to man the increasing fleet of mechanised boats and off-shore and deep-sea fishing vessels. The facilities available at the Central Institute of Fisheries, Nautical and Engineering Training and the fishing fleet with the Exploratory Fishery Project and with the private sector companies would be made use of for giving adequate sea-time training to candidates qualifying for the posts of skippers and engineers for fishing vessels. In order to meet the expanding demand for fishery scientists, technicians and operators, the training institutions catering to various levels of such personnel under the Central/State Governments would be strengthened and expanded. Training of extension personnel will form part of the Inland Fishery Project. A target of one extension worker for every 100 ha. water area brought under fish culture has been proposed. This will facilitate adoption of training and visit system as in the case of agriculture. Extension organisations both for marine and inland fisheries development would be expanded in the States to promote adoption of modern technologies in marine and inland fish production. Training of fish farmers will receive special attention under the Fish Farmers Development Agency Programme.

9.240 *Processing and Marketing:* The organisation and efficient functioning of Fisheries Corporations/Cooperative Federations would be encouraged for undertaking commercial and economic activities, such as fish seed production, reservoir development, marine fisheries exploitation and processing and marketing of fish for internal consumption and for exports. The organization of fisheries cooperatives would be promoted at the landing centres and at inland fish production points for the storage processing, transport and marketing of their fish catches, making use of financial assistance from institutional financial sources. An All-India Marine and Inland Fish Marketing Survey would be undertaken, which would cover all aspects of inland fishery marketing and infrastructure and other requirements for export promotion. A cold chain scheme linking major production centres and internal market points would be taken up through public sector and private sector enterprises.

FORESTRY

Review

9.241 The 1952 National Forest Policy resolution of the Government of India had recommended that the country should aim at a coverage of one-third of the total land area under forests. The position in

this regard has been far from satisfactory, in as much as only about 23 per cent of the total land area is under forests and not more than 40—50 per cent of this has good forest cover. The remaining areas have been degraded and depleted due to demographic and commercial pressures. Efforts made in the past for rehabilitation of the degraded forest areas have met only with limited success.

9.242 Programmes of social forestry and economic and industrial plantations have been under implementation for some time in different States with varying degree of effectiveness. Forest Development Corporations have been established in some of the States with a view to expand and speed up afforestation programmes by utilising institutional finance. Programmes for development of national parks, strengthening of research on endangered animals including project Tiger were taken up during the Fifth Plan period. Significant progress has been made in respect of economic and industrial plantations with an achievement of about 22 lakh hectares by 1979-80. Similarly the area under plantations of quick growing forest trees has also increased substantially to cover about 14.8 lakh hectares by 1979-80. There is, however, urgent need and great scope for further improvement in forestry development all over the country.

9.243 In addition to indiscriminate felling of trees for commercial purposes, large scale degradation of forests is taking place to meet the needs of fuel wood by rural population. Fuel wood accounts for about 60 per cent of all energy consumed in the country. According to the present indications, there is a huge gap in fuel wood availability which has resulted in the use of cowdung as fuel instead of manure. It has also created tremendous pressure on existing wood lots.

Objectives

9.244 The main objective of the forestry programme during the Sixth Plan period will be the conservation of existing forests and the launching of country-wide afforestation and social forestry programmes. Forest policy has to fulfil three sets of needs: (a) ecological security; (b) fuel, fodder and other domestic needs of the population; and (c) the needs of village, small scale and large scale industries. In conformity with this objective the major area of thrust will be the promotion of a peoples' forestry movement. An important aspect which would require a more close attention in the coming years is employment generation through forestry activities. It is known that forestry is a highly labour intensive primary activity. It has been estimated that in the primary and secondary sectors forestry activities generate approximately 240 million mandays of employment in a year.

9.245 Tribal economy and forest development are actually dependent. Therefore, special emphasis would be laid on linking the forestry programme with the economic development of tribal population as well as other weaker sections of the population. Undoubtedly tribals have particularly benefited as

wage earners in forestry operations, but the forestry projects have not been designed for uplifting the economy of the tribal people in a significant manner. This requires a new awareness for forestry planning in tribal areas.

Programmes and policy

9.246 *Conservation:* The critical importance of maintaining a proper environmental balance and the conservation of natural resources is still not adequately recognised. Felling of natural forests and depletion of the flora and fauna has been taking place at an alarming pace without adequate appreciation of the consequences on environment and disastrous repercussions on the economy of the country. Prudence demands that a severe restraint must be imposed and exercised on the consumption of this critical resource until a scientific basis for sustained yield of forest resources is determined and established. Forests being the primary natural resource supporting general pools of a great variety of living organisms, it is of the utmost importance to set apart suitable forest areas for affording adequate protection to animal and plant life, particularly those species which are threatened with extinction. In this context, the conservation of wild life and their habitat is also of critical importance. Since the benefits from such an approach are not easily quantifiable or immediately apparent, there is a general reluctance to extend the requisite priority to this field of activity. Unlike soil erosion, gene erosion is not visible to the eye and hence does not attract financial support. However, unless the valuable genetic material found in forest canopies is preserved, the fruits of thousands of years of natural selection will be lost to posterity. It is, therefore, essential for the Centre to come forward to take the lead in this respect as well as to provide some financial assistance for those activities which are crucial and can no longer be ignored. The main developmental objectives contemplated will encompass the popularisation of appropriate management systems integrated with rural development, to develop a national conservation strategy with special reference to natural living resources, to restore degraded habitat and depleted fauna and to rehabilitate the endangered and threatened species. For this it is necessary to develop a cadre of trained personnel for the management of wild life.

9.247 Forests are at present considered as revenue utilising assets in different States. This leads to several undesirable practices resulting in over exploitation. Further, to ensure effective protection and improvement of environment the diversion of forest land for non-forestry purposes should be totally stopped and machinery for protecting forests and wild life should be adequately strengthened. With the inclusion of forests and protection of wild animals and birds in the Concurrent List of the Constitution under an amendment in 1976, it is now possible to enact a comprehensive forest legislation for the entire country.

9.248 *Social Forestry:* Social forestry programme comprising of two schemes, viz., (a) mixed plan-

ation of waste lands, and (b) reforestation of degraded forests and raising of shelter belts was for some time treated as Centrally sponsored programme, but with effect from 1979-80 it was transferred to the state sector. In view of the important role of social forestry in the rural economy and in improving the quality of life, States should allocate adequate resources for implementing this programme. To intensify this programme in the districts where shortage of fuel wood is particularly acute, a new centrally sponsored scheme of social forestry including rural fuel wood plantation and farm forestry is being introduced in 100 selected districts.

9.249 Fuel Wood: Wood is a bulky material and if it is not grown locally, it would require use of other energy inputs to transport it to the area of consumption. The strategy to be adopted is thus to grow fuel wood as near as possible to the consumption points. The Government of India has already sanctioned a Centrally Sponsored Scheme of Rural Fuel Wood Plantation from the year 1980-81. State Governments should take necessary steps to implement this programme with vigour during the Sixth Plan period.

9.250 Forest Labour: It has been recommended by various bodies particularly the National Commission on Agriculture and the Central Board of Forestry that the contractor should be eliminated from forest working for the sake of better scientific management of forests. States like Madhya Pradesh, Andhra Pradesh, Jammu and Kashmir and Sikkim and the Administration of Andaman and Nicobar Islands have already eliminated the system of contractors and replaced it by the departmental working. In Gujarat, except for a few areas which are worked departmentally the entire work of forests is done through forest labourers' cooperatives. In Maharashtra most of the work is done through forest labour cooperatives or departmentally or through the Forest Development Corporation. In other States the work is being taken over by the Corporation or by the Department. For complete elimination of the contractors there is need for trained personnel and adequate financial support. It is recommended that the entire contractor agency should be eliminated in all States during the Sixth Plan period.

9.251 Forest Survey: The pre-investment survey of forest resources will be developed into the Forest Survey of India (FSI) with a view to realising the long-term objectives of establishing a national forest resources survey for providing continuous and reliable information on the existing and potential forest resources as well as description of land use. For proper functioning, the FSI should have links with various organisations for continued updating of the technology of mapping, inventory and presentation of planning data.

9.252 Forest Management: In order to meet the requirement of commercial forestry and to improve the management capacity of Forest Corporations an Institute of Forest Management has recently been set up. The Institute's collaboration with the Insti-

tute of Management, Ahmedabad which was for a period of 1½ years is over and it is now ready to function autonomously. In this period the Institute has developed a core of knowledge by initiating some projects for training and action. Provision has been made for strengthening this Institute.

9.253 Forest Research: All-India coordinated research projects in bamboo, neem and leguminous trees and shrubs are envisaged in the Sixth Plan. This would cover (a) survey and exploration of major areas where neem and leguminous trees occur; (b) selection of suitable eco-types and assembling the variation in germ plasm banks; (c) studies on vegetative propagation techniques; (d) breeding and improvement work, provenance and progeny trials; and (e) cytological and chemical studies. In addition, the programme of research and education both in the States and at the Forest Research Institute and its colleges will be strengthened. The involvement of Agricultural Universities in certain aspects of forestry research has been achieved during the past three to four years but this needs further strengthening. State Forest Service Officers Colleges will also need considerable expansion.

9.254 People's Participation: Having regard to the present state of forests in India and the big gap between demand and supply of forest products, it is essential to involve the people of every block in the development of forests. Mass media will have to be harnessed for promoting an awareness of the role of trees in human welfare. The universities and schools can play an important role in this direction. A Division of Forestry Extension will be set up at the Forest Research Institute, Dehra Dun. In addition, *Van Vigyan Kendras* will be established to provide training in agro-forestry techniques.

New Thrusts

9.255 In addition to strengthening and expanding on-going programmes in forestry research, education and development, the following four new programmes will be introduced during the Sixth Plan period:—

(a) *"Tree for Every Child Programme"*: This programme envisages the promotion of school forestry programmes based upon the interest of the children themselves with reference to the choice of trees. Under this project assistance including training and supply of relevant seedlings will be provided to all the schools which are willing to join a programme of enabling children studying in the school to plant and protect one or more trees in their homes. The choice of the tree will be based upon considerations, such as providing botanical remedies to specific nutritional maladies (example: Vitamin 'A' deficiency induced blindness, Vitamin 'C' deficiency, etc.), the specific preference of the family for trees of horticultural, floricultural and fuel value. Those schools which have the necessary land and water facilities will be enabled to raise nurseries of appropriate seedlings within the school compound itself with the participation of the children.

(b) *Eco-Development Force*: An Eco-Development Force consisting predominantly of ex-service-

men will be formed for the purpose of restoring damaged hill eco-systems through afforestation and soil conservation. To start with, two units of this force will be organised for working in the Western Himalayan region.

(c) *Eco-Development Camps*: College students drawn from different universities of India will be enabled to take up extensive tree planting work in suitable areas, such as hills, desert and coastal regions.

(d) *Agro-Forestry Programmes*: Forestry Departments and the Indian Council of Agricultural Research will jointly undertake agro-forestry research in order to develop suitable systems of land management which involve integration of silviculture with horticulture, agriculture, animal husbandry, etc.

9.256 It is hoped that the above programmes together with the extensive tree planting work which will be undertaken under the National Rural Employment Project will help to not only arrest the further degradation of forests but also to build the ecological infrastructure necessary for sustained development.

Plan Outlays

9.257 Keeping in view the priority attached to agriculture in the Sixth Plan and the strategy adopted for achieving a rapid growth of output and employment, the financial allocations have been made at a much higher level compared with the outlay envisaged in the interim plan 1978—83. Thus, the total

outlay proposed for agriculture and allied programme for the Sixth Plan 1980—85 is Rs. 5695 crores.

9.258 The break up of the plan outlay by State Union Territories and Centre is of the following order:—

	(Rs. crores)
States	3119.0
Union Territories	125.9
Centre	2450.1
TOTAL	5695.0

Details by heads of development are given in Annexure 9.3. Outlays of selected agricultural programmes for States and Union Territories are shown in Annexure 9.4.

9.259 In regard to the plantation crops sector, an outlay of Rs. 135 crores had been provided in the Plan of the Ministry of Commerce as under:—

	(Rs. crores)
Tea	45
Coffee	47
Rubber	36
Cardamom	7
TOTAL	135

Annexure 9.1

State-wise average size of operational holdings for 1970-71 & 1976-77 as per Agriculture Census

(hectares)

Sl. No.	State	1970-71	1976-77
(0)	(1)	(2)	(3)
Group I—Land Records States			
1	Andhra Pradesh	2.51	2.34
2	Assam	1.47	1.37
3	Bihar	1.5	1.1
4	Gujarat	4.11	3.71
5	Haryana	3.77	3.58
6	Karnataka	3.20	2.98
7	Madhya Pradesh	4.0	3.60
8	Maharashtra	4.28	3.60
9	Rajasthan	5.46	4.65
10	Tamil Nadu	1.45	1.25
11	Uttar Pradesh	1.16	1.05
	Total Group I	2.49	2.18
Group II—Non Land Records States			
1	Kerala	0.57	0.49
2	Orissa	1.89	1.60
3	Meghalaya	1.7	1.5
4	West Bengal	1.20	0.99
	Total Group II	1.26	1.04
	Group I & II (11+4) States	2.30	2.00
16	Himachal Pradesh	1.53	1.65
17	Tripura	1.02	1.20
18	Manipur	1.15	1.2
19	Nagaland	5.40	7.61
20	All UTs except Mizoram	3.14	2.78
	Total 16—20	1.99	2.16
21	Punjab	2.89	2.74
22	Jammu & Kashmir	0.94	0.94
	Total—21-22	2.08	2.03
	Grand Total 1+22	2.28	2.00
23	Sikkim	..	2.56
24	Mizoram	..	1.49
	Total 23—24	..	2.28
	All India Total	2.28	2.00

Annexure g. 2

Area, production and per hectare yield of foodgrains and Major Commercial Crops

Area = Million hectares
 Production = Million tonnes
 Yield — Kgs./hectare

Crop	1950-51	First Five Year Plan (1951-56) (Average)	Second Five Year Plan (1956-61) (Average)	Third Five Year Plan (1961-66) (Average)	Annual Plans period 1966-69 (Average)	Fourth Five Year Plan (1969-74) (Average)	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Rice A	30.8	30.6	33.1	35.6	36.2	37.6	37.9	39.4	33.5	40.3	40.5	39.0	
P	20.6	25.0	30.3	35.1	35.9	41.8	39.6	48.7	41.9	52.7	53.8	42.2	
Y	668	817	915	986	992	1112	1045	1235	1088	1308	1328	1082	
Wheat A	9.7	10.7	12.8	13.3	14.6	18.4	18.0	20.5	20.9	21.5	22.6	22.0	
P	6.4	7.9	9.7	11.1	15.5	23.4	24.1	28.8	29.0	31.8	35.5	31.6	
Y	655	738	757	834	1062	1272	1338	1410	1387	1480	1571	1436	
Jowar A	15.6	17.2	17.5	18.1	18.4	17.0	16.2	16.1	15.8	16.3	16.1	16.5	
P	5.5	7.5	8.7	8.8	9.7	8.3	10.4	9.5	10.5	12.0	11.4	11.3	
Y	353	436	497	486	527	488	643	591	667	739	708	685	
Bajra A	9.0	11.0	11.2	11.4	12.4	12.6	11.3	11.6	10.7	11.1	11.4	10.6	
P	2.6	3.4	3.4	3.9	4.5	6.0	3.0	5.7	5.9	4.7	5.6	4.0	
Y	288	309	303	342	363	476	290	496	544	491	491	377	
Maize A	3.2	3.6	4.2	4.6	5.5	5.8	5.9	6.0	6.0	5.7	5.8	5.8	
P	1.7	2.7	3.6	4.6	5.6	6.1	5.6	7.3	6.4	6.0	6.2	5.6	
Y	547	750	857	1000	1018	1052	948	1203	1060	1051	1069	966	
Other Cereals A	10.8	10.9	10.8	10.1	10.0	9.6	9.8	10.1	9.4	9.2	8.9	8.4	
P	6.1	6.6	6.5	6.3	6.2	6.4	6.9	7.9	6.1	7.3	7.2	5.8	
Y	565	605	601	624	620	666	704	782	649	793	809	690	
Pulses A	19.1	21.1	23.7	23.8	22.0	22.2	22.0	24.4	23.0	23.5	23.7	21.8	
P	8.4	10.1	11.7	11.1	10.3	10.9	10.0	13.0	11.4	12.0	12.2	8.4	
Y	441	474	493	466	468	491	455	553	494	510	515	385	
Total Foodgrains,† A	97.3	105.3	113.4	117.1	119.0	123.4	121.0	128.2	124.4	127.5	129.0	123.9	
P	50.8	63.2	74.0	81.0	87.8	103.0	99.8	121.0	111.2	126.4	131.9	108.9	
Y	552	600	652	692	738	836	824	944	894	991	1022	879	
Ground-nut (a) A	44.94	49.3	62.2	72.3	73.1	72.0	70.6	72.2	70.4	70.3	74.3	72.4	
P	34.81	35.4	47.3	51.2	49.2	55.0	51.1	67.5	52.6	60.9	62.1	57.7	
Y	775	724	760	711	672	781	724	735	747	866	836	797	
Castorseed (a) A	5.55	5.6	4.9	4.6	4.1	4.5	5.9	3.8	5.0	5.8	4.5	4.4	
P	1.03	1.1	1.1	1.0	1.0	1.6	2.1	1.4	1.8	2.2	2.3	2.3	
Y	186	203	225	218	281	343	356	381	361	572	311	323	
Sesamum (a) A	22.0	24.5	21.6	24.4	26.2	23.6	22.3	21.7	22.8	23.8	23.9	23.8	
P	4.5	5.1	4.0	4.4	4.3	4.7	3.2	4.8	4.2	5.2	5.1	3.7	
Y	202	211	184	178	164	197	176	221	185	218	213	155	
Rape-seed & Mustard (a) A	30.7	23.5	26.4	30.3	30.4	33.8	36.8	33.4	31.2	35.8	35.4	34.7	
P	7.6	9.1	10.9	12.7	13.8	17.0	22.5	19.4	15.5	16.5	18.6	14.3	
Y	368	390	411	419	453	504	612	580	496	460	525	412	
Linseed (a) A	14.0	14.0	16.6	19.3	16.6	19.1	20.7	21.2	18.9	20.1	20.9	16.4	
P	3.7	3.8	3.9	4.2	3.4	4.8	5.6	6.0	4.2	5.3	5.4	2.7	
Y	262	271	233	217	205	252	272	282	222	262	258	165	
Five Major Oilseeds (a) A	107.3	116.9	131.8	150.9	150.4	152.9	156.4	152.3	148.3	153.9	159.0	151.7	
P	61.6	54.5	67.1	73.5	71.9	82.9	85.3	99.1	78.3	90.0	93.5	80.8	
Y	481	465	510	487	477	541	545	651	528	585	588	523	

Annexure 9.2--Contd.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Cotton* (b)	A	58.8	97.7	77.8	80.5	78.1	76.8	75.6	73.5	68.9	78.7	81.2	80.8
	P	30.4	38.7	48.1	54.0	55.0	58.6	71.6	59.5	58.4	72.4	79.6	77.0
	Y	88	92	105	114	120	130	161	138	144	157	167	162
Sugarcane (a)	A	17.1	17.1	21.2	24.8	22.9	28.9	25.9	27.6	28.7	31.5	30.9	26.7
	P	570.5	552.6	802.8	1092.0	1043.3	1281.3	1442.9	1406.0	1530.1	1769.7	1516.6	1279.9
	Y	33363	32316	37868	44032	45559	49471	49927	50942	53311	56181	49081	47936
Jute +(b)	A	5.71	6.46	7.60	8.5	7.4	7.7	6.6	5.9	7.4	8.0	8.8	9.4
	P	33.09	39.3	44.4	56.8	48.7	55.0	44.7	44.4	53.5	53.6	64.7	61.2
	Y	1044	1094	1136	1208	1193	1292	1211	1308	1307	1294	1323	1312
Mesta+(b)	A	..	2.0	3.1	3.9	3.1	3.2	3.2	3.3	3.5	3.7	3.8	3.8
	P	..	8.5	13.6	16.8	11.3	12.2	13.6	14.7	17.5	17.9	18.6	19.1
	Y	..	774	792	774	666	684	756	810	900	782	880	905
Jute and Mesta+(b)	A	5.7	8.5	10.7	12.4	10.5	10.9	9.8	9.2	10.9	11.7	12.6	13.2
	P	33.1	47.8	58.0	73.6	60.0	67.2	58.3	59.1	71.0	71.5	83.3	80.3
	Y	1044	1045	1034	1068	1029	1110	1071	1156	1172	1100	1190	1184

* Bales of 170 kgs. each
+ Bales of 180 kgs. each

(a) Oil seeds and Sugarcane :

Area = Lakh hectares
Production = Lakh tonnes;
Yield = Kgs/Hectare

(b) Cotton, Jute and Mesta:

Area = Lakh hectares
Production = Lakh bales
Yield = Kgs/hectare

Annexure 9.3

Sixth Five Year Plan Outlays:—Agriculture and Allied Programmes

(Rs. crores)

Head of Development	Centre	States	Union Territories	Total
(1)	(2)	(3)	(4)	(5)
1 Agricultural Research and Education	340.00	192.67	*	532.67
2 Crop Husbandry	293.00**	911.50	34.48	1238.98
3 Soil and Water Conservation	90.00	323.16	20.41	433.57
4 Animal Husbandry & Dairying	398.00	430.56	22.82	851.38
5 Fisheries	174.00	185.13	12.29	371.42
6 Forestry	105.00	559.54	28.10	692.64
7 Land Reforms	30.10	272.62	1.91	304.63
8 Management of Natural Disasters	15.00	..	..	15.00
9 Agricultural Marketing	46.65	48.55	0.91	96.11
10 Food, Storage and Warehousing	294.00	38.61	5.00	337.61
11 Investment in Agricultural Financial Institutions	664.38	156.68	..	821.06
Grand Total:—	2450.13	3119.02	125.92	5695.07

*Included under Crop Husbandry

**Excludes Rs. 50 crores for bio-gas shown under energy sector.

Annexure 9.4

Sixth Plan Outlay Agriculture and Allied Programmes States and Union Territories

(Rs. lakhs)

State	Research and Education	Crop Husbandry	Total (2—3)	Soil Conservation	Animal Husbandry	Dairying	Total (6—7)	Fisheries	Forestry	Grand Total (col. 4, 5, 8, 9 and 10)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1 Andhra Pradesh .	460	1700	2160	360	1400	600	2000	1400	1050	6970
2 Assam . .	900	5000	5900	800	1650	400	2050	600	2520	11870
3 Bihar . .	500	4200	4700	2000	1900	760	2660	696	1800	11856
4 Gujarat . .	1000	3100	4100	2900	1770	200	1970	2000	8900	19870
5 Haryana . .	1000	5500	6500	1000	1100	223	1323	195	1450	10468
6 Himachal Pradesh	*	3014	3014	1577	675	425	1100	180	2900	8771
7 Jammu & Kashmir	377	2145	2522	500	1800	100	1900	230	1028	6180
8 Karnataka .	850	3854	4704	2080	1334	845	2179	1303	3075	13341
9 Kerala . .	1400	8594	9994	1029	1517	721	2238	2000	1862	17123
10 Madhya Pradesh .	400	5685	6085	3800	2475	370	2845	700	3800	17230
11 Maharashtra .	1600	6782	6382	1588	1832	3287	5119	1207	4875	21171
12 Manipur . .	120	900	1020	550	300	@@	300	250	475	2595
13 Meghalaya .	27	803	830	700	520	70	590	90	500	2710
14 Nagaland .	*	850	850	600	525	@@	525	70	680	2725
15 Orissa . . .	300	4250	4550	600	1000	@@	1000	1000	1000	8400
16 Punjab . .	1000	7237	8237	2060	1349	236	1585	175	1290	13347
17 Rajasthan .	300	2800	3100	565	995	1064	2059	225	1500	7449
18 Sikkim . .	1034	**	1034	662	500	@@	500	100	570	2866
19 Tamil Nadu .	1300	12203	13503	1800	3353	580	3933	2400	5900	27536
20 Tripura . .	41	1086	1127	697	730	142	872	333	1239	4268
21 Uttar Pradesh .	2100	5420	7520	4448	1549	1419	2968	659	7090	22685
22 West Bengal .	1544	9041	10585	2000	2650	690	3340	2700	2200	20825
<i>Union Territories</i>										
1 Andaman & Nicobar Islands.	*	175.00	175.00	165.00	226.00	..	226.00	200.00	550.00	1316.00
2 Arunachal Pradesh	*	872.00	872.00	850.00	345.00	42.00	387.00	78.00	952.00	3139.00
3 Chandigarh .	*	13.00	13.00	10.00	65.00	@@	65.00	10.00	60.00	158.00
4 Dadra & Nagar Haveli . .	*	90.00	90.00	85.00	40.00	..	40.00	5.00	130.00	350.00
5 Delhi	*	389.00	389.00	91.00	288.00	150.00	438.00	60.00	90.00	1068.00
6 Goa, Daman and Diu	*	525.00	525.00	125.00	320.00	75.00	395.00	400.00	450.00	1895.00
7 Lakshadweep .	*	165.00	165.00	..	65.00	..	65.00	175.00	..	405.00
8 Mizoram . .	*	969.00	969.00	680.00	500.00	..	500.00	60.00	550.00	2759.00
9 Pondicherry .	*	250.15	250.15	34.50	145.00	21.00	166.00	241.00	27.70	719.65

*Included under Col. (3)

**Included under Col. (2)

@@Included under Col. (6)

Annexure 9.5

Physical Targets:—Agriculture and Allied Sectors-Sixth Plan (1980—85)

Sl. No.	State	Foodgrains (lakh tonnes)	Cotton (lakh bales)	Jute and Mesta (lakh bales)	Sugarcane (lakh tonnes)	Oilseeds (lakh tonnes)
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	Andhra Pradesh	120.00	5.65	12.00	146.00	18.00
2	Assam	35.30	0.06	12.87	30.00	1.63
3	Bihar	128.00	..	11.00	80.00	3.00
4	Gujarat	53.50	24.30	..	45.00	30.00
5	Haryana	80.00	7.70	..	90.00	1.78
6	Himachal Pradesh	13.58	..	..	1.00	0.17
7	Jammu & Kashmir	17.30	..	..	..	..
8	Karnataka	100.00	12.00	..	147.00	15.00
9	Kerala	16.54	0.01	..	4.75	0.26
10	Madhya Pradesh	141.00	3.57	—	29.40	15.50
11	Maharashtra	125.00	20.00	..	260.44	11.60
12	Manipur	4.50	0.01	—	1.35	0.15
13	Meghalaya	2.12	0.07	1.00	0.10	0.07
14	Nagaland	1.65	—	..	2.40	0.02
15	Orissa	74.01	0.21	9.70	51.10	10.00
16	Punjab	150.00	16.00	..	80.00	3.50
17	Rajasthan	113.00	8.50	—	30.00	10.00
18	Sikkim	0.80	—	—	..	0.04
19	Tamil Nadu	106.86	6.00	..	248.40	18.58
20	Tripura	5.05	..	1.50	1.33	0.08
21	Uttar Pradesh	279.90	0.50	1.50	900.00	26.72
22	West Bengal	120.00	..	45.00	26.00	2.00
TOTAL		1688.11	104.58	94.57	2174.27	168.10
<i>Union Territories</i>						
1	A&N Islands	0.33	..	..	..	..
2	Arunachal Pradesh	1.72	..	..	..	0.07
3	Chandigarh	..	..	..	..	..
4	Dadra & Nagar Haveli	0.44	..	..	..	..
5	Delhi	1.51	—	..	..	..
6	Goa, Daman & Diu	1.58	..	..	1.84	..
7	Lakshadweep	..	..	..	..	..
8	Mizoram	0.55	..	..	1.50	0.01
9	Pondicherry	1.20	0.19	..	4.00	0.13
Total Union Territories		7.33	0.19	..	7.34	0.21

NOTE :—The aggregate of States and Union Territories is higher than the all India targets for 1984-85.

Annexure—9.5 Contd.

Sl. No.	State/Union Territories	Milk ('000 tonne)	Eggs (Million)	Fish Inland	Fish (Marine) ('000 tonnes)	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	Andhra Pradesh	2700	2100	250.00	138.00	388.00
2	Assam	560	510	60.00	3.80	63.80
3	Bihar	2350	1000	128.00	..	128.00
4	Gujarat	2040	360	55.00	345.00	400.00
5	Haryana	2400	250	12.00	..	12.00
6	Himachal Pradesh	380	26	3.20	..	3.20
7	Jammu & Kashmir	300	240	12.00	..	12.00
8	Karnataka	1500	5000	70.00	230.00	300.00
9	Kerala	1163	1250	40.00	498.00	538.00
10	Madhya Pradesh	2784	700	30.40	..	30.40
11	Maharashtra	2059	1380	40.00	420.00	460.00
12	Manipur	65	89	5.00	..	5.00
13	Meghalaya	64	40	5.00	..	5.00
14	Nagaland	4	18	6.00	..	6.00
15	Orissa	280	388	63.00	54.00	117.00
16	Punjab	4254	782	3.50	..	3.50
17	Rajasthan	3800	165	17.00	..	17.00
18	Sikkim	22	4.5	0.07	..	0.07
19	Tamil Nadu	2240	1040	210.00	300.00	510.00
20	Tripura	22.50	30	10.00	..	10.00
21	Uttar Pradesh	6830	357	50.00	..	50.00
22	West Bengal	1499	940	524.00	41.00	565.00
	TOTAL	37916.50	16619.5	1594.17	2029.80	3623.97
23	Andaman & Nicobar Islands	2.50	10.00	0.05	3.95	4.00
24	Arunachal Pradesh	35.00	27.00	0.85	..	0.85
25	Chandigarh	21.00	30.00	0.24	..	0.24
26	Dadra & Nagar Haveli	1.00	3.00	—	—	..
27	Delhi	182.00	75.00	2.20	..	2.20
28	Goa, Daman & Diu	48.00	20.00	10.00	60.00	70.00
29	Pondicherry	16.00	9.50	1.30	22.50	23.80
30	Lakshadweep	0.75	1.30	—	5.00	5.00
31	Mizoram	3.30	9.40	2.80	..	2.80
	TOTAL	309.55	185.20	17.44	91.45	108.89
	GRAND TOTAL	38226.05	16804.70	1611.61	2121.25	3732.86

NOTE:—Please see Note to Annexure 9.5.

Annexure 9 5—Concl'd.

Sl. No.	State/Union Territories	Area under HYV	Chemical Fertilizers ('000 tonnes)			
		('000 Hec)	N	P	K	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	Andhra Pradesh	4485	700.00	235.00	80.00	1015.00
2	Assam	1656	20.00	10.00	10.00	40.00
3	Bihar	5000	350.00	100.00	50.00	500.00
4	Gujarat	2450	400.00	200.00	70.00	670.00
5	Haryana	2450	230.00	80.00	30.00	390.00
6	Himachal Pradesh	490	15.00	5.00	5.00	25.00
7	Jammu & Kashmir	516	60.00	20.00	10.00	90.00
8	Karnataka	4000	400.00	175.00	125.00	700.00
9	Kerala	600	79.00	43.00	58.00	180.00
10	Madhya Pradesh	5663	250.00	125.00	55.00	430.00
11	Maharashtra	7064	485.00	248.00	118.00	851.00
12	Manipur	93	6.00	1.60	0.60	8.20
13	Meghalaya	46	5.00	3.00	1.00	9.00
14	Nagaland	31	0.80	0.40	0.30	1.50
15	Orissa	1945	144.00	49.00	25.00	218.00
16	Punjab	4250	750.00	300.00	50.00	1100.00
17	Rajasthan	4000	400.00	75.00	15.00	490.00
18	Sikkim	45	0.75	0.56	0.19	1.50
19	Tamil Nadu	3285	450.00	150.00	150.00	750.00
20	Tripura	224	1.50	0.55	0.55	2.60
21	Uttar Pradesh	10800	1400.00	350.00	150.00	1900.00
22	West Bengal	3370	335.00	88.00	77.00	500.00
TOTAL		62448	6532.05	2259.11	1080.64	9871.80
TOTAL UNION TERRITORIES		215	17.29	6.64	6.63	30.56

NOTE:—These are tentative figures based on discussions with States and Union Territories held at the time of Sixth Plan meetings.

IRRIGATION, COMMAND AREA DEVELOPMENT AND FLOOD CONTROL

The strategies of development in the irrigation sector during the Sixth Five Year Plan will be broadly as follows:

- (a) Expeditious completion of as many ongoing major schemes as technically and financially feasible; completion of all ongoing medium schemes excepting some of them taken up during the last two or three years of the Plan which may spill over into Seventh Plan.
- (b) To initiate action on a few selected projects so as to keep up the tempo of development in Seventh Plan and also meet the needs of drought prone, tribal and backward areas and remove regional imbalances.
- (c) Improved implementation of the programme by aiding and strengthening, where required, monitoring organisations of the projects at the State level apart from continuing work of monitoring at the Central level.
- (d) Proper advance planning for scarce materials of construction in co-ordination with other Ministries concerned in order to procure scarce construction materials like cement, steel, coal, diesel, etc., required for planned implementation of major and medium irrigation projects.
- (e) Taking up work of modernisation of irrigation systems in a phased manner.
- (f) Optimisation of benefits through better operation of existing systems and conjunctive use of surface and ground waters and adoption of Warabandi.
- (g) Efficient water management and introduction of Warabandi on rotational distribution system on the existing and new projects and formulation and monitoring irrigation programmes for different regions in a water year.
- (h) Strengthening of Command Area Development (CAD) organisations and Authorities and integrating functioning of canal management authorities, CAD authorities and irrigators.
 - (i) Ensuring adequate maintenance of the canals and distribution systems by making adequate financial allocations for maintenance of canal systems.
 - (j) Setting up a system of evaluating regularly the project performance by appraising the actual benefits vis-a-vis the proposed.
 - (k) Carrying out detailed surveys and investigations for preparation of new projects to be taken up with priority being given to projects benefiting tribal area, drought prone area and area having large percentage of scheduled castes, with a view to completing investigation and preparation of project report of all projects and in a phased manner by end of 1989-90.
 - (l) Initiating investigation for a National Plan for inter-basin transfer of water from the water surplus area to the water short areas.
 - (m) Restructuring the management procedures in such a way that the farmers and public in command, catchment and watershed areas fully participate in the scientific management of the water and soil resources of the area and thereby enhance terrestrial and aquatic productivity per units of water, land and time.

10.2 Irrigation contributes substantially to the agricultural price stability, by removing to a large extent the elements of uncertainty in the agricultural production. Therefore, expansion in irrigation would be envisaged as a part of a price stabilization policy.

10.3 When planning started in 1950-51, irrigation schemes were divided into three categories; major, costing more than Rs. 5 crores each; medium, costing individually between Rs. 10 lakhs and Rs. 5 crores; and minor, costing less than Rs. 10 lakhs each. According to the revised classification in vogue since April 1978, projects having CCA (culturable command area) of more than 10,000 ha. each are classified as major projects, those having CCA between 2,000 ha. and 10,000 ha. as medium schemes and the schemes having CCA of less than 2,000 ha. each are categorised as minor irrigation schemes. This classification has helped to adjust the technical and administrative scrutiny of irrigation schemes according to their magnitude and complexity.

10.4 The development of irrigation upto the end of 1979-80 is shown in the table below:

Table 10.1
Irrigation potential & utilisation 1950—80

		(Million lha.)						
Sl. No.	Item	Ultimate Irrigation Potential	1950-51		1977-78		1979-80	
			Pot.	Util.	Pot.	Util.	Pot.	Util.
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1	Surface water	73.5	16.1	16.1	32.3	28.7	34.6	30.6
	(a) Major & Medium	58.5	9.7	9.7	24.8	21.2	26.6	22.6
	(b) Minor	15.0	6.4	6.4	7.5	7.5	8.0	8.0
2	Ground water	40.0	6.5	6.5	19.8	19.8	22.0	22.0
	TOTAL	113.5	22.6	22.6	52.1	48.5	56.6	52.6

10.5 The outlays during successive Plan periods and the development of irrigation potential therefrom are shown in the table below:

Table 10.2
Outlay on Development of Irrigation Potential

(1)	Outlay/Expenditure (Rs. crores)			Irrigation Potential (Mill. Hectares)		Cumulative (Mill. Hectares)
	Major & Medium Irrgn.	Minor Irrgn.**	Total	Major & Medium Irrgn.	Minor Irrgn.**	
(1)	(2)	(3)	(4)	(5)	(6)	(7)
Pre-Plan benefits				9.7	12.9	22.6
First Plan	380*	76	456	12.20	14.06	26.26
Second Plan	380	142	522	14.30	14.79	29.09
Third Plan	581	323	909	16.60	17.01	33.61
Annual Plan (66—69)	434	326	760	18.10	19.00	37.10
Fourth Plan (69—74)	1237(b)	513	1750	20.70	23.50	44.20
Fifth Plan (74—78)	2412@	631	3073	24.82	27.30	52.12
Annual Plan (78—79)	977	237	1214	25.86	28.60	54.46
Annual Plan (79-80)	1079	260	1339	26.60	30.00	56.60

*Includes Rs. 80 crores incurred during the pre-plan period.

**Government outlays only.

(b) Excludes Plan outlay of Rs. 50.54 crores on unapproved Cauvery Basin projects.

@Excludes non-Plan outlay of Rs. 52.24 crores on unapproved Cauvery Basin projects.

10.6 The development of irrigation has been considered under the four broad sub-divisions as follows:

- (a) Major & Medium Irrigation
- (b) Minor Irrigation
- (c) Command Area Development and Water Management
- (d) Flood Control.

MAJOR AND MEDIUM IRRIGATION REVIEW

10.7 In spite of the large investment made in the irrigation sector and the phenomenal growth of irrigation during the past 30 years, the return from the investment both in terms of yield as well as finance are very disappointing. Irrigated land should yield at least 4 to 5 tonnes of grains per hectare per year. However, at present it is hardly 1.7 tonnes on an average. Actual yield levels are lower than the levels of 4 to 5 tonnes achieved in National Demonstrations and by experiments in water management projects where appropriate water management and other cultural practices were maintained at optimum levels. Intensive education programme for the farmers through demonstration and extension services is necessary in water management at farm level and other cultural practices. Irrigation projects are unable to recover even working expenses in most of the States. It has been estimated that on an average, the States are losing more than Rs. 427 crores per year on their irrigation investments. The reasons for this situation are many. The first and the foremost is the delay in completion of schemes. Some of the schemes have been lingering for more than 15 to 20 years. To name a few, Nagarjunasagar Project (Andhra Pradesh), Gandak and Kosi Projects (Bihar), Malaprabha Project (Karnataka), Kallada Project (Kerala), Tawa Project (Madhya Pradesh), Rajasthan Canal Project and Kangsabati Project (West Bengal).

10.8 Another reason is the delay in utilisation of the potential already created. In most of the projects, there has been delay in construction of field channels and water courses, land levelling and land shaping. Supplies to the farmers have not been assured due to deficiency in the canal systems and the absence of field channels. In some of the projects, the crop patterns originally envisaged have proved unsuitable. In a few others, the introduction of irrigation has created water logging and salinity. Farmers have been very reluctant to adopt improved crop practices like high yielding seeds, fertilizer application, pesticides etc.

10.9 The delay in completion of projects has contributed in no small measure to the increase in cost of projects, upsetting the schedule of completion of a number of projects. The States have taken up a number of new projects spreading their resources thinly over these, instead of taking up a few projects at a time and completing them quickly and then take up new projects. This tendency of taking up a large number of projects, when adequate resources are not in sight, has to be avoided.

10.10 In the context of the delay in utilisation of irrigation potential and low yield from such areas, government introduced the command area development programme. This broadly consisted of development of irrigation through land levelling and land shaping, construction of field channels, introduction of Warabandi system of water distribution and popularisation of integrated soil-crop-water management practices. The progress made under the command area development is discussed separately in this Chapter.

10.11 In addition to the command area development programme, expert technical groups from the Centre have been visiting various projects and identifying the bottlenecks and deficiencies in the development of irrigation. Some of the broad observations made by these teams after inspecting 20 irrigation projects are:

- (a) lack of maintenance of canals in good shape;
- (b) delay or absence of construction of water courses/field channels;
- (c) non-introduction of warabandi or rotational water supply system;
- (d) non revision of crop pattern in the light of local conditions;
- (e) inadequate conjunctive use of surface and ground waters;
- (f) inadequate provision for drainage; and
- (g) lack of participation of farmers in application of water.

STRATEGY FOR THE SIXTH PLAN

10.12 During the Sixth Plan period, the highest priority will be given to the improvement of productivity per unit of water in the areas already covered with the irrigation arrangements including attention to the problems arising from salinity and water logging. Work on the command area development, introduction of Warabandi system of water distribution, popularisation of crop soil-water management practices will be encouraged. Advance action will be taken for research by agricultural universities for developing cropping and land management systems for effective use of irrigation water so that water becomes a blessing and not a curse.

10.13 Highest priority will be given to the completion of all unfinished irrigation projects as speedily as possible. For this purpose, the on going approved projects will be adequately funded. The construction programme will have to be firm and the project organisations have to prepare yearwise physical and financial programmes for each project indicating the requirements of balance investigations, data collection, designs, equipment, key construction materials, cost review, staff etc. All efforts are to be made to utilise the outlays fully. It is, therefore, proposed to continue earmarking the outlays for selected approved major irrigation projects to ensure their timely completion. In addition, new starts will be made particularly in the drought prone, tribal

and backward areas. Inter-State differences in relation to the use of water has to be resolved speedily to facilitate development of irrigation resources. Special steps will be taken for ground water development which are discussed in a separate section in this Chapter.

10.14 High priority has to be given to analysing and identifying the problems in each project under each zone so that there would be optimisation of benefits from the irrigation resources already created and to be created in future. This will be achieved through the following activities:

- (i) Minimising the losses at the storage/diversion point.
- (ii) Minimising the losses in the distribution system.
- (iii) Efficient use of water on the fields.

10.15 The losses at the storage or the diversion point has to be kept to the minimum by judicious operation of storage reservoirs. Utilisation of storage supply to the maximum extent before the onset of hot weather season will be the aim for efficient use of storage waters. Losses in the distribution system shall be minimised by resorting to selective lining looking into the performance of each reach of the distribution system. In such of the projects where adequate and timely supply of coal for burning bricks required for lining or where supply of cement for cement concrete lining have become a bottleneck, lining with alternative materials like rubber or plastic sheets or similar materials may be tried if technically and economically justified. The efficient use of irrigation water on the field involves study of many factors including the soils, their physical and chemical conditions, water requirements of various crops, irrigation practice and drainage needs. Selection of proper crops and cropping patterns based on agro-climatic conditions will be made. Proper land shaping and land levelling with adequate drainage facility, construction of field channels for eliminating field to field losses, selection of suitable method of irrigation to help efficient use of water on the field will be provided. Proper scheduling of irrigation will be necessary to ensure high yields and high efficiency in the irrigation water use. In areas where water resources are in excess of land resources, irrigation will be supplied on optimum level in order to obtain maximum yield per unit of land. In areas where water resources are deficient compared to land resources, the irrigation scheduling shall be done to obtain maximum production per unit of water. The scheduling of water will be so tailored to ensure water supply at such stages of crop growth which are more critical in their demand for water so that crop growth and quality do not suffer seriously. Consolidation of holdings for better land and water management will be continued vigorously. It is necessary to train the irrigation engineers in the soil and water management practices. Suitable institutions for training in-service engineers will be set up in the States and also at the Centre. The services available at the organisations like Water Technology Centre and the various agri-

cultural universities will be availed of in the training programme.

10.16 Conjunctive use of surface and ground water resources will be adopted for optimising benefits from the available water resources. In the States of Bihar, Madhya Pradesh, Uttar Pradesh and West Bengal, there is scope for increased development of surface and ground water resources. In order to derive the maximum benefits from the conjunctive use of surface and ground waters, it will be necessary to mobilise institutional investments and also to provide the necessary infrastructural facilities, the most important of which is proper tie up with energy supply.

10.17 Apart from the expeditious and efficient harnessing of the locally available water resources formulation of a National Plan would be necessary to transfer waters from one system to another in order to utilise the surplus waters to meet the needs of drought prone and water deficit areas in the country. The need for transfer of waters from one basin for utilising part of the surplus water to meet the needs of the drought prone areas in the country has been recognised. The Central Water Commission has already taken up studies to determine the quantum of shortages and surpluses in location and time in each river basin and sub-basin. These studies will include, among others, identification of drought prone areas, availability of water at present, potential of harnessing further water available locally and possibilities of transferring waters from areas having surplus water. Proposals for inter-linking of rivers are also being studied and work in this regard will be continued in the Sixth Plan.

10.18 Gross receipts from irrigation are currently insufficient to cover even the working expenses in most of the States. It will be necessary for the State Governments to revise the water rates so that the return recommended by the Seventh Finance Commission is achieved.

10.19 Recently the system of monitoring selected major irrigation projects has been introduced. The Central Water Commission has been suitably strengthened. The projects are periodically inspected and the deficiencies and bottlenecks in their implementation are brought to the notice of Government. States have also to set up monitoring cells at the project level and state level for close monitoring of projects at intervals of about six months to ensure that the targets are achieved according to the time schedule. The Centre is also taking steps for arranging scarce materials like cement, steel and explosives. Project authorities are being advised to prepare operational plans of the system so that their efficiencies could be watched and improved from year to year.

10.20 Cost Control Cells are required to be set up at State/project level. A detailed work plan for each project for each year will be necessary.

Regional Imbalances

10.21 In a country as vast as ours with diversified topography and availability of water resources, both

surface and ground, there is bound to be some disparity and imbalance in the development of irrigation facilities. In addition, historical reasons like different types of administration in different parts of the country, have contributed in no small measure to the regional imbalances. Some of the States which had good administrations have progressed far ahead of the States who have to investigate the schemes and then take them up. During the past three decades, a number of steps have been taken to correct this imbalance as far as possible. States have been encouraged to take up investigations in a big way. Even so, a look at the development of irrigation facilities in different States would indicate that some States like Punjab, Haryana, Uttar Pradesh, Tamil Nadu have progressed ahead of others whereas States like Madhya Pradesh, Maharashtra and Gujarat have got a long way to go. However, it is gratifying that efforts are now being made in these States also to catch up with the progress made in other parts of the country and a large number of schemes are being taken up and larger outlays are being provided for irrigation development in successive years.

10.22 In addition to the efforts being made by the States, as already stated, the Centre is continuing studies for transfer of water from one river basin to another, particularly from the surplus basins to the deficit areas prone to drought according to guide lines earlier agreed to by Planning Commission. A national perspective for water resources development is being initiated in the Ministry of Irrigation and CWC which when implemented will go a long way in correcting much of the regional imbalances seen today.

Modernisation

10.23 There are number of old irrigation projects and even those constructed recently which are not able to meet the irrigation requirements of the cropping patterns developed, due to excessive transit losses and inadequacy of regulatory structures. In some reaches, the canal capacities become a constraint. It is important to remedy these defects by undertaking a modernisation programme, which would include lining, construction of regulatory structures etc. so that requirements of crop in the peak periods are met with and productive agriculture coupled with the use of fertilizers and other inputs becomes possible.

Drainage

10.24 Provision of adequate drainage is of vital importance for realising full benefits of irrigation. What is needed is an adequate net work of main drains, intermediate drains and field drains. It is necessary that the main drains and the intermediate drains are constructed first, preferably as a part of the irrigation project as the functioning of the field drains is dependent on the prior construction of intermediate and main drains.

Of late, there has been a large scale denudation of vegetation and forests in the catchment areas of reservoirs of irrigation projects. As a result, inflow of

sediment into the reservoirs has increased. The life of the reservoirs will consequently be shorter than that assumed at the implementation stage. Overgrazing, faulty agricultural practices and indiscriminate felling of trees have been the major contributing factors for this malady. It is, therefore, necessary to take up urgently soil conservation measures in the catchment areas of irrigation reservoirs. Outlays for soil conservation programme are provided under the agricultural sector.

Research

10.25 Projects built so far were comparatively easier and simpler. The projects to be taken up hereinafter will be more complex in nature and have to be built in difficult terrains and locations. With a view to execute these projects in a safe and economical manner, it is necessary that considerable research is carried out on various aspects of construction of dams, canal systems and their management. The importance of such research has been well recognised by most of the State Governments. The Central Government has two research institutes, one at Pune and the other in New Delhi. In addition, a number of universities and autonomous bodies are also being encouraged to take up research problems connected with irrigation development. The Central Board of Irrigation and Power, a registered society, has been playing a coordinating role in encouraging research and providing results of the research studies directly to the various users. The Central Government has been assisting such research activity by giving grant assistance to specific basic research programmes related to river valley projects. Recently, the Government of India has set up a National Institute of Hydrology to act as nodal institution for fundamental and advanced research in the field of hydrology, to act as a data bank and assist the State Governments in adopting modern techniques in hydrological investigations and analysis.

10.26 The Central Water Commission has, in association with the National Remote Sensing Agency, taken up a number of studies in the application of space technology for water resources development. Such application would result in substantial saving in time and effort in the development of water resources.

Training

10.27 With the rapid expansion of irrigation facilities and the increase in tempo of investment in irrigation, there is an urgent need for training the irrigation personnel both in methods of construction and in efficient operation of management of the completed systems. It is with a view to achieve better efficiency and organisational control, schemes for establishing staff training colleges have been recommended. Some of the States have already established such colleges or institutes, and others are in the process of doing so. It is recommended that no more time is lost in establishing these institutions. At the Centre, the Central Water Commission has a proposal to start a staff training college as an apex body for

imparting advanced training and refresher courses in the various aspects of the water resources development. Efforts will however, be made to utilise the infrastructure facilities already available in some of the institutions, such as the Roorkee University, the Indian Institute of Technology, the Water Technology Centre, New Delhi and some of the leading engineering and agricultural institutions. Considering the problems now being faced and to be faced in the future, there is urgent need of imparting training to our serving engineers and also the new recruits on the intricacy and efficient management of water resources. As stated in the Sixth Plan Framework, optimum productivity per unit of water in area irrigated is the only answer to the large investments being made in this sector. This can be achieved if the persons building such schemes, operating and managing them are trained. The amount spent in organising such training and refresher courses would go a long way in improving the efficiency of our irrigation systems.

Employment

10.28 Execution of irrigation programme affords a large scope for providing employment, particularly in the rural areas. Construction of irrigation projects involves excavation of large network of small channels apart from construction of large masonry and concrete structures and large canals. In such types of works, manual construction methods utilising large number of unskilled and skilled labour are invariably used. There are, however, certain types of works such as large dams and special types of hydraulic structures where mechanisation of construction methods is inescapable with a view to ensure completion of the project within a reasonable period and also to ensure the quality of work. In the execution of projects during the next five years, although maximum stress would be on adopting labour intensive methods of construction, resort to mechanised construction would also be necessary and in some cases obligatory. Adoption of such combination of technology will enable achieving the twin objectives of creating maximum employment as well as achieving benefits within a reasonable time schedule, making optimum use of men and machines. Already there are some excellent examples of the use of combination of technology at Nagarjunasagar dam and Rajasthan Canal Project, Kadana Dam, where use of human resources, animals and most sophisticated construction equipment has been made with spectacular results. In view of the rural unemployment problem, resort would have to be made to such techniques in future programmes to as large extent as possible.

Maintenance

10.29 In the priority task for future development of irrigation, mention has also to be made of the problems pertaining to maintenance of completed works. In regard to public irrigation projects including major, medium and minor, the problem primarily relates to inadequacy of budgetary allocations made for main-

tenance in the non-Plan sector of the States. The consensus arrived at various forums is that atleast Rs. 50 per ha. of the gross irrigated area or the cultivable commanded area whichever is more, has to be provided annually for proper and efficient maintenance of flow irrigation systems. The actual prevailing allocations are far less. The deficit in maintenance has to be met as speedily as possible. It is suggested that the State Governments may consider setting up of dam safety cells with a view to building up appropriate expertise at State level to identify areas requiring special attention and initiate timely action to remedy any defect detrimental to the safety of the dam.

A large number of irrigation projects have already been constructed in the country and are under operation. So far, much headway has not been made in evaluating the impact of irrigation projects on socio-economic aspects and on environment. Such studies will help in water planning, project formulations, appraisals and implementation. It is, therefore, suggested that the States may initiate action to take up the study of impact of irrigation projects on the socio-economic aspects and environment.

During the past few years, scarcity of steel, cement and coal has hampered the progress of irrigation and multi-purpose projects. Steps have been taken to streamline the demand and allocation of these scarce materials. It is hoped that in the coming years the progress of these projects will not be affected.

PROGRAMMES

10.30 An outlay of Rs. 8448.36 crores is proposed to be invested on major and medium irrigation projects. Bulk of this outlay will be in the State sector with only a sum of Rs. 90 crores being in the Central sector. Annexure 10.1 and 10.2 give the state-wise break-up of outlays and the benefits likely to be achieved. The Central Sector outlay is mainly for strengthening the Central Water Commission, the Central Research Stations and observation of river flows at key gauging sites.

10.31 The outlays proposed are:

	(Rs. crores)
1 States	8301.46
2 Union Territories	56.90
3 Central Sector	90.00
TOTAL	8448.36

With the above outlay, an additional irrigation potential of 5.7 million hectares is proposed to be created.

10.32 While every effort is being made to complete the ongoing projects because of the fact that some of the States have taken up a large number of projects already and there is a constraint of resources, a few

projects will spill over into the Seventh Plan. Annexures 10.4 and 10.5 show the list of approved major projects started before 1-4-1976 that are likely to be completed in the Sixth Plan and those that are likely to spill over into the Seventh Plan respectively.

MINOR IRRIGATION

REVIEW

10.33 Upto the end of the Fourth Five Year Plan, the total cropped area which benefitted from minor irrigation was assessed at 23.5 m. ha. During the Fifth Five Year Plan 1974-79 against an increase of 5 m. ha. envisaged additional potential created during four years of the Plan (1974—78) was 3.8 m. ha. By the end of 1977-78, the level achieved under minor irrigation coverage, therefore was 27.3 m. ha. and during 1978—80 additional potential created is about 2.7 m. ha. The physical achievements on some of the important items are as follows:

	'000 Nos.
(i) Dug wells	7,780
(ii) Private tube wells	2,110
(iii) Deep tube wells	36
(iv) Electrical pump sets	3,950

Minor Irrigation Programme suffered a setback on account of shortage of EC grade aluminium slowing down the electrification programme which was most vital for ground water development and surface lift irrigation schemes. Besides, some of the States were proceeding fast with ground water development like Gujarat, Haryana, Punjab and Tamil Nadu and had to slow down the pace considerably because many pockets of these States were reaching saturation stage in respect of ground water potential. On the other hand States like Assam, Bihar, Madhya Pradesh, Orissa, U.P. and West Bengal where considerable ground water potential was available could not move fast on account of comparatively low level of electrification, weak cooperative structure and insufficient flow of institutional credit.

STRATEGY FOR THE SIXTH PLAN

10.34 The deep tubewells will be executed mostly from the public sector. The other programmes will require institutional investments. While the flow of institutional credit has not been picking up at the desired rate in the States of Eastern and North Eastern region, the tempo has been going down in many other States due to deteriorating recovery position of the banks. It is, therefore, evident that special measures would be necessary to step up the flow of institutional investments.

10.35 The following steps are proposed to be taken in this context:—

- (i) Revitalising organisations for collection of hydrogeological data, quick preparation of

feasible schemes and monitoring, sanction and implementation of the schemes.

- (ii) Simplification and streamlining of the procedures for processing of loan applications.
- (iii) Active involvement of the revenue staff, the village level workers, boring mechanics and other staff of the Minor Irrigation department in collection of loan applications.
- (iv) Giving maximum emphasis on organising local campaigns (credit melas) for clearance of a large number of applications on the spot.
- (v) Organising drives for completion and updating of land records in the States of Eastern Region and adopting quick procedures for certification of land title in the absence of updated records.
- (vi) Organising and sustaining drives for improving the recovery position of lending banks.

10.36 No precise assessment of private investment in minor irrigation during Fifth Plan 1974—78 and 1978-79 and 1979-80 annual plans is available. It will be useful to undertake some studies to gauge investment in the minor irrigation by private sector so as to assess the total investment likely to take place in the next Plan period.

10.37 The programme of minor irrigation development will have the following components:—

- (i) Ground Water exploration and Exploitation:
 - (a) Survey and Investigation of potential.
 - (b) Based on surveys of ground water potential, schemes will be formulated on area basis. Special attention is to be given to prevent over-exploitation.
 - (c) Faster mobilisation of institutional credit.
 - (d) Stepping up rural electrification and rationalising power supply to pump sets.
 - (e) Measures for improving planning and execution.
- (ii) Integrated/Conjunctive planning and utilisation of surface and ground water.
- (iii) Special measures for conservation of conventional energy.
- (iv) Action Plan for extending the benefits to weaker sections and development of the backward areas.
- (v) Improved maintenance.
- (vi) Measures for improved utilisation of irrigation potential created.
- (vii) Research and Development efforts; and
- (viii) Strengthening administrative and field organisation for survey, planning, design and execution of Minor Irrigation Programme.

10.38 Survey and Investment work will have to be stepped up especially in the North Eastern Region so that an adequate number of projects are formulated for implementation. These investigations would also help the States to put ground water exploitation on a more systematic and rational basis which has been lagging far behind the available potential. As referred to earlier, in some area in States like Gujarat, Haryana, Punjab and Tamil Nadu, the lowering of water table is already posing serious problems. The necessary measures to control over exploitation may have to be considered seriously by these States.

10.39 Surface water projects may be planned on watershed basis with due emphasis on integration with small head-water tanks necessary for soil and water conservation. Works may be integrated with social forestry and contour bunding with a view to reduce the rate of siltation in the reservoirs.

10.40 Investigations in the tribal area will be accelerated and effort shall be made to complete all surveys of ground water potential in a period of ten years. The present norms in regard to construction will be reviewed in order to ensure that these do not come in the way of implementing feasible schemes in these areas.

In selected surface Minor Irrigation and deep tubewell schemes a complete package of measures based on Command area approach is required to be undertaken to serve as models and motivate the cultivators in the adjoining areas. Work of construction of field channels upto the last holding shall be accelerated. Formulation of water user associations to handle jobs such as distribution of irrigation water according to the agreed turn-schedule, carrying out on-farm development (OFD) works and maintenance of field channel will be encouraged.

10.41 Rural electrification coupled with assured supply of power is a vital input for accelerating minor irrigation programme. There will be closer synchronisation between the rural electrification programme and the development of the lift irrigation to achieve quick progress. Imposition of power restriction in irrigated agriculture will be avoided, as far as, possible. Efforts will be directed to increase the efficiency of the pump sets, particularly those used by the farmers, by selection of appropriate size of motors, pumps, suction and delivery heads. Guidelines are proposed to be issued for the use of the farmers.

10.42 In the planning and evaluation of ground water schemes on a scientific basis, special attention by the ground water organisations in the States is essential for extending technical guidance to the farmers on the basis of manuals, guidelines, type design, location and construction of wells, tubewells etc., and adopting suitable mechanism for selection and pricing of pumpsets.

10.43 For integrated conjunctive planning and utilisation it is essential to have simultaneously utili-

sation of surface and ground water resources through a judicious combination of surface irrigation projects and ground water schemes, keeping in view the overall estimate of available water resources, the infrastructure of irrigation facilities already available, agricultural setting and potentialities of the region and the long term needs of irrigation and other competitive uses.

10.44 State tubewells and other irrigation works will be taken up on priority basis in the public sector in areas where population of scheduled castes is high and in tribal areas. Areas with preponderance of small and marginal farmers will also receive special attention.

10.45 Satisfactory arrangements for maintenance, particularly of smaller surface water projects are still lacking. It is necessary that engineering department which is responsible for maintenance of bigger minor irrigation projects is more actively involved in the maintenance of smaller projects also and provide with adequate maintenance grants to carry out the maintenance works satisfactorily. Maintenance/irrigation charges will be realised by the Government from the beneficiaries. The field agencies may come together to form a broad based complex of repair shops, spare parts depots and mobile units for providing service and repair facilities for tubewells and pump sets.

10.46 The following recommendations made by the National Commission on Agriculture 1976 on maintenance needs to be given particular attention:

- (a) (i) In case of tanks maintained by the Department, the annual maintenance grants often fall short of the requirements; these need to be suitably increased in view of the price increase and taking into consideration the actual requirements for proper sustained maintenance.
- (ii) Where Panchayats are responsible for maintenance of tanks, they have to raise sufficient financial resources through water charges for satisfactorily maintaining the tanks and employ sufficient staff for the purpose.
- (iii) A suitable legislation for recovering water charges from beneficiaries of tank irrigation at present exempt under "Fardabpashi" and "Wajib-ul-arz" in order to cover maintenance cost of the tanks is necessary.
- (iv) The circle system of inspection and repairs of tanks as in vogue in erstwhile Madras State is to be introduced in all States which have fairly large tank irrigation.
- (b) The smaller works that are still expected to be maintained by the beneficiaries themselves will be brought under the orbit of some organisations such as the Irrigation Department, Panchayati Raj Department, Rural Engineering organisation, etc. to ensure that maintenance gets adequate attention.

- (c) The whole field of administration and management of public tubewells and lift irrigation projects will be given special attention to remove the existing deficiencies. Drastic administrative measures are to be taken to control the thefts of transformers and conductors. Special watch may be kept during the periods of keen irrigation demand.
- (d) Progressive young farmers will be specifically trained in handling mechanical and electrical equipment in carrying out petty repairs on the spot for their pumps/tubewells. Concerned departments of the State and organisations will back up this programme.

irrigation till the end of 1979-80 works out to 8 m. ha. and from ground water up to 22 m. ha. The target for the Sixth Five Year Plan 1980-85 is proposed as under:—

Table 10.3
Physical Targets

(Million ha.)

Year	Additional irrigation targets 1980-85		
	Surface water additional potential	Ground water additional potential	Total
(1)	(2)	(3)	(4)
1980-81	0.20	1.30	1.50
1981-82	0.20	1.35	1.55
1982-83	0.20	1.40	1.60
1983-84	0.20	1.45	1.65
1984-85	0.20	1.50	1.70
	1.00	7.00	8.00

Keeping in view the loss due to depreciation and siltation of existing works, the gross potential to be created during the Plan period is fixed at 11 m. ha. so that the additional potential net of depreciation and siltation may be 8.0 m. ha.; 1.0 m. ha. from surface water and 7.0 m. ha. from groundwater.

10.49 To achieve the large scale development of ground water during the Sixth Plan, the target for various items of the programme will be as under:

	Nos.
(i) Dug wells	12 lakhs
(ii) Private tubewells	12 lakhs
(iii) Deep tubewells	15,000
(iv) Electrical Pumpsets	25 lakhs

It is proposed that the States may take up on priority basis construction of dug wells falling in the vicinity of villages where there is no drinking water supply at all.

An outlay of Rs. 1810.30 crores has been envisaged in the public sector alongwith an institutional investment of the order of Rs. 1700 crores. The State-wise outlays and benefits are indicated in Annexures 10.1 and 10.3.

Central Ground Water Development Corporation

10.47 The Central Ground Water Board has three important functions in respect of Ground Water Development viz., (i) survey and investigation (ii) assessment and monitoring of aquifers and (iii) exploratory tubewells. While the Board has been doing very useful work in providing scientific data for ground water development in various parts of the country according to the varying lithology, its direct involvement in the implementation of ground water development schemes in the country has been very marginal. During times of emergency, like the drought in the various parts of the country in 1979, the Board had not been able to render sufficient assistance in drilling wells in the affected areas on account of paucity of rigs. The demand for the deposit wells to be drilled by the Central Ground Water Board is increasing from States as also from Central Government Departments, Corporation etc. It is, therefore, proposed to set up a Central Ground Water Corporation with head quarters located in a backward area like Basti or Balia in Eastern part of Uttar Pradesh which would take up exploitation of ground water in low utilisation areas. The Corporation, which will work on commercial lines, will not only act as a catalyst for accelerating ground water development in the States but also provide training facilities. To begin with, the Corporation will concentrate its work in the eastern region of the country and part of eastern Uttar Pradesh, Bihar, Orissa and Madhya Pradesh, where large untapped ground water potential exists. After the Corporation is set up, the Central Ground Water Board and the New Corporation would function in a mutually supportive manner. The Corporation will endeavour to mobilise institutional finance for ground water development; but initially some equity support would be needed from the Government. In the Sixth Plan, it is proposed to allocate Rs. 20 crores for initial setting up of Corporation and buying of new rigs etc.

PROGRAMME

10.48 The ultimate potential for development of minor surface irrigation has been broadly assessed at 15 m. ha. and for ground water at 40 m. ha. The expected cumulative utilisation under minor surface

COMMAND AREA DEVELOPMENT AND WATER MANAGEMENT

REVIEW

10.50 Considerable investment has been made on major, medium and minor irrigation projects in order to create irrigation potential for increased agriculture production. The utilisation of the potential created has lagged behind for various reasons. For obtaining maximum benefits from irrigation water, it is essential that the command area of the project is fully ready to receive and beneficially use supplies. For this, a comprehensive programme of Command Area Development (CAD) which will include systematic programme of land consolidation, the scientific land shaping, construction of water courses and field channels to carry water to individual fields, field drains to carry surplus water away from the fields and a system of roads which will enable farmers to carry the produce to the market will be necessary. Besides the above measures, adequate and timely supply of inputs has to be ensured and marketing and other infrastructure facilities created so that the farmers are able to derive optimum benefits from available land and water.

10.51 For removing the above deficiencies and in order to optimise the agricultural production, during the Fifth Plan, a programme for integrated development of command area was launched and Command Area Development Authorities were set up for identified projects. The coverage of CAD is proposed to be increased to more projects during the Sixth Plan. In spite of this, a great deal of ground still remains to be covered as the task is stupendous. The major functions of these CAD authorities were to be as under:—

- (i) Modernisation and efficient operation of the irrigation system as well as development of main drainage system beyond the farmers blocks of 40 ha.;
- (ii) construction of field channels;
- (iii) land shaping and land levelling;
- (iv) construction of field drains;
- (v) lining of field channels/water courses;
- (vi) exploitation of ground water through tubewells, open wells etc.;
- (vii) adoption and enforcement of a suitable cropping pattern;
- (viii) enforcement of a suitable rostering system of distribution of water among farmers (Warabandi);
- (ix) preparation of plan of input supply for credit, seeds, fertilizer, pesticides etc.;
- (x) making arrangements for timely and adequate supply of various inputs;
- (xi) strengthening of existing extension training and demonstration organisations.

10.52 During the Fifth Plan (1974-78), 38 command area development authorities covering 50 irrigation projects were set up. These were spread in

108 districts in 13 States and covered about 12.4 million ha. of ultimate irrigation potential. By the end of March, 1980, the total number of projects taken up for command area development increased to 76 which covered an ultimate irrigation potential of 15.3 million ha., in 16 States and one Union Territory. The number of CAD Authorities increased to 43 by the end of March, 1980. The area covered under the field channels during the Fifth Plan period was 12,20,150 ha., and under the land levelling and shaping the area was 3,37,480 ha. The area covered under the field channels and land levelling to end of March, 1980 was 30,82,570 ha. and 9,36,970 ha. respectively.

In addition, construction of roads, lining of canals, improving the drainage system and construction of deep and shallow tubewells have also been taken up in a number of projects. T&V system of extension has been introduced in a number of projects and modernisation including improvement of drainage have also been undertaken in some projects. Supply of other essential inputs has also been streamlined in the command area.

10.53 The financing of the CAD programme is at present on the following pattern:—

(i) *Sharing of cost between Union Government and the State Government:* Matching share between the Centre and the States in respect of the cost of establishment of CAD authorities, creation of water utilisation cell and CAD Department at State level, soil survey, preparation of farm plans, warabandi supervision of on farm development works (OFD) and for equity capital support to Land Development Corporations, Farmers' Service Societies to be set up to mobilise institutional credit to farmers for construction of field channels, field drains, land levelling and land shaping and adaptive trials and training. The loan assistance for field channels which was earlier given on a cent percent basis by Union Government was changed during 1979-80 to one of matching basis between the Centre and the States. Crop compensation to farmers for OFD works was also eligible on a matching share between the Centre and the States upto a certain limit.

(ii) *Assistance provided by the Union Government:* Subsidy for on-farm development works as well as the ground water development to small and marginal farmers on the prevalent basis as in Small Farmer Development Agency (SFDA), Marginal Farmers and Agricultural Labourers Scheme (MFAL) or in accordance with the pattern prevalent in the States as well as to disadvantaged farmers.

Loan assistance on a matching basis to Agro-Industries Corporation for procuring equipment for land development in command areas and also equity support to the Corporations dealing with the ground water development in these areas or loan assistance for the purchase of equipment for executing ground water development schemes in the Command areas. In addition, subsidy is available for community minor irrigation works in the command

areas and for scheduled tribes on the pattern prevalent under the Integrated Rural Development Programme.

(iii) *State Government's responsibility:* (a) Cost of strengthening the existing extension, training and demonstration organisations.

(b) Cost of strengthening of infrastructures including communication system to handle the increased production.

(c) Re-modelling and modernisation of a delivery system above one cusec outlet as well as provision of intermediate and major drainage.

(d) Creation of basic infrastructure like land for markets etc., and debenture contributions for cooperative institutions.

(e) Maintenance of roads, drainage and irrigation system in the command area.

(iv) *Special fund for financing OFD works in case of ineligible farmers:* For financing OFD works in the case of ineligible farmers, a special loan fund has been created which would be contributed by the Union Government, State Governments and ARDC in the ratio of 37.5:37.5:25. The fund would be jointly administered by the three agencies.

STRATEGY FOR THE SIXTH PLAN

10.54 The main aim of the programme is to reduce the gap between created irrigation potential and utilisation thereof and to optimise agricultural production through better management of land and water in the command areas of Irrigation Projects. Apart from the 76 on-going schemes some more projects will be included under the Programme in order to further hasten utilisation of irrigation potential created on projects, particularly those in the pipeline for assistance from the international institutions. Farmers should be associated closely in the command area development activities, particularly in land levelling and shaping, construction of field channels and distribution of water equitably. This can be attempted if in each village or under a minor, farmers' association is formed along with representatives of the irrigation and CAD departments. In order to ensure optimum use of land and water, strong and sustained linkages need to be developed amongst the Canal Management Authorities, Command Area Development Authorities and the farmers. The cooperatives of the farmers need to be encouraged not only for water distribution but also for providing inputs to agriculture and for marketing the produce. There should be joint consultations with regard to planning of crops for each season as well as during appropriate stage of distribution of water. A sense of involvement will go a long way in the speedy achievement of results and better management of the water resources. Already Gujarat has made an effort in forming farmers cooperative for distribution of water. They take water in bulk from the irrigation department and distribute it amongst the members. This has resulted in better efficiency in use of water. Based on the experience gained from the projects taken up

so far, following components of the Programme will require special attention:—

(a) Intensification of the modernisation of the pre-plan and earlier plan irrigation systems, with a view to achieving better return from them.

(b) Drainage is to be given high priority.

(c) The on-farm development works should continue to be given priority. As was decided earlier, considering the fact that complete package of OFD Programme is time-consuming and as it is essential to ensure that water reaches every field at the earliest, it is proposed to continue implementation of this Programme in two stages.

(i) Construction of field channels on a priority basis along the ridges predetermined for subsequent consolidation programme without waiting for the realignment and consolidation of holdings. Funds for the construction of field channels would also be available from the major and medium irrigation sector, as field channels would be constructed up to 8/5 ha, block as a part of the irrigation projects. The maintenance of the field channels would, however, continue to be the responsibility of the farmers themselves.

(ii) Land levelling and shaping including consolidation of holdings, realignment of field boundaries.

(d) In most of the States up-dating of the land records has to be accelerated.

(e) Construction of essential roads in the Command area may be taken up on priority under the Rural Roads Programme. So far as the taking up of road construction as a part of the CAD programme is concerned, recommendations made by a Technical Group set up by Planning Commission to look into the norms and specifications for such roads could form the basis for such programmes.

(f) Ancillary activities like development of marketing and processing facilities, animal husbandry, farm forestry etc. have to be organised by the CAD authorities for integrated development of the area.

(g) Proper operation of irrigation system and timely scheduling of irrigation supplies, enforcement of warabandi (turn schedule) with farmers' participation and adequate legal and administrative backing.

(h) To determine the best package of practices for different crops in different agro-climatic conditions, adaptive trials would have to be carried out extensively by the Project authorities.

(i) Enactment of enabling legislation, which would facilitate flow of institutional credit

for land levelling/shaping works wherever it has not been done so far.

- (j) A review of the procedure for obtaining institutional finances will have to be made and the procedures streamlined so that the farmers are able to get institutional finance within a short time.
 - (k) For all-round development, it is necessary that CAD authorities are set up on other projects also and to make these authorities more effective, it would be essential to strengthen them so that adequate coordination can be brought about.
- (1) Attention is required to be given to diversification of crop pattern within the existing commands so that water is put to optimum use and productivity of land increased. During such diversification attention would have to be given to production of oil seeds, pulses, etc., to eliminate as far as possible their shortage.

PROGRAMMES

10.55 It is proposed to cover an area of about one million ha. under on-farm development works for land levelling/shaping. In respect of field channels, it is proposed to cover an area of 4 million hectares during the Plan period. In addition, modernisation of irrigation system including improvement of drainage arrangements, development of conjunctive use wherever feasible, integration with other sectoral development programmes including Rural Roads etc., would also be achieved.

Water Management

10.56 Water Management occupies a key role in the steps to be taken in the coming years. The objective of water management in irrigated agriculture is to provide suitable moisture and environment to the crops to obtain optimum yields with corresponding maximum economy. This technology is location specific and is governed by the nature and extent of water availability, soil and climatic conditions and the terrain of the area, to be irrigated. It differs from one area to another. With the extension of irrigation facilities and advent of high yielding varieties, the cropping pattern in different parts of the country has been undergoing a considerable change. The demand for water has become more exacting and the need for efficient management of land and water is, therefore, most imperative. It is proposed to achieve efficiency in use of water by employing appropriate water lifting devices for delivering adequate quantities of water at the required time. Sprinkler and drip irrigation systems will be used in areas where agro-climatic conditions permit economic and efficient use of these devices. The role of Irrigation Engineers, Agricultural Scientists and others engaged in managing irrigated agriculture, in such a changing situation has become more difficult and complex. It is, in this context that a scientific and pragmatic approach to the problem of water management has assumed great significance. While

efforts are being made under the Command Area Development Programme to improve the water management on the field, research activities relating to various aspects of water management have to be stepped up. It is also necessary to lay greater emphasis on teaching the subject of water management in Universities and colleges which impart courses in Irrigation and Irrigated Agriculture.

10.57 The management of irrigation systems should aim at the following broad objectives:

- (a) *Ecological*: Introduction of irrigation should not lead to any adverse effects in the long run such as water logging, salinity etc.;
- (b) *Economic*: There should be stability in farming under irrigated conditions. There should be better income for the farmers. This should be ensured by organising necessary inputs at reasonable rates and suitable marketing for the produce. The cost, return and the risk elements should be evaluated properly in every irrigation system.
- (c) *Energy of the farming system*: The requirements of energy for irrigation either in terms of bullock power for ploughing, pump sets for watering, manual energy for seeding, harvesting, storage etc. should all be properly worked out and adequate arrangements made; and
- (d) *Employment*: In irrigated agriculture, there should be better employment than in dry farming. Efforts should be made to maximise the employment opportunity both during farming and in post harvest operations.

The entire concept of efficient water management should aim at better use of land and water resources for the greatest good of the farming community and this can be achieved only when the farmers are actively involved in planning and management of the land and water resources. There has to be a beneficial interaction between the irrigation and command area development administrations and the farmers. This interaction should be concurrent and continuous. Then only one can hope for the optimum results as a result of the introduction of irrigation.

FLOOD CONTROL

REVIEW

10.58 The investment made in the flood control sector from the First Plan to the end of the Fifth Plan (1977-78) was of the order of Rs. 640 crores. The anticipated expenditure during 1978-80 was Rs. 330 crores. The area provided with reasonable protection from floods till the end of the Fifth Plan was about 10 million ha., which was expected to go up to 11 million ha. till the end of March, 1980. Besides, 264 towns have been protected and 4,700 villages raised above flood level by the end of March,

1978. It has been noticed that while the outlays for successive Five Year/Annual Plans have been increasing and more and more areas are being protected, the estimated value of damage due to floods has been increasing. According to the Report of the Rashtriya Barh Ayog (RBA), the total value of damages at current prices was Rs. 3,128 crores for the period 1974—78 as against Rs. 3,104 crores for the period 1954—74.

To develop long-term strategy on control and management of floods, Government of India had set up the Rashtriya Barh Ayog in 1976. The Ayog in their report submitted to the Government of India in March, 1980 have dealt with the flood problem in a comprehensive manner and have made several recommendations. The recommendations of the Commission are currently under examination by the Ministry of Irrigation.

Flood forecasting and warning to areas that may be affected by floods is necessary so that the population in these areas can be evacuated in time and loss of life and property minimised. Considerable progress has been made in flood forecasting and fore-warning the population that may be affected.

STRATEGY FOR THE SIXTH PLAN

10.59 Although under the various laws there is authority to prevent encroachments of the flood plains, there seems to be quite a lot of haphazard and unauthorised encroachments which have been on the increase obviously on account of pressure of population. These lead to additional damage in some other area due to restriction of the flood plain. Sometimes, the protected areas behind the embankments get affected under abnormally high intensity of floods resulting in breaches in the existing embankments. Further, while the flood plain is to be kept free from encroachments, even valuable constructions have been going on in such areas. Values of properties and crops damaged have also been continuously rising. These have resulted in larger damage monetarily when the floods are serious. It has not been possible to adopt a rational and practical basis for estimating the flood damage and collection of statistics on a uniform basis. Encroachments in the riverine areas have not been identified. There is also no master chart from which the administration can judge the exact areas which will get affected by floods of different intensities. Thus, the basic data and knowledge for dealing scientifically with the flood problem has many gaps.

The construction of embankments and improvement of drainage in the areas actually affected by floods, though provide some immediate and direct benefits in alleviating the actual suffering of the people, these do not appear to bring assured and lasting benefits to them.

10.60 One of the important causes of occurrence of floods viz., the devastation of forests and lack of other conservative measures on the catchment areas of the rivers leading to heavy soil erosion and consequent increase in silt load in rivers, has not so far received

adequate attention. As a measure of silt control in some of the big reservoirs already constructed, some soil conservation measures in the catchment areas have been carried out during the last 15 years. It is now agreed that soil conservation and afforestation measures will be necessary in the catchment areas of all the rivers which are creating flood havoc. During 1976-77 and 1977-78, a new scheme of watershed management was taken up in the Himalayan Region. It is essential to extend this programme to the other catchments of floodprone rivers where this has not been taken up so far. These measures, besides retarding the run-off, will lead to control of silt inflow into the river which create unstable conditions in the regimes of the rivers. Implementation of the programme involves multi-disciplinary approach and will require experts on soil conservation, engineering, forestry and agronomy to work jointly to formulate and execute schemes on sub-watershed basis. The existing organisation in the States will need considerable strengthening. In addition, land use survey teams have to be organised for survey and identification of critically affected sub-watersheds which will require priority treatment.

10.61 While it may take some time to process the recommendations of Rashtriya Barh Ayog, the Flood Control Programme in the Sixth Five Year Plan has been evolved keeping broadly the recommendations of the Commission in view. The measures would continue to be flood forecasting and warning systems, new embankments, drainage improvement, soil conservation including afforestation etc., to be funded from the respective sectors.

PROGRAMMES

10.62 It is proposed to provide reasonable flood protection for 4 million ha. during the Sixth Plan period. Towns and important installations which are threatened by floods and erosion would also be protected.

10.63 *Completion of continuing Schemes.* Completion of continuing schemes including priority flood control works is the first priority. Some of the schemes of the Fourth Plan have still not been completed. Some of the major schemes which have been lingering on are—Lower Damodar Scheme, Mograhat Basin Drainage Scheme in West Bengal, Buxar-Koilwar Embankment Scheme, Bagmati Embankment Scheme in Bihar, Tapi Embankment Scheme in Gujarat, Krishna Godavari Delta Drainage Scheme in Andhra Pradesh, Lucknow Town Protection Works in UP, Improvement of Jhelum outfall channel in Jammu & Kashmir etc. It is essential that all on-going projects are reviewed as quickly as possible to identify which of them are even now technically feasible and economically justifiable.

10.64 *Flood Forecasting:* The flood forecasting network in the country will be extended to cover other Inter-State rivers so far not covered by the Central Water Commission. Similarly, there is need to modernise the methods and techniques on this subject.

State Governments have also to take up this programme for rivers which lie within the States and which cause floods.

10.65 Preparation of Master Plans: Efforts to prepare long range comprehensive Master Plan will be intensified. The comprehensive plans will not only envisage construction of embankments, improvement of drainage channels in the flood affected areas but also construction of storage reservoirs in the upper catchments and appropriate reservoir regulation to regulate the flood discharges. Such basin-wise Master Plans will be drawn up on a time-bound basis. The States should set up special organisation for the purpose.

10.66 Flood Plain Zoning and Regulation: It is proposed to have large scale contour maps with flood areas delineated for transfer on the ground and for use in flood warning. This will have to be pursued more vigorously as these maps are essential for effective management of flood plains.

10.67 New Schemes: Appropriate priorities will be accorded for inter-state schemes while taking up new schemes by the States. Some Inter-State Schemes have been causing lot of damages. These include the Goverdhan Drainage Scheme in Haryana, Rajasthan and Uttar Pradesh; Sahibi Basin, Najafgarh Drainage System in Rajasthan, Haryana and Delhi etc. The participating States have to make adequate provision in the respective Plans to complete such schemes expeditiously. Some Central assistance is likely to be provided for such schemes. New embankment and drainage schemes are to be taken up after very careful examination and for each scheme there must be a time-bound programme of completion.

10.68 Soil Conservation and Afforestation : It is proposed to lay greater emphasis on this programme on water-shed basis in the catchment areas of rivers causing flood.

10.69 Anti-sea Erosion Works : The Anti-sea Erosion programme in Kerala would be continued. Efforts to check sea-erosion in other coastal States would be intensified.

10.70 Maintenance: In order to stabilise the existing benefits from completed works and also to keep the works in a state of fitness, increased attention would need to be given to the maintenance of flood control works. States are to be persuaded to provide adequate funds in their annual budgets on the basis of the recommendations of the Seventh Finance Commission.

10.71 Monitoring: While monitoring of selected major irrigation projects at the Centre, State and Project levels has started during the Fifth Plan period, similar efforts in respect of flood control programme have been initiated. It is necessary that all major flood control works and InterState projects are taken up for monitoring by the Centre and the State during the Sixth Plan period.

10.72 Brahmaputra River Board: Parliament has recently enacted the Brahmaputra River Board Bill for setting up a Statutory Board to look into the flood

problems of the Brahmaputra Valley and prepare a master plan for implementation. This will help in tackling one of the most serious problems faced by the North Eastern region and help in the speedy development of that region by control of floods, development of hydro power and irrigation facilities.

DESALINATION OF SEA WATER

10.73 As Water is becoming scarce in most parts of the country, particularly in arid and semi-arid areas the question of utilising sea water after desalination assumes importance. A number of scientific institutions in the country are already carrying out research in this field. Mention may be made of Central Salt and Marine Research Institute of Bhavnagar, Indian Institute of Technology, Madras, the Indian Council of Agriculture Research (ICAR), Department of Atomic Energy and also a number of individuals and research groups. A lot of research work is also being done in other countries notably in Europe. It is necessary that there is a further expansion of this activity during the Sixth Plan period and pilot studies are taken up for demonstrating the usefulness of desalination. The desalination water will be used through drip irrigation method for growing high value crops like vegetables, date palm etc. At the same time effort will be made to find out to what extent the brackish water from the sea could be used for growing crops like millet, bajra and some variety of wheat. The possibility of using sea water by mixing it with fresh water for growing crops like sugar-beet, fodder and some variety of rice may also be explored. In this effort the irrigation research institutes located in the various States and also the Central Water and Power Research Station and the Ministry of Irrigation will be associated. There is also need for taking up a large number of pilot demonstrations on farmers' fields to prove the utility, economy and use of sea water.

PEOPLE'S PARTICIPATION

10.74 For promoting the scientific use of our land and water resources it is essential that the farmers in each command, watershed and catchment area participate in the development and management of soil and water resources. For this purpose the management of command areas of irrigation projects as well as catchment and watershed areas will be developed on a joint sector approach involving the people of the area and the administration. Technologists have to draw up plan of action in consultation with the local people and help implement the programme. District Level Committees in which representatives of farmers representatives of people and news media, officials and others interested in water resources are fully associated have to be formed. The academic and technical institutions and in particular Agricultural Universities in the area would be fully involved in the preparation of precise action plans. These plans will vary from region to region and it is necessary that close links are maintained with local agricultural experts and agricultural universities in the preparation of action plans,

Annexure 10.1

Outlays on Major and Medium Irrigation, Minor Irrigation and Flood Control Programme during the Sixth Plan (1980-85).

(Rs. crores)

Sl. No.	State/Union Territory	Major and Medium Irrigation	Minor Irrigation	Flood Control	Command Area Development
(0)	(1)	(2)	(3)	(4)	(5)
States					
1	Andhra Pradesh	791.29	79.00	20.00	35.00
2	Assam	62.50	74.50	22.40	1.60
3	Bihar	850.00	168.70	158.00	32.00
4	Gujarat	980.00	88.00	20.00	18.80
5	Haryana	362.25	23.71	114.00	69.05††
6	Himachal Pradesh	10.45	21.00	3.35	..
7	Jammu & Kashmir	67.94	43.50	31.00	8.00
8	Karnataka	440.50	100.00	1.80	13.00
9	Kerala	256.05	40.00	25.00	7.25
10	Madhya Pradesh	780.00	267.75	4.80	94.75
11	Maharashtra	1138.66	164.65	0.60	26.70
12	Manipur	40.00	8.50	5.50	0.50
13	Meghalaya	1.00	6.00	1.00	..
14	Nagaland	..	10.00	..	..
15	Orissa	360.00	85.00	15.00	10.00
16	Punjab	327.29	9.43	21.00	38.81
17	Rajasthan	375.00	34.00	17.75 ^(a)	94.26
18	Sikkim	..	4.00	0.50	..
19	Tamil Nadu	149.79	39.40	28.00	8.00
20	Tripura	19.00	13.10	5.00	..
21	Uttar Pradesh	1049.74*	279.96*	132.70*	85.00*
22	West Bengal	240.00*	150.00*	200.00*	13.20*†
Sub-total : States		8301.46	1710.70	827.40	555.92
II. UNION TERRITORIES					
1	Andaman & Nicobar Islands	..	1.20	..	..
2	Arunachal Pradesh	2.00	13.00	1.00	..
3	Chandigarh	..	0.64	..	..
4	Dadra & Nagar Haveli	9.00	0.55	0.10	..
5	Delhi	4.10	2.00	39.00	..
6	Goa, Daman & Diu	40.00	6.00	0.50	0.35
7	Lakshadweep	..	..	0.60	..
8	Mizoram	..	3.00	..	..
9	Pondicherry	1.80	3.21	1.50	..
Sub-total : Union Territories		56.90	29.60	42.70	0.35
III. CENTRAL SECTOR		90.03	70.00	175.00	300.00
Grand Total :		8448.36	1810.30	1045.10	856.27

(a) Includes Rs. 2.75 crores for colonisation.

* Tentative.

† Includes Rs. 5 crores for Area Development.

†† Includes Rs. 5 crores for Mevat Area Development.

Annexure 10.2

Benefits from Major and Medium Irrigation Schemes

('000 ha. gross)

Sl. No.	States	Ultimate Irrign.	Irrigation benefits to end of 1979-80	Target of benefits during Sixth Plan	additional	
		Potential	Potential Utilisation	Potential	Utilisation	
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	Andhra Pradesh	5000	2937	2846	520	335
2	Assam	970	89	49	119	99
3	Bihar	6500	2452	1720	665	638
4	Gujarat	3000	1030	562	260	224
5	Haryana	3000	1769	1630	151	166
6	Himachal Pradesh	50	..	..	6	5
7	Jammu & Kashmir	250	106	98	40	45
8	Karnataka	2500	1074	1052	400	320
9	Kerala	1000	458	438	208	207
10	Madhya Pradesh	6000	1442	1043	533	601
11	Maharashtra	4100	1235	615	550	450
12	Manipur	135	6	6	46	43
13	Meghalaya	20	..	..	..	..
14	Nagaland	10	..	..	..	..
15	Orissa	3600	1426	1426	254	254
16	Punjab	3000	2309	2304	170	160
17	Rajasthan	2750	1535	1334	332	314
18	Sikkim	20	..	..	..	..
19	Tamil Nadu	1500	1179	1165	66	65
20	Tripura	100	..	..	3	2
21	Uttar Pradesh	12500	6029	4941	1200	1359
22	West Bengal	2310	1526	1436	197	251
	Sub-total : States	58315	26602	22635	5720	5588
	Union Territories	160	10	10	21	12
	Grand Total	58475	26612	22645	5741	5600

Annexure 10.3
Benefits from Minor Irrigation Schemes

('000 ha. gross)

No.	States	Ultimate	Irrigation benefits		Target of additional	
		Irrgn. Potential	Potential	Utilisation	Potential	Utilisation
(1)	(2)	(3)	(4)	(5)	(6)	
1	Andhra Pradesh	4200	1985	1985	350	350
2	Assam	1700	288	288	107	107
3	Bihar	5900	2335	2335	1015	1015
4	Gujarat	1750	1431	1431	193	193
5	Haryana	1550	1257	1257	147	147
6	Himachal Pradesh	285	96.5	96.5	22	22
7	Jammu & Kashmir	550	313	313	25	25
8	Karnataka	2100	1015	1015	315	315
9	Kerala	1100	310	310	95	95
10	Madhya Pradesh	4200	1550	1550	500	500
11	Maharashtra	3200	1632	1632	325	325
12	Manipur	105	26.3	26.3	15	15
13	Meghalaya	100	23.7	23.7	15	15
14	Nagaland	80	42.0	42.0	10	10
15	Orissa	2300	665	665	406	406
16	Punjab	3550	2914	2914	240	240
17	Rajasthan	2400	1812	1812	150	150
18	Sikkim	22	9	9	8	8
19	Tamil Nadu	2400	1887	1887	167	167
20	Tripura	115	38.4	38.4	10	10
21	Uttar Pradesh	13200	8840	8840	3350	3350
22	West Bengal	3800	1430	1430	490	490
	Sub-total : States	54607	29900	29900	7955	7955
	Union Territories	250	100	100	45	45
	GRAND TOTAL :	54857	30000	30000	8000	8000

Annexure 10.4

Major on-going projects of the Sixth Plan started before 1-4-1976 which are likely to be completed during the Sixth Plan

Sl. No.	Name of the State/Project	Sl. No.	Name of the State/Project
ANDHRA PRADESH		KARNATAKA	
1	Nagarjunasagar	26	Bhadra
2	Sriram Sagar Stage I	27	Tungabhadra Tungabhadra H.L.C.
3	Godavari Barrage		KERALA
4	Vamsadhara Stage I	28	Chittarpuzha
5	Tungabhadra H.L.C. Stage II Somasilla Stage I	29	Kuttiadi
	ASSAM	30	Pamba
7	Dhansiri	31	Pazahassi
	BIHAR		MADHYA PRADESH
8	Gandak	32	Mahanadi Reservoir Phase I
9	Kosi Barrage & Eastern Canal	33	Tawa
10	Rajpur Canal	34	Upper Wainganga
11	Sone H.L.C.	35	Chambal (Stage I & Stage II)
12	Barner Reservoir		MAHARASHTRA
	GUJARAT	36	Jayakawadi Stage I
13	Mahi Stage I	37	Krishna
14	Mahi Stage II (Kadana) Mahi Bajaj Sagar	38	Bhima
15	Damanganga	39	Upper Tapi Stage I
16	Panam	40	Manjra
17	Ukai	41	Mula
18	Sabarmati	42	Waghur
	HARYANA	43	Khadakwasla
19	Beas Unit I	44	Upper Godavari
20	Beas Unit II		MANIPUR
21	Gurgaon Canal	45	Loktak Lift Irrigation
22	Jawahar Lal Nehru Lift Scheme		ORISSA
23	Loharu Lift Irrigation	46	Mahanadi Delta
24	Sewani Lift Irrigation	47	Anandpur Barrage
25	W.J.C. Remodelling	48	Rengali Dam (Dam's share under Irrigation)
			PUNJAB
			Beas Unit I
			Beas Unit II
		49	Diversion weir of Shahnahar Canal

Sl. No.	Name of the State/Project	Sl. No.	Name of the State/Project
RAJASTHAN		56	Kosi Irrigation
	Beas Unit I	57	East Baigul Reservoir
	Beas Unit II	58	Increasing capacity of Narainpur Pump Canal
	Chambal (stage I and stage II)	59	Parallel Lower Ganga Canal
	Gurgaon Canal	60	Sone pumped Canal
50	Jakham	61	Increasing capacity of Dookall Pump Canal
51	Mahi Bajaj Sagar	WEST BENGAL	
52	Rajasthan Canal stage I	62	Kangsabati Reservoir
TAMIL NADU		63	Teesta Barrage 1st sub-stage of Phase I
53	Parambikulam Aliyar	64	D.V.C. Extn. & Improvements
54	Modernisation of Periyar Vaigai system	GOA, DAMAN & DIU	
UTTAR PRADESH		65	Salauli
	Gandak Canal		Damanganga
55	Sarda Sahayak	DADRA & NAGAR HAVELI	
			Damanganga

Annexure 10.3

Major on-going Projects of Sixth Plan started before 1-4-1976 which are likely to spillover into Seventh Plan.

Sl. No. Name of the State/Project

BIHAR

- 1 Bagmati
- 2 Western Kosi Canal
- 3 Durgawati

JAMMU & KASHMIR

- 4 Ravi Canal

KARNATAKA

- 5 Upper Krishna
- 6 Malaprabha

KERALA

- 7 Kallada
- 8 Periyar Valley
- 9 Kanhipuzha

Sl. No. Name of the State/Project

MAHARASHTRA

- 10 Warna
- 11 Kukadi Stage I
- 12 Surya

RAJASTHAN

- 13 Rajasthan Canal Stage II

UTTAR PRADESH

- 14 Tehri Dam
 - 15 Jamrani Dam
 - 16 Lakhwar Vyasi
 - 17 Madhya Ganga Canal Stage I
-

RURAL DEVELOPMENT AND COOPERATION

Development of the rural areas has been one of the abiding concerns of the successive five year plans. Beginning with Community Development programme in the early 50's which helped to establish a net-work of basic extension and development services in the villages, thereby creating awareness in the rural communities of the potential and means of development which made quicker adoption of major technological advances later in the mid 60's in agriculture possible, reinforced with abolition of intermediary landlords and reform of land tenure system, the investments in the successive five year plans have led to the creation of essential physical and institutional infrastructure of socio-economic development in many rural areas. Later, realising that the benefits of various development programmes were in the main being taken by those better endowed in terms of land resources, programmes specifically designed for the development of small and marginal farmers and the landless and agricultural labourers were taken up in the early 70's. A special programme for the development of Drought Prone Areas (DPAP) was introduced in the mid 70's and a programme of development of desert areas in the late 70's. A programme of Food for Work was launched in 1977 to provide opportunities of work for the rural poor particularly in slack employment periods of the year which would at the same time create durable community assets. Irrigation facilities have been expanded manifold. With a view to removing regional disparities, particularly in less endowed or dis-advantaged areas, like the hill and tribal areas, special sub-plans of development were introduced. Special financial and fiscal concessions, credit on softer terms and subsidies have also been made available to under-developed areas to attract increased industrial investment. A Minimum Needs Programme was designed to secure to the rural areas within a reasonable time-frame certain basic amenities in the field of education, health, drinking water, electrification, roads and house-sites.

The major thrust of the Five Year Plan 1980-85 will be on strengthening the socio-economic infrastructure of development in the rural areas, alleviating rural poverty and reducing regional disparities. The specific programmes and strategies to be adopted during the Plan period to achieve these goals have been dealt with in relevant chapters. This Chapter

deals only with special employment and income generation programmes for the rural poor, special area development programmes and the institutional means for rural development.

RURAL DEVELOPMENT

Review

11.2 The Small Farmers Development Agencies (SFDA) programme, aimed at the target group of small and marginal farmers and agricultural labourers, has been in operation since 1974 covering 1818 blocks in the country. The objective of the Programme was to assist persons specifically identified from this target group in raising their income level. This was to be achieved by helping them, on the one hand, to adopt improved agricultural technology and acquiring means of increasing agricultural production like minor irrigation sources, and on the other hand, to diversify their farm economy through subsidiary activities like animal husbandary, dairying, horticulture etc. The Agencies were to make particular efforts to ensure that the needed inputs and credit were made available to these persons by respective credit agencies. Enrolling them as members of the credit cooperatives was one of the operational objects of the programme so that they could draw necessary assistance from them. Up to March, 1980 the Agencies had identified 16.7 million persons from the target group for assistance. Of these, 8 million beneficiaries including 1.3 million belonging to the scheduled castes and scheduled tribes, have been assisted. 6.1 million or 75 per cent of these beneficiaries have been helped in acquiring access to improved agricultural practices through subsidised supply of inputs, improved implements and field demonstrations. Bulk of the remaining 1.9 million beneficiaries have been covered under the more substantive asset development programme like acquisition of milch cattle, sheep, poultry, piggery etc. (0.9 million), minor irrigation (0.9 million), and other categories including forestry and village industries (0.1 million).

11.3 Short term credit advanced to the beneficiaries of this programme through cooperatives was Rs. 27.76 crores during 1979-80 and through commercial banks Rs. 6.03 crores. The cumulative

medium and long-term loans advanced through cooperatives upto March, 1980 amounted to Rs. 112.82 crores and Rs. 140.20 crores respectively. The total outlay utilised by way of subsidy to beneficiaries and other grants, and expenditure on execution, amounted to Rs. 156.10 crores during the period 1974-79. It will be seen that while the numbers identified for assistance represented only a segment and not the whole of the target group, the numbers benefited are only about half the number identified. Furthermore, the nature of assistance given to the bulk of them comprised items which did not lead to any specific additional asset creation. The actual impact of these items of assistance on the income of the beneficiaries therefore varied a great deal and in many cases has been of doubtful significance. Where, however, assistance has been given for developing minor irrigation sources or for acquiring milch cattle, sheep, goats, poultry etc. the impact has been significant. The principal reason for a lower coverage under such asset creation purposes has been the progressive erosion in the integrated functioning of the Block agency which is the main implementation agency, inadequacies of the credit institutions and lack of coordination and adequate support from concerned departments to the Agencies' programmes.

11.4 The concept of an Integrated Rural Development Programme was first proposed in the Central budget of 1976-77, and a beginning was made. This programme was intended to assist the rural population to derive economic benefits from the developmental assets of each area. The programme with some modifications was introduced on an expanded scale in 1978-79, beginning with 2300 blocks, of which 2000 were under coterminous coverage with SFDA, DPAP and CAD programmes. With another 300 blocks added during 1979-80, its coverage was 2600 blocks as on 31-3-1980. Besides the small and marginal farmers, this programme was more specific in regard to agricultural workers and landless labourers and additionally brought within its purview rural artisans also. The programme emphasised the family rather than individual approach in identification of beneficiaries. 5.3 million families had been identified under the programme for assistance as on 31-3-1980. Of these, 2 million families have been already given assistance in some form. Under this programme, as in the SFDA Programme, largest coverage has been under the 'improved agriculture' category (60 per cent in 1979-80), followed by animal husbandry (15 per cent in 1979-80). Though conceptually this programme was comprehensive in scope and sought to secure, through a process of block level planning, fuller exploitation of the local growth potential with a view to making an optimum impact on the local poverty situation, in point of fact it has also tended to operate on the same lines as the SFDA. Undoubtedly the programme has only recently begun and has yet to firmly establish itself. It has also been subject to the same constraints as the ones earlier mentioned in respect of SFDA.

11.5 Drought Prone Areas Programme (DPAP) is currently being implemented in 557 blocks spread over 74 districts in thirteen States. This programme has been in operation since the Fourth Plan. Since its inception upto March, 1980 a total expenditure of Rs. 426 crores has been incurred on this programme. Under this programme upto December, 1979 13.30 lakh hectares of land had been treated with soil and moisture conservation measures, irrigation potential of 2.72 lakh hectares created, afforestation and pasture development taken up on 4.77 lakh hectares and 72,000 milch animals distributed to individual beneficiaries. The weakest aspect of its operation has, however, been its lack of effort and impact on the development of better dry land farming practices and cropping patterns.

11.6 The Desert Development Programme is operating in 128 blocks covering arid areas in 20 districts in 5 States in the country, including the two cold desert areas of Ladakh and Spiti. The main aim of the programme is to check desertification and combine it with projects which facilitate development of productivity and productive resources of the area and its inhabitants. Under this programme since its inception in 1977-78 upto March, 1980, an expenditure of Rs. 23.21 crores has been incurred. The expenditure has mainly been on schemes of afforestation, water harvesting, rural electrification and animal husbandry. Investments under this programme have been somewhat slow in picking up; particularly in forestry and pasture development. This has been largely due to the forestry organisation in the States being inadequately equipped to meet the particular requirements of the desert areas. However, Rajasthan which has the largest coverage under the programme has now established a specialised Directorate of Desert Forestry and Pasture Development.

11.7 A Food for Work Programme was initiated in 1977-78, aimed at creation of additional employment in rural areas on works of durable utility to the community, with the use of surplus foodgrains available in the buffer stock for payment as wages. Beginning somewhat haltingly, the programme gained momentum in 1978-79 when over 12 lakh tonnes of foodgrains were utilised creating 372.8 million mandays of employment. During 1979-80, the utilisation has been provisionally estimated at 23 lakh tonnes of foodgrains inclusive of the special allotments which were made to the States affected by drought in that year, resulting in about 600 to 700 million mandays of employment as estimated on incomplete reports. The programme, besides creating substantial additional employment in the rural areas during lean employment periods, more particularly in areas affected by the wide spread drought of 1979, has made a favourable impact on stabilisation of wages in the rural areas and also helped check the rise in prices of foodgrains. Notwithstanding, however, its very substantial achievements in respect of employment generation and even more so its popularity and promise, the programme suffered from severe limitations in respect of planning and supervision of works. The operation of

this programme on a year-to-year basis had resulted in uncertainty about its continuance for the full Plan period. In the circumstances, the State Governments were disinclined to build the needed technical and administrative support to effectively plan, monitor and oversee the programme. No serious attempt appeared to have been made by the State Governments to develop for each block where the programme was being implemented, a shelf of projects which would be the most useful from the point of view of local needs and would also, fit in with overall national priorities. As a result, works of low priority with dubious utility have been taken up at several places. For want of a back-up financial provision in many States, which could be used to finance the cost of materials required for works, the tendency has been to take up kachha roads on a large scale, which unless brought to at least a semi-pacca stage would not be able to survive one or at best two monsoons. Due to lack of the needed administrative and technical back-up, the work was often executed through contractors. This is, however, not to say that work everywhere has been of this nature. A great deal of durable assets whether in the nature of irrigation tanks or school buildings, panchayat buildings, drinking water wells, paving of village streets and drainage and such like have also been created.

11.8 As brought out above the SFDA, IRD, DPAP, DDP and the Food for Work programmes have over the years achieved their objectives only partially. The size of the problem which these programmes, especially the individual beneficiary oriented programmes like SFDA and IRD, have to deal with is enormous. The pace and the manner in which the problem of rural poverty has been dealt with so far leaves much to be desired both qualitatively and quantitatively. Only a small fraction of the rural poor has so far been covered effectively by these poverty amelioration programmes. Even amongst those covered, a sizable portion is of those who had some land. The bottom deciles of the rural poor i.e., the landless and the rural artisans, who are the poorest, have in most cases been left untouched. In the area development programmes (DPAP/ DDP) also, while significant progress has been made in expanding minor irrigation and dairying, the same measure of effort has not gone into the programmes of soil and water conservation on a scientific watershed development basis, and on afforestation and pasture development. These are programmes of critical importance to these areas. Of all elements, the weakest has been the introduction of changes in agronomic practices and cropping patterns most advantageous in the particular agro-climatic potential of the area. Marginal lands continue to be over exploited through crop husbandry even though optimal utilisation in many cases would be through pasture and grass lands development. Animal husbandry is an important and promising activity for these areas but while about a million beneficiaries have been enabled to acquire milch cattle and other animals, the back-up effort in respect of better feed and fodder,

health care and breed improvement has been grossly inadequate. The constraints from which these programmes have suffered have not been financial but organisational inadequacies and lack of a clear-cut plan of development for the area to which co-ordinated effort of all concerned agencies could be directed.

Strategy for the Sixth Plan

11.9 Alleviation of rural poverty will be the prime objective of the Sixth Plan. An increase in the productive potential of the rural economy is an essential condition for finding effective solutions to the problems of rural poverty. At the same times, recognising the constraints which limit the scope for higher growth rate in medium-term, more direct means of reducing the incidence of poverty and destitution would have to be employed. It is well known that the hard core of poverty is to be found in rural areas. The poorest sections belong to the families of landless labourers, small and marginal farmers, rural artisans, Scheduled Castes, Scheduled Tribes and socially and economically backward classes. House-holds below the poverty line will have to be assisted through an appropriate package of technologies, services and asset transfer programmes.

11.10 The strategy and methodology for accelerated rural development will be as follows:

- (a) increasing production and productivity in agriculture and allied sectors;
- (b) resource and income development of vulnerable section of the rural population through development of the primary, secondary and tertiary sectors;
- (c) skill formation and skill upgrading programmes to promote self and wage employment amongst the rural poor;
- (d) facilitating adequate availability of credit to support the programmes taken up for the rural poor;
- (e) promoting marketing support to ensure the viability of production programmes and to insulate the rural poor from exploitation in the marketing of their products;
- (f) provision of additional employment opportunities to the rural poor for gainful employment during the lean agricultural season through a national rural employment programme (NREP);
- (g) provision of essential minimum needs; and
- (h) involvement of universities, research and technical institutions in preparing a shelf of projects both for self-employment and NREP and in preparing strategies for the scientific utilisation of local resources.

11.11 The development of the rural areas is the concern of all sectors of the economy and these areas draw benefits of development in varying degrees from various sector. In this chapter programmes

which are directly aimed at the development of the target group of the rural poor and the principal institutional instruments relevant therefor have been dealt with. There are three broad categories of these programmes:—

- (i) Resource and income development programme for the rural poor.
- (ii) Special Area development programme.
- (iii) Works programme for creation of supplementary employment opportunities.

RESOURCE DEVELOPMENT OF THE RURAL POOR

11.12 A number of programmes have been operating in the country, some for as much as the last ten years (SFDA/MFAL) and some introduced recently, aimed at improving the economic conditions of the rural poor. None of these programmes covered the whole country, though a large number of blocks in the country had more than one of these programmes operating simultaneously in the same area for the same target group. This territorial overlap combined with the different funding patterns of these programmes, not only created considerable difficulties in effective monitoring and accounting, it often blurred the programme objectives. In practice, therefore, these programmes were reduced to mere subsidy giving programmes shorn of any planned approach to the development of the rural poor as an inbuilt process in the development of the area and its resources. It is proposed that such multiplicity of programmes for the rural poor operated through a multiplicity of agencies should be ended and be replaced by one single integrated programme operative throughout the country. The programme will be called the Integrated Rural Development Programme (IRDP). Of the 350 million people below the poverty line in the country, around 300 million are in the rural areas. These consist largely of the landless labourers, small and marginal farmers, rural artisans, and other workers. The hard core of poverty is constituted by the marginal farmers, agricultural labourers (about half of whom are landless), rural artisans and fishermen constituting nearly one-third of the rural work force. Possessing little or virtually no assets, they need to be enabled to acquire productive assets and/or appropriate skills and vocational opportunities and then backed effectively with services to increase production and productivity. If through special programmes of specific beneficiary oriented assistance this group could be brought above the poverty line, a major impact would have been secured on the overall economic levels of the country.

11.13 The main objective of the IRD programme will be to evolve an operationally integrated strategy for the purpose, on the one hand, of increasing production and productivity in agriculture and allied sectors based on better use of land, water and sunlight, and on the other, of the resource and income development of vulnerable sections of the population in all the blocks of the country. Any developmental strategy which aims at improving the lot of the rural poor must aim at creating new productive

assets for them. Improving the productivity of land by providing access to inputs like water, improved seeds, and fertilizers would be an essential means to help those categories of the rural poor, who have some land asset. Diversification of agriculture through animal husbandry, dairying, forestry, fishery, sericulture etc. will benefit both the landless and the land holders and this would form an important plank of the programme. Processing and manufacturing activities based on local resources will also have to be identified and fully exploited. Post harvest technology will have to be improved so that both producers and consumers benefit from enhanced production.

11.14 Since the bulk of the rural poor are landless or marginal farmers, a significant part of the activities for their benefit will have to be in the non-farm sector. While subsidies will continue on the existing pattern to help the rural poor to acquire productive assets their role which has been overplayed will have to be brought in the correct perspective. Formulation of schemes to launch the prospective beneficiaries in viable economic activities is the linch pin of this programme. Identification of these activities, formulation of projects based on these, provision of forward and backward linkages, arranging of credit and choosing the right beneficiary, are the most important aspects of the process of helping the intended beneficiaries. Village and cottage industries and the services sector offer considerable untapped potential for self and wage employment. These sectors have heretofore received only scant attention in the poverty amelioration programmes. The potential of these sectors needs to be optimally exploited by strengthening the arrangements for the supply of raw materials, consumer-based designs and marketing facilities. It is proposed to cover a sizable number of beneficiaries in each block through programmes in these sectors. Suitable support will be provided through programmes of skill formation. In these tasks, the educational, research and technical institutions will be fully involved through suitable agreements between them and the concerned development departments. An All India Coordinated Research Project for the development of technologies for increasing the income of landless labour families will be initiated.

11.15 The operational strategy of IRDP will have the following main elements:—

- (1) A five year development profile will be drawn up for each district dis-aggregated into blocks, based on practical (achievable) possibilities of development in agriculture and allied sectors. This plan will be based on a scientific understanding of the developmental assets of the district and will particularly deal with optimum development of ground and surface water (minor irrigation) resources, fuller water utilisation (including private sources like wells and tubewells), and dairy, animal husbandry, fisheries, forestry and local manurial and fuel resources including bio-gas, development. The plan so formulated will become the framework of action for the relevant schemes of development in these sectors.

- (2) While access to agricultural extension services is to be provided to all farmers, the programme will ensure that a farm guidance is provided on a systematic basis to the small and marginal farmer families. A specific operational programme will be drawn up by the extension agency for this purpose.
- (3) A special programme of assistance to the poorest of the rural households will be drawn up to raise the specific households, so identified, above the poverty line. This programme will be implemented on a phased basis. A household rather than individual approach will be followed, implying that the economic uplift of the household will be sought through a package of activities involving all working members, with particular attention being given to economic programmes for women. In the identification of families to be assisted, the village council (Gaon Sabha) must be involved, and the identification done in a manner which would ensure that only those belonging to the target group are identified.
- (4) A blueprint for exploiting the available potential in the secondary and tertiary sectors, which also spells out linkages for training and marketing will be prepared for each block and families from among the target group identified for assistance based on such a blueprint.
- (5) A suitable mechanism should also be developed to secure representation of the poor on the implementing agencies at the district, block and village levels to facilitate better planning and implementation of the programme. A village plan register indicating details of all the identified families and the development programmes drawn up for them should be maintained at each village.
- (6) The credit plan for the District/Block while taking into account the total credit needs of the area, must also specifically indicate the credit programme for the target groups. It must also be ensured that their needs are met on a priority basis.
- (7) IRDP will be implemented through a single agency in each district. Such agencies already exist in most districts in the country. In others new agencies will be set up. Adequate autonomy for these agencies to enable them to formulate and implement the programmes effectively is necessary. An unambiguous organisational arrangement for making available the needed support from various concerned departments is essential and must be clearly spelt out. Each district agency will have a multi-disciplinary planning team which may be funded out of the programme provision. The planning teams will take up the preparation of block plans in each district, and will also prepare specific development projects within the framework of such plans with the help, where necessary, of appropriate technical personnel available in the district or higher levels in concerned departments.
- (8) Effective implementation of the programme is largely dependent on an efficient and well-equipped field level organisation. Block organisation which has necessarily to be the field level agency for implementation has been greatly eroded over the years, and needs to be strengthened adequately in the terms of staff, both specialised and village level. Where the T&V extension scheme has been introduced, clear linkages will need to be established between the personnel working with this scheme, both at the specialist and V.L.W. level and the plan of work to be undertaken under IRDP.
- (9) IRDP has been conceived essentially as an anti-poverty programme. This objective is proposed to be achieved by enabling the poorest families to acquire productive assets, technology and skills as would make their economic activities viable. These families will also need support from social services like health, education and housing. It will be necessary to link to the extent possible the prospective beneficiaries under the IRDP to these social services, particularly programmes like applied nutrition, compulsory primary education, adult education, family welfare, children's and women's welfare, activities etc. The prospective beneficiaries having been identified, these lists should be made available to the departments concerned for them to follow up these persons in respect of the services handled by them. The house-hold-centered poverty alleviation strategy will thus come to consist of steps not only for the economic emancipation of the family, but also the education of the children, health and welfare of the vulnerable members, adoption of small family norm etc.

11.16 Of the approximately 20,000 families in a block, about 10,000—12,000 families on an average would be below the poverty line, though undoubtedly in individual blocks this number would vary from area to area. It is proposed to provide specific assistance under this programme to 3,000 families on an average in each block during the Sixth Plan. These families should be from the bottom deciles of the rural population below the poverty line. It is essential that specific income generating projects are developed for each identified beneficiary family. Though the nature and scope of development projects for these families will vary from block to block depending upon opportunities, it is assumed that of the 3,000 families approximately 2,000 could on an average be covered

by schemes broadly falling in the area of agriculture and allied activities, 500 in villages and cottage industries and another 500 in the services sector. It is important that the identification of an economic activity(s) for a household is done in full consultation with the beneficiary household concerned so that the project is appropriate to its inclination and management capability. The project must also be able to give enough net income to take it across the poverty line.

11.17 The scale of funding under the Programme will be Rs. 5 lakhs per block in the first year of the plan, Rs. 6 lakhs in the second year and Rs. 8 lakhs each in the last three years. This gradual stepping up will take care of the time that will initially be taken in developing the district/block plans, identifying all the eligible beneficiaries, building up the organisation and putting the programmes on a firm footing. In consonance with the funding pattern the target of beneficiary coverage could be lower in the first two years and higher in the last three years, with about 3,000 families covered on an average in each block over a full five year period.

Credit for Weaker Sections

11.18 Small and marginal farmers who constitute over 70 per cent of the farming population have little input mobilising power and risk taking capacity. Hence credit is a key input in achieving a rapid diffusion of benefits from new technology. It is also essential for promoting self-employment and in the creation of productive assets. The success of Integrated Rural Development Programme will mainly hinge on the preparation of viable schemes for these identified for assistance and the provision of investment credit therefore on an assured basis. While over the years there has undoubtedly been an impressive step-up in credit availability to the weaker sections, its dispersal among various strata of the rural poor has been extremely disparate. Among them the main beneficiaries have been the small and marginal farmers, the former distinctly more than the latter. The least to benefit have been the landless and the rural artisans, who as a category account for as much as one-fourth of the rural work force. The policy of stipulating a minimum percentage for the entire target group of weaker sections has done little to prevent glaring intra-group distortions. Experience shows that bracketing those who have some resource (land) with those who have none generally tends to operate to the disadvantage of the latter. It, therefore, appears necessary that the strategy of credit deployment should be so oriented as to equitably serve the needs of each category. This will call for more effective credit planning and prescription of separate targets of credit for the sub-group of the landless and the artisans, alongwith arrangements for the formulation of economically viable projects for them.

11.19 While attempting to do this, it needs to be stressed that the credit delivery systems, of both co-

operative and commercial banks, will require considerable toning up. Simplification of procedures, systematic identification of the most needy among the target group and preparation of appropriate investment projects for them and re-orientation from security-based lending to project-based lending are some of the important aspects of an improved delivery system. Credit-cum-input supply melas or other effective credit and input delivery systems will have to be adopted on a large scale before the onset of kharif and rabi sowings. Full support will need to be given by the extension agency in building up the awareness and motivation of the rural poor in respect of their production and investment needs. It is also proposed to devise suitable credit insurance schemes for insulating weaker sections from total loss due to factors beyond their control. Alongside, fullest emphasis will be given to recovery disciplines, pressures which have lately developed in some parts of the country for general writing off of overdues can only be viewed with extreme concern, for the consequences of this will be disastrous for the credit system as a whole. The aim of the Sixth Plan is to secure a high rate of rural credit expansion to serve the productive needs of all with priority being given to the credit needs of the various economic groups among the poor. Recycling of credit is an imperative of the process of expansion.

Drought Prone Area Programme

11.20 The DPAP which covers 557 blocks spread over 74 districts in the country is an integrated area development programme in agricultural sector and aims at optimum utilisation of land, water and livestock resources, restoration of ecological balance and stabilising the income of the people particularly the weaker section of the society. Some of the important elements of the programme are:—

- (i) Development and management of water resources.
- (ii) Soil and Moisture conservation measures.
- (iii) Afforestation with special emphasis on social and farm forestry.
- (iv) Development of pasture lands and range management in conjunction with development of sheep husbandry.
- (v) Live-stock development and dairy development.
- (vi) Restructuring of cropping pattern and changes in agronomic practices, and
- (vii) Development of subsidiary occupations.

11.21 The programme will be continued during the Sixth Plan period with the strategy for development of these areas being re-oriented to insulating the economy of these areas from the effects of recurring droughts through diversification of agriculture and promoting afforestation, pasture development and soil and water conservation. Of late, operational plans for these areas are being prepared from year to year.

This is inconsistent with the long-term perspective which is essential for these areas. What is needed is to evolve a medium-term strategy for development of these areas from which should flow the annual action programmes. Mere spending of money even on accepted priority programmes would not meet the objective unless this is done as a part of clearly conceived perspective of development. Economic development of these areas would be achieved through activities which in the long run contribute actively in creating conditions which mitigate the effects of drought in these areas. Watershed management will receive the highest priority and steps will be taken to promote the cooperative management of the watershed by the people in the area. Medium term project profiles which aim at achieving the objectives of the programme would be prepared for each drought prone district as also five year and one year project profiles which will be scrutinised and approved by the competent authority. An inter-disciplinary Task Force has been set up to review the scope and coverage of this programme. Individual beneficiary content of these programmes will be supported through the IRDP. The DPAP has a large potential for generating avenues of employment. This will be optimally utilised in conjunction with the National Rural Employment Programme. Overlap of areas under this programme with those under the Desert Development Programme will be eliminated.

Desert Development Programme

11.22 The Desert Development Programme aims at checking further desertification of the desert areas and raising productivity of the local resources to raise the income and employment levels of the local inhabitants. The programme will continue to be implemented both in the hot and cold arid zones of the country during the Sixth Plan. The emphasis will be on arresting desertification through activities which restore ecological balance, stabilise sand dunes, and facilitate soil and water conservation. Plantation of shelter belts, adoption of water harvesting techniques and development of pastures to sustain the livestock economy will be vigorously pursued. Exploitation of the natural resources of these areas will be closely linked to replenishment of these resources. It is proposed to encourage innovative use of land for fodder crops, pastures and fuel and fodder plantations. This diversification can substantially improve the economy of the desert areas in keeping with the ecological requirements of the area. In the cold arid zones of Ladakh and Spiti, irrigated agriculture and improved animal husbandry practices would be among the activities to be encouraged.

Outlays for IRDP and related Programmes

11.23 The outlay on the IRDP programme during the Plan period 1980-85 will be Rs. 750 crores in the central sector. It is a Centrally Sponsored Scheme and the outlay will be matched on an equal basis by the States. The IRDP which will be operative in all the blocks in the country will replace the

on-going SFDA/IRD/SLPP programmes. No separate provision also would need to be made for minor irrigation subsidy. The scheme of Training of Youth for Self-Employment (TRYSEM) will be operated as a part of IRDP for the benefit of the identified households. A small provision, however of Rs. 5 crores is being made separately for TRYSEM to meet some exceptional needs in suitable cases to strengthen the institutional infrastructure.

The Drought Prone Areas Programme will continue to be financed at the rate of Rs. 15 lakhs per block per year with a total plan outlay of Rs. 175 crores in the central sector which will be matched on an equal basis by the States.

The outlay for the Desert Development Programme will be Rs. 50 crores in the central sector with a similar provision in the State Plans.

There is a provision of Rs. 17.55 crores in the central sector for other programmes of rural development including the scheme for Rural Godowns.

The provisions in the State Plans for Rural Development amount to Rs. 1509.22 crores (Details in Annexure 11.2). This includes the matching contribution of States for IRDP, DPAP, DDP along with the provision for the National Rural Employment Programme.

NATIONAL RURAL EMPLOYMENT PROGRAMME (NREP)

11.24 The problem of employment in rural areas is mainly of seasonal unemployment and under-employment. Fuller employment opportunities for the rural work force will in the main have to be found within the agricultural and allied sectors themselves, through intensification and diversification of agriculture based on expansion of irrigation and improved technology. However, the very dimensions of the problem call for a multi-pronged strategy which aims on the one hand at resource development of vulnerable sections of the population, and on the other, provides supplementary employment opportunities to the rural poor, particularly during lean periods, in a manner which will at the same time contribute directly to the creation of durable assets for the community. Programmes in the nature of Small Farmers' Development Agencies, Integrated Rural Development, Drought Prone Areas Programme, Desert Development Programme, Command Area Development Programme, TRYSEM and the like, aim at resource development on individual or area basis. As for the object of providing supplementary employment opportunities, a beginning was made in this direction through the Food for Work Programme. Based on the experience of this programme, it is possible to build it into a well directed and sustained national programme for providing supplementary employment opportunities to those seeking work, during lean employment periods of the year. In the past, however, special programmes for solving the problem of unemployment and under-

employment have often tended to be formulated and implemented in isolation of the on-going developmental projects. It is necessary to view employment as an indivisible component of development and ensure that both in concept and implementation, employment and development become catalysts of each other, and the benefits to the community from the limited resources available maximised.

11.25 During the Plan period, additional opportunities for employment will become available through the large number of developmental projects to be undertaken in the public and private sectors. Such opportunities will, however, not be sufficient to absorb the growing numbers of the rural work force. Rural development programmes in the form of individual beneficiary and area development schemes and other sectoral programmes in the Plan will also provide opportunities to many of the rural poor for gainful employment through production enhancing activities. Beneficiaries of these activities will in the main be those with an asset base. A large number of people in the rural areas are without assets or with grossly inadequate assets and need to be provided wage employment. This segment of the rural poor which largely depends on wage employment virtually has no source of income during the lean agricultural period. The National Rural Employment Programme is conceived, in the main to take care of this segment of the rural poor. Under this programme, development projects and target group oriented employment generation projects will be closely intertwined.

11.26 NREP will be implemented as a Centrally sponsored scheme on 50:50 sharing basis between the Centre and the States. The Centre will provide its share in the form of foodgrains to the extent surplus foodgrains are available, and the rest in cash. Inter-State allocation of foodgrains will be made on a rational criteria related to the population size of the target group i.e. a States' population of marginal farmers and agricultural labourers and its rural population below the poverty line. The States will be encouraged to procure sorghum, millets and other locally grown foodgrains and utilise them under the scheme. Suitable financial and operational arrangement will be worked out in each State in this behalf. This would besides, making additional foodgrains available for NREP, help in insulating the producers from uneconomical sale of their produce and also save substantially on cost of movement of foodgrains from distant godowns to the work sites. For the storage of foodgrains so procured, rural godowns programme and other programmes for building up storage capacity in rural areas e.g., cooperative societies godowns, can be suitably used.

11.27 The wage paid under the programme should be on par with the minimum agricultural wage prescribed for the area. The quantum of foodgrains as part of the wage should be such as to be adequate for the family's need. It should be adequate if the two components of the wage (foodgrains and cash) are in equal proportion. In any case the foodgrains

component should not exceed 2 Kgs. per head per day.

11.28 Efforts will also be made to organise mobile fair price shops at the centres where rural works are in progress so that cloth, vegetable oil, salt and other essential items of consumption could also be made available.

11.29 Contractors are to be totally excluded from the execution of the rural works on which employment is offered through NREP. Neither will the distribution of foodgrains be entrusted to middlemen or contractors.

11.30 Only about half the States had involved Panchayati Raj institutions in the Food for Work Programme. Given proper technical and administrative supervision, these institutions have the capability of planning and executing works answering to local needs, at comparatively low costs. The PEO Evaluation Study of the Food for Work Programme has also highlighted this fact. It is, therefore, desirable that these institutions are involved in planning and execution works under NREP in all States to the extent possible, considering local conditions and nature of the work. The educational research and technical institutions in the block would be associated with the Panchayati Raj institutions in preparing a shelf of projects which will help to ensure that the assets created are at least equal in value to the wages paid.

11.31 It is contemplated that a district level employment plan disaggregated blockwise, will be formulated. This plan will estimate the numbers likely to be seeking work, separately for skilled and unskilled workers, and the work opportunities likely to be available under various plan and non-plan works in the district. The work opportunities and shortfalls will be identified, preferably in terms of blocks and the programme of works under NREP formulated accordingly. The aim of the NREP should be to provide employment opportunities during the lean agricultural period.

11.32 It is necessary that the State Governments have a shelf of projects on a sufficiently dispersed scale prepared for each block so that the programme may be implemented on a planned and systematic basis and technical soundness of the works ensured. Preparation of projects will be a continuous process. For this purpose the State Governments will have to strengthen/build up adequate technical personnel at the block and higher supervisory levels. Some of the States have a rural engineering organisation or some technical personnel at the block level, but considering the size and spread of the programme, it is quite inadequate. Some States have none at all. It is necessary that each Block should have a reasonable complement of technical staff (overseers). To ensure effective monitoring of the programme, suitable strengthening of staff will be necessary at all levels. The locally available expertise of technical institutions like IITs, Agricultural Universities, Engineer-

ing Colleges etc. as well as of voluntary organisation should be fully utilised. Block level project preparation and monitoring groups could be set up wherever the size of the programme warrants it.

11.33 The implementation agencies would be required to give priority to works relating to social forestry and pasture development, soil and water conservation, irrigation, flood protection and drainage, field channels in irrigation command areas, construction and improvement of village tanks and ponds, school and dispensary buildings and works to improve village environments, hygiene and sanitation. Only those roads may come in the priority category which can be made at least semi-pucca with culverts or have a reasonable prospect of being brought within the regular road programmes of the State or Panchayati Raj Institutions, as the case may be. While only such works as create community assets should be taken up, an exception may be made in the case of works benefiting individuals belonging to Scheduled Castes and Scheduled Tribes in respect of group housing and land development projects. Special attention will be paid to programmes where women can be gainfully employed.

11.34 In order to ensure that benefits of this programme reach the weaker sections of the society, at least 10 per cent of the allocation under the programme would be earmarked for utilisation exclusively on programmes of direct benefit to Scheduled Castes, viz. drinking water wells in Harijan Bastis, community irrigation schemes in which majority of the beneficiaries are Harijans, environmental improvement works in Harijan localities and housesites/group housing for the Harijans. Another at least 10 per cent of the allocation under the Programme would be specifically earmarked for utilisation on programmes of social forestry and fuel plantations. The utilisation of provisions by the States on these two activities will be specially monitored.

11.35 It will be desirable to regulate employment on the rural works taken up under the NREP and other Plan works so as to take particular care of the needs of the families in the target group. Specific attention will also be paid to promoting women's participation in this programme.

Outlays for NREP and Special Employment Programmes

11.36 An outlay of Rs. 980 crores has been provided for the programme for the Sixth Plan period in the Central Sector. There will be a provision in the State Plans for this programme from 1981-82 onwards as it is being operated on 50:50 sharing basis. This is included in the provision of Rs. 1509.22 crores for rural development programmes in State plans. (Statewise details in Annexure 11.2). This will be supplemented from the provisions made for special employment programmes in some states.

The outlay for NREP includes both the wage as well as the 'materials' component of works. For

no individual work should 'material' component exceed 40 per cent though for the programme as a whole 33 per cent should normally be the proportion. The outlays provided in the central and state plans are expected to generate 300-400 million mandays of employment on an average per year during the plan period. The Planning Commission will review the performance of the programme and depending on the actual experience, consideration will be given to expanding its scope and size.

There is also a provision in some State plans for special employment schemes as under:—

	(Rs. crores)
Karnataka	55.90
Maharashtra	450.00
Uttar Pradesh	100.00
West Bengal	4.75
	<hr/>
	610.65

11.37 NREP will confer concurrent benefits on those seeking daily wage employment and on the local village community only if the portfolio of projects indicating the precise man-days of labour needed for completing each specific task is prepared carefully. The project preparation and task implementing agencies should ensure that the economic output of the project is at least equal to the wages paid and total amount spent.

11.38 A high-level NREP Committee will be set up to provide overall guidance and organise continuous monitoring of the programme so that timely corrective measures can be initiated, wherever structural weaknesses become apparent. All State programmes will be submitted to this Committee for the entire Plan period.

PANCHAYATI RAJ AND COMMUNITY DEVELOPMENT

Review

11.39 Democratic decentralisation, symbolised by the establishment of Panchayati Raj institutions at the village, block and district levels in the wake of the Balwant Rai Mehta Committee Report (1958) is a natural extension of democracy at the national and state levels. Transfer of authority to and sharing of the state functions and responsibilities with the local communities and geographical units was considered crucial to the whole process and meaning of development. Besides having a better appreciation of local needs and capability of eliciting local participation in the formulation and implementation of their plans of development, these institutions were expected to act as nurseries and training ground for leadership. This called for a new administrative culture and a faith in the capacity of

our people to take decisions and execute them and to consider decentralisation of State's power and functions to these institutions not only as a means of development but an end in itself.

11.40 In the above backdrop, most of the States enacted laws establishing Panchayati Raj institutions at various levels, vested with financial developmental, and in some cases judicial powers and responsibilities for their areas. In some States, e.g. Maharashtra, Gujarat, Andhra Pradesh and Rajasthan, these bodies were made quite strong and the devolution of functions were significant. In some other States like J&K, Manipur, Sikkim and Tripura, only Gram Panchayats are functioning in the North Eastern region where tribal population predominates, historically and culturally, the traditional panchayats still command a decisive voice on a number of issues and disputes. In other States also a three tier Panchayati Raj structure with varying degrees of powers and functions has been established. In Kerala, which earlier had only Gram Panchayats, a strong District level Panchayati Raj body is proposed to be established through a recent enactment. At present there are 228593 Gram Panchayats, 4478 Block Panchayat Samitis and 252 Zila Parishads in the country. A potentially viable and useful structure of Panchayati Raj thus exists in form, but its effectiveness has been limited in practice. There has been considerable erosion in the powers and functions of these institutions in many States. Adequate financial support has generally been denied to these institutions in most States, often even in respect of the "transferred" schemes, and programmes. These institutions themselves have shown little inclination to raise their own resources locally. Besides, there has been a general apathy at the administrative and political levels towards strengthening these bodies.

11.41 All these factors—exogenous as well as endogenous have left these potentially dynamic peoples' institutions, in a virtually moribund State in most parts of the country. A Committee was consequently set up in 1977 under the Chairmanship of Shri Asoka Mehta to review the present status and to consider the restructuring necessary to secure their close involvement in the planning and implementation of programmes of rural development. The Committee submitted its report in 1978, which was considered by a conference of Chief Ministers in May, 1979. Besides suggesting larger devolution of funds and functions to these bodies, the Committee had recommended in favour of making Zila Parishad as the principal executive organ of Panchayati Raj with the Block Panchayat Samiti being converted in effect to a block level committee of the Zila Parishad. In regard to the lowest level unit, i.e., the Panchayat, the Committee recommended the concept of Mandal Panchayats comprising of 15,000 to 20,000 population and 10 to 15 villages, with a somewhat smaller size in tribal and other sparsely populated areas. There was general agreement in the Chief Ministers' Conference to the need for increased devolution and

clear definition of functions and funds to be transferred to these institutions. There was, however, considerable opposition to the idea of Mandal Panchayats. As regards Zila Parishad vis-a-vis Block Panchayat Samiti also the general opinion was that one structural pattern cannot be universalised for the whole country and that it was neither easy nor necessary to upset the existing structural patterns in different States. The Conference recommended that a Model Bill may be prepared which could then be considered by each State in the light of its own context and adapted with such modifications as it considered necessary.

Strategy for Sixth Plan

11.42 During the Sixth Plan it is proposed to strengthen the process of democratic decentralisation. Irrespective of whatever structural pattern that is existent or that may be devised, effort will be to devolve on these institutions all such functions, appropriate to each level, which are capable of being planned and implemented at that level. These institutions will be particularly involved in the planning and execution of Integrated Rural Development Programme and the National Rural Employment Programme. They will also have prominent role in District and Block level planning and in the planning of Minimum Needs Programme for their area of operation.

11.43 Any set of programmes aimed at the transformation of rural societies, with their complex sets of social values and goals, would be meaningless and in fact self-defeating, if they do not involve effectively the rural women. This subject has been dealt with in a separate chapter. Suffice here to say that the women in the villages suffer from a number of social, economic and educational handicaps and inequalities, perhaps even more than their urban counterparts. They share almost the whole burden of household chores, besides significantly helping their menfolk in farming operations. The need for organising and informing the women as will enable them to effect better home management and thereby reduce their own drudgery as well as promote family welfare is imperative. Indeed, with the increased diversification of agriculture to animal husbandry etc. envisaged in the Plan the role and participation of women in the economic activities of the family gets even more accentuated. A useful institutional means for mobilising women in rural areas is through their organisations like Mahila Mandals centred around both social and economic activities. A large number of such Mahila Mandals had been formed under the Community Development Programme, estimated at around 66,000. Most of them, however, have languished for lack of proper guidance and follow-up. Even the small complement of two gram sevikas and one mukhya sevika, which was part of the original Block staffing pattern, has ceased to exist in most blocks. It is proposed during this Plan to take up a programme of strengthening activities of interest to women, both social and economic through revitalised Mahila Mandals in a phased manner in a substantial number of blocks, as an in-

tegral part of the Integrated Rural Development Programme.

11.44 The Block agency is, and will continue to be, the main agency for implementing or assisting in implementation of various programmes of rural development. The effectiveness of this agency as an instrument for coordination of all development activities has been eroded over time. Now that the Integrated Rural Development Programme is proposed to be extended to the whole country, along with the National Rural Employment Programme and the increased demands of the Panchayati Raj system, this agency in its present weak state will not be able to cope with the magnitude and the diversity of the task it will be called upon to handle. The need for strengthening it is, therefore, imperative. The situation, however, varies from state to state. The present status and strength of the block agency will, therefore, be examined State-wise and the State Governments assisted in suitably strengthening it on a mutually agreed basis within the provisions of the Integrated Rural Development Programme. The aim is to devise a compact multidisciplinary apparatus at the block level which will be able to effectively service the needs of diverse rural development activities. Suitable linkages will also be established with the village and higher level functionaries of the T&V extension scheme. To cater to the training needs of the developmental functionaries particularly at the district and the State levels, the National Institute of Rural Development would be further strengthened in its research and training services.

Outlays

11.45 The outlay for various schemes of Panchayati Raj and Community Development would be Rs. 7.17 crores in the Central Sector and Rs. 344.90 crores in the States and UTs sector, aggregating thus to Rs. 352.07 crores. (Statewise details in Annexure 11.2)

COOPERATION

11.46 Cooperation as an instrument of economic development of the disadvantaged, particularly in the rural areas has received considerable emphasis during the successive Plans. The founders of planning in the country saw a village Panchayat, a village cooperative and a village school, as the trinity of institutions on which a self-reliant and just economic and social order was to be built. The non-exploitative character of cooperatives, voluntary nature of their membership, the principle of one man one vote, decentralised decision making and self-imposed curbs on profits eminently qualified them as an instrument of development combining the advantages of private ownership with public good.

Review

11.47 Having begun primarily in the field of credit as a defensive mechanism against the usurious money lenders, cooperatives have through the last three decades of planning come to embrace a large gamut of activities to serve the interests of the producers and consumers. Credit, however, still continues to be the

predominant activity. Taking the latest published figures, there were 1.16 lakh Primary Agricultural Credit Societies including LAMPS, FSSS etc. In 1978-79, with a membership of 5.18 crores. The number of borrowing members was around 37 per cent of the total membership. The cooperatives today cover almost all the villages in the country and their working capital stood at Rs. 2950 crores on 30th June, 1979. In 1979-80, the figure of short term credit advanced is provisionally estimated at around Rs. 1300 crores and medium and long term investment credit at Rs. 400 crores. While all round progress has been made in the field of credit by cooperatives, a few disconcerting features deserve special notice. Firstly, the rate of growth of agricultural credit advanced by the cooperatives has lately slowed down. Notwithstanding the needs of a rapidly developing agriculture, the short term credit advanced by the cooperatives has stayed around Rs. 1200 to Rs. 1300 crores during the last 3 years. The position of medium and long term credit representing investment loans is distinctly worse, with a loaning of about Rs. 339 crores in 1977-78, Rs. 448 crores in 1978-79 and only Rs. 400 crores in 1979-80. The most important reason for this stagnation in credit flow is the mounting overdues which are clogging the process of credit recycling. While the sheer volume of overdues in some states make it impractical to recover these in one instalment and demands some practical solutions for recovery over a phased period, the tendency which has developed in some States to write off the debts can only be viewed with extreme concern. It sets in undesirable precedent and will hamper recovery efforts in future. Secondly, while it is satisfying to note that the share of the weaker sections of the rural community has been steadily increasing over the years and is at present placed at over 40 per cent of the total, this share falls short of their essential production needs. Though the small and marginal farmers are apparently getting credit in larger proportion (35 per cent) than the land area held by them (21 per cent), considering that these farmers have to depend mainly on credit for the purchase of their inputs, unlike the larger farmers who can use their own surpluses, the flow of cooperative credit to the small and marginal farmers is still inadequate. However, in case of tenants, share croppers, landless agricultural labourers and rural artisans, who are the poorest and therefore the most needy, the flow of cooperative credit in terms of percentage share has continued to range only around 3 to 5 percent over the years. There have also been considerable regional disparities in credit availability. Partly due to the poor absorptive capacity and partly due to lack of coordination among concerned developmental agencies, the cooperatives have not been able to ensure an increasing flow of production loans and investment credit in most of the tribal and hill areas. Thirdly, though the cooperatives have now come to cover almost the entire country-side, the membership is only around 45 per cent of the total rural families. The weakest sections of the rural community are still not adequately represented in the membership roll.

11.48 Cooperatives are playing an important role in the supply of fertilisers on credit or cash to farmers

and carrying it to the remotest parts of the country. In quantitative terms, it is estimated that 23.5 lakh tonnes of NPK (Rs. 900 crores worth) of chemical fertilisers would have been distributed by the net work of 47000 cooperative outlets in 1978-79. However, private retailers have been progressively eating into their share of the total sales. Stagnation in credit flow has also affected their sales which are to a large extent on credit. Consequently their share in total sales has come down to about 43 per cent in 1979-80 as against 55—60 per cent a few years ago.

11.49. Linking of production credit with input supply on the one hand and marketing and processing of agricultural produce on the other has been considered critical to the success of the production programme. Cooperative marketing infrastructure has now come to cover almost all the important secondary and terminal markets in the country, comprising 3370 primary marketing societies at the mandi-level (including 550 Special Commodity Agricultural Marketing societies), 173 Central/District Cooperative Marketing Societies, 27 State/Apex cooperative marketing federations and the National Agricultural Cooperative Marketing Federation (NAFED) and its 25 main branches. During the last two decades, the marketing cooperatives have attained significant growth in business operations and have also diversified their activities manifold; yet their total share in the market still continues to be small, except in procurement operations (for the buffer stock) in some States, nor has their share kept pace with the rapidly growing output and volume of agricultural produce. In nominal value terms, agricultural produce marketed by the cooperatives has risen from Rs. 1100 crores in the terminal year of the Fourth Plan to Rs. 1750 crores at the end of 1979-80. During 1978-79, sugarcane followed by foodgrains and cotton constituted the bulk of the value of agricultural produce marketed by the cooperative system. Bulk of the turnover is accounted for by only the five States of Punjab, Haryana, Kerala, Madhya Pradesh and Uttar Pradesh. In the marketing of horticultural and other products, the role of cooperatives is only marginal compared to the potential. One of the constraints in the development of agricultural marketing has been the weak financial base at the primary level. They also suffer from lack of suitable personnel for such commercial operations and there is not enough linkage and business relationship among the different cooperative sectors *e.g.*, between producers cooperatives and consumers cooperatives. Some of these problems have weakened the ability of the cooperatives to undertake larger marketing operations on behalf of their members. In the field of agricultural processing, the most conspicuous success has been the one achieved by sugar cooperatives and cooperative milk unions in some parts of the country. Rice mills, dal mills, cotton ginning and processing units, spinning mills, oil crushing and processing, fruits and vegetable processing units, poultry food, jute baling etc., are some of the other processing activities in the cooperative sector which are steadily expanding. In terms of impact, however, except for sugar and milk, cooperatives account for rather a small share.

11.50 Adequate and Scientific storage facilities with cooperatives are essential to their operational efficiency in the marketing of agricultural produce, agricultural inputs and consumer goods. The programme now is to ensure that all re-organised primary agricultural credit societies and marketing societies are assisted to build up owned storage of appropriate capacity within a phased period. The total sanctioned storage capacity at the end of 1979-80 in the cooperative sector comprised 67.8 lakh tonnes of which 47 lakh tonnes has been established. The completed capacity comprises 22000 godowns at the primary societies' level with a capacity of 22 lakh tonnes and 5040 godowns of 25 lakh tonnes capacity at the marketing societies' level. Within a period of 10 years, 1969-79, the completed storage capacity in the cooperative sector has gone up from 26 lakh tonnes to 47 lakh tonnes, though, undoubtedly the intensity of coverage has been uneven among States. Occasional scarcity of building materials, delays in acquisition of land, lack of centralised arrangement for technical supervision, cost escalation and in some cases the indifferent attitude of managements have been responsible for slow progress in construction. With a view to meeting the growing needs of producers especially of potato, fruits, onion, etc., a systematic programme to establish cold storage facilities at strategic places has been taken in hand. At the end of March 1980 the number of cold stores organised in the cooperative sector was 204 with licensed capacity of 4.6 lakh tonnes, accounting for approximately 15 per cent of the total cold storage capacity in the country. Of this, 125 units with a capacity of 2.14 lakh tonnes had already been installed and the rest were at various stages of installation. An assessment carried out of the cold stores indicates that these units were being utilised by the small and middle farmers also and that there had been progressive increase in the level of capacity utilisation during the last three years. Taking into consideration the need for more cold storage capacity for a variety of perishables and the trends of potato production in certain areas, an expanded programme of cold storage capacity in the cooperative sector is being contemplated in the Sixth Plan.

11.51 Of all the major cooperative activities, consumer activity is the most recent. It has, however, made headway and come to occupy an important role in the distribution of consumer articles in rural as well as urban areas. A four tier system comprising the National federation, State federations, Central societies at the district and the primary societies at the base level, has been operating in this field. As on 30th June 1979, this structure consisted of a National federation, 14 State consumer cooperative federations, 8 State cooperative marketing-cum-consumer federations, 481 Central/Wholesale consumer societies at the district level and 16348 primary consumer cooperatives at the base level. The district level wholesale societies were also operating 3690 branches including about 200 departmental stores. Over 5000 cooperative societies have also been functioning among industrial workers, employees of railways posts and telegraphs, etc. In the rural areas, about 1900 primary marketing societies and over 37000

villages/service cooperatives and other cooperative societies were connected with the distribution of consumer articles. During 1979-80, the total retail trade handled by the urban consumer cooperatives was estimated at Rs. 800 crores. In the rural areas, the total value of consumer articles sold by the cooperatives is also estimated at Rs. 800 crores in 1979-80. One of the major problems concerning these cooperative stores both in the rural as well as in the urban areas has, however, been inadequate marketing finance, uncertainties in the procurement of supplies and lack of trained and skilled manpower.

11.52 It would thus be seen that the progress of cooperatives over the years presents a mixed picture. There has been much progress quantitatively and yet there are a number of indicators which point to serious lacunae in their development. The cooperatively weak States, particularly in the eastern region do not seem to have made up any of their lag. In fact, some of the so-called cooperatively advanced States have also slid down particularly in the field of credit due to mounting overdues. Nearly 37 per cent of the total primary marketing cooperatives are not doing any business and are virtually defunct. Only five States account for more than 80 per cent of the total marketing of agricultural produce done by cooperatives. Even in these States, the management studies undertaken have pointed to the scope for bringing about considerable managerial improvements. The cooperative share of total fertiliser sales which was at one time around 55 per cent has come down to around 43 per cent. Sluggishness in credit development due to heavy overdues in a large number of States has eroded the overall viability of primary cooperatives and has thus affected all other fields of activity like marketing of agricultural produce, farm inputs and consumer goods. In the ultimate analysis, the most outstanding of the deficiencies, which indeed is at the root of many of the palpable shortfalls in cooperative performance, is in the area of management. In spite of considerable discussion over the years in regard to the need for proper manpower development, the cooperatives have by themselves shown a singular lack of appreciation of this problem.

Strategy for the Sixth Plan

11.53 In the light of the problems and constraints discussed above, it is proposed to specifically direct attention during the Five Year Plan to the following tasks on a priority basis:

- (i) A clearly conceived action programme to be drawn up for the strengthening of primary village societies so that they are able to effectively act as multi-purpose units catering to diverse needs of their members.
- (ii) Re-examination of the existing cooperative policies and procedures with a view to ensuring that the efforts of the cooperatives are more systematically directed towards ameliorating the economic conditions of the rural poor.
- (iii) Re-orientation and consolidation of the role of the cooperative federal organisa-

tions so that they are able through their constituent organisations to effectively support a rapidly diversifying and expanding agricultural sector, including horticulture, food processing, poultry, dairying, fishery, animal husbandry, sericulture etc., with credit, input supply, marketing and other services.

- (iv) Development of professional manpower and appropriate professional cadres to man managerial positions.

Programmes

11.54 The primary village (multi-purpose) society is the base on which the entire cooperative structure rests. A programme of re-organisation of these societies had been undertaken a few years ago based on certain stipulated viability criteria and such a re-organisation has already been carried out in form in most States of the country. Nevertheless, even where this programme is said to have been completed, the basic objective of re-organisation has not yet been achieved in substance. A very large number of re-organised societies still continue without even one full time manager. Furthermore, a large number of managers so appointed have either received no training or extremely inadequate training. Stable arrangements still do not exist in many States for regular payment of salaries to managers. Financial constraint is said to be one of the reasons for this state of affairs. Nevertheless, this particular task is of such importance that it must take precedence over other schemes and projects of development on which considerable funds are presently being expended. Without a stable and properly staffed, primary society, the base of all cooperative activity will continue to remain weak. The Centrally sponsored scheme for assistance to States to contribute towards the deficit in the salary fund of managers of reorganised societies will be continued during the Sixth Plan. Besides, the share capital of these societies will be strengthened, subject to certain norms of performance, to enable them to take up diversified activities on an expanded scale.

11.55 The cooperatives have for some time been alive to their responsibility towards the rural poor. The percentage of short and medium term credit to weaker sections has moved up from 29 per cent of the total cooperative credit disbursed in 1973-74 to about 40 per cent presently and in long-term credit to about 38 per cent. However, on further examination, it is observed that the bulk of this credit has gone to the small and marginal farmers, namely, those who have a land base. The share of tenants, agricultural labourers and rural artisans has continued to stagnate around 3 to 5 per cent of the total cooperative credit during the last decade. The membership pattern of village cooperatives also reveals a similar trend. While small and marginal farmers constituted about 44 per cent of the total membership in 1977-78, agricultural labourers and rural artisans constituted only around 10 per cent. Without, therefore, minimising in any way the efforts which have already been made

by the cooperatives to direct their benefit to the weaker sections, a much greater thrust in that direction is called for with a view particularly, to giving greater coverage to the poorest among the target group of the weaker sections. It would be necessary for the cooperatives to mount a systematic programme for enrolling the landless workers, members of the scheduled castes and scheduled tribes, fishermen, artisans and others among the poorest as members, so that they could get the benefit of facilities offered by the cooperatives. Mere enrolment, however, of these persons as members will not be enough. It will be necessary that each primary society systematically identifies the members who are below the poverty line and draws up a specific credit plan for them in the light of individual possibilities of development and carries it out within a reasonable time-frame. This will need to be closely coordinated with the Integrated Rural Development Programme.

11.56 A tendency has developed among cooperative federal organisations often to promote their own business at the cost of their constituents. The programmes and policies of cooperative federations at the State as well as the national level would be so oriented as to make these institutions more effective as federations of affiliated cooperatives. They would thus be called upon to enlarge not only their own business but at the same time provide leadership to their affiliated organisations and lend full support to them in their business operations. In respect of commodities, which have inter-State marketing possibilities, the State and national federations would be expected to undertake larger inter-State trade. Co-ordination and linkage between marketing and consumer cooperatives would be strengthened so that the latter may be able to procure farm produce directly from the farmers through the marketing cooperatives instead of resorting to procurement through private wholesalers and intermediaries. Special attention will be given to strengthening the activities of consumer cooperatives in the urban areas and to the development of consumer business of primary village cooperatives and marketing societies in rural areas to serve as a dependable adjunct to the public distribution system. The Central sector scheme for strengthening NAFED; NCCF and other Federations and the Centrally sponsored scheme for the development of cooperative marketing, processing and storage etc. in underdeveloped States would be continued during the Sixth Plan. The capital base of National Cooperative Development Corporation, which is the principal financing and promotional organisation at the national level for the development of cooperative marketing, storage, processing, supply of farm inputs and rural consumer activity, will be further strengthened during the Sixth Plan with a view to enabling it to lend support to these activities on an expanded scale.

11.57 Irrespective of whatever objectives that may be laid down in terms of expected levels of performance and whatever programmes of assistance that may be developed, it is ultimately in the area of management and man-power development that the key to successful implementation lies. In spite of a

number of committees and frequent discussions that have been devoted to this subject over the last three decades, the picture does not seem to have altered in any significant way. Neither the scheme of organisation or "Pools" of personnel nor of formation of cadres for different sectors of cooperative activity have made much headway so far. The main resistance has come from cooperative organisations themselves, who have been averse to taking personnel recruited on a centralised basis either by the cooperative departments or by special "cadre" societies or the sectoral federations. As most cooperative institutions by themselves are not big enough to either offer suitable salary scales or career advancement prospects to be able to attract the right kind of personnel, it appears necessary that a system be devised by which key personnel are recruited for the whole range of small and medium cooperatives in an organised manner, which should make it possible to offer adequate wages to the persons employed, provide them opportunities of career advancement within the sector as a whole and make them feel part of a larger system with potentialities of development to each according to his capacity and competence. In other words, a cooperative sector must operate as one inter-linked whole in this manner rather than as a mere collection of small scattered institutions. Special attention will be given during the Sixth Plan to devising a suitable system in this behalf which will make available to the cooperatives, cadres of properly qualified and trained personnel to handle their diverse activities. Care will, however, have to be taken that the system contemplated is such as reconciles to the extent possible, the sensitivity and the autonomy of the individual organisations where the persons recruited will actually be employed. Along side, sector-wise surveys of cooperative activities will be undertaken on a scientific basis to identify their organisational, operational and managerial deficiencies and to work out measures for their sound growth. Another aspect of management is in regard to the commitment and quality of the elected office bearers. The cooperatives are often criticised for being dominated by vested interests. The solutions sought so far have been in the nature of limiting the number of terms of office etc. While these measures are useful as far as they go, they still do not impinge on the basic question of commitment of an office bearer to the objectives of the society. An office bearer of a marketing society, who does not market his own produce through his marketing cooperative, is hardly likely to have any stake in the performance of that society, likewise, of a credit cooperative bank, who is himself a defaulter in payment of dues is hardly likely to pursue recovery discipline in his society. It will be necessary to take a close look at the bye-laws of various types of cooperatives and to suitably revise these, wherever necessary to ensure that such commitments are built into the bye-laws as to eliminate mere office seekers from the management of the society. In fact, dairy cooperatives of the "Anand Pattern" have a specific clause built into the bye-laws about the supply of milk to the cooperative for a certain minimum number of days in a year as an essential qualification for office. A similar provision needs to be built in the bye-laws of other type of cooperatives also.

158 An agriculture which is projected to grow at an annual compound rate of about 4 per cent during the Sixth Plan period would demand substantial credit for farm inputs, and marketing and storage support. Within this overall growth rate, the rate of growth of production in dairying, animal husbandry, poultry, fishery and fruits and vegetables has been projected at a rate higher than for crops. The Integrated Rural Development Programme which would now cover the entire country would demand much larger multi-sided support from the cooperatives. Particular attention will be given to the development and strengthening of dairy cooperatives in the context of Operation Flood II, in which cooperatives constitute the organisational frame-work of the project almost wholly. The role of the fishery cooperatives has only been somewhat marginal so far, both qualitatively and quantitatively. Fishermen have been one of the poorest and the most exploited sections of the rural community. A specific programme of strengthening the cooperative structure in this field will therefore be drawn up. Minor Irrigation Development and water management is another important area of activity in which corporations will have to be particularly en-

couraged. Cooperatives are also expected to play an expanded role in the public distribution system and in the supply of essential consumer articles in rural and urban areas. Considerable expansion in the storage capacity of cooperatives is envisaged during the Sixth Plan with a view to strengthening and enlarging their role in the marketing of agricultural produce, supply of farm inputs and retailing of consumer articles. Substantial increase is proposed during the Plan in the oil-seeds processing capacity, particularly for soyabean to encourage increased production and in cold storage capacity to support expanded programmes of potato, fruits and vegetables production. Programmes for setting up cooperative sugar factories and spinning mills would be suitably accelerated. The cooperative training and education programmes would also be intensified and increasingly linked to the growing and diversified needs of the various sectors of cooperative movement. Taking into consideration, the demand for cooperative services and the reasonable capabilities of the cooperative system, the following targets of physical performance in important cooperative activities have been projected for the period 1980-85.

Table No. 11.1

Targets for Cooperative Operations

Sl. No.	Physical Programmes	Unit	Base level anticipated achievement 1979-80	Level for the terminal year 1984-85
(0)	(1)	(2)	(3)	(4)
1	Short term loans	Rs. crores	1300	2500
2	Medium term loans	Do.	125	240*
3	Long term loans	Do.	275	555*
4	Value of agricultural produce to be marketed through Coops.	Do.	1750	2500
5	Fertiliser to be distributed through Coops.			
	(a) Quantity	Lakh tonnes (NPK)	23.50	45.00
	(b) Value	Rs. crores	900	1600
6	Value of consumer goods to be distributed through Coops. in rural areas	Do.	800	2000
7	Value of Consumer goods to be distributed in urban areas through Coops.	Do.	800	1600
8	Construction of additional godowns :			
	(a) Rural godowns			
	(i) No.		22000	52000
	(ii) Capacity	Lakh tonnes	22	44
	(b) Marketing godowns			
	(i) No.		5040	7500
	(ii) Capacity	Lakh tonnes	25	38
	(c) Total storage capacity to be completed	Do.	47	82
	Construction of Cold Storage			
	(i) No.		125	276
	(ii) Installed capacity	Lakh tonnes	2.14	7.48
	Processing Units installed			
	(i) Sugar factories		142	185
	(ii) Spinning Mills		62	90
	(iii) Oil Units (including Copra Units)		304	390
	(iv) Others		1529	1694
	Total		2037	2359

Total cumulative target of medium and long term loans during the period 1980/85 is Rs. 3100 crores.

Outlays

11.59 The total Central Plan outlay for various schemes of cooperation for the Sixth Plan period 1980—85, is Rs. 330.15 crores. The outlay in the State and Union Territories Sector is Rs. 584.08 crores. Thus, total public sector outlay on various schemes of cooperation is Rs. 914.23 crores. This outlay is mainly for strengthening the capital base of the cooperatives and to assist them in building the necessary infrastructure and capacities to enable them to undertake higher level of business and improve their services. The level of their development and operational efficiency will, however, depend very largely on the quality of management and leadership that they can bring to bear on their operations. (Details are given in Annexure 11.1 and 11.2).

SPECIAL AREA PROGRAMMES

11.60 The Plan provides for special Central assistance totalling Rs. 1370 crores for certain area programmes. These are described in Chapter 25 (Hill Areas and North Eastern Council) and Chapter 26 (Tribal Areas). Some State Governments have also made allocations in the Sixth Plan for accelerated development of certain identified special areas. The Statewise Sixth Plan outlay is as follows:

Outlay for the Development of Special/Backward Areas, States

	(Rs. crores)
1 Gujarat	2.50
2 Jammu & Kashmir	45.00
3 Kerala	2.50
4 Meghalaya	10.00
5 Nagaland	5.00
6 West Bengal	45.00
TOTAL	110.00

The areas for which this provision has been made are indicated below:

(1) *Gujarat*: 25 backward talukas have been identified by the State Government and a special provision of Rs. 2 lakhs annually is envisaged for each taluka i.e. Rs. 50 lakhs annually for 25 talukas.

(2) *Jammu & Kashmir*: The provision has been made for Leh and Kargil areas in Ladakh. Outlay also includes provision for beneficiary-oriented programmes for nomadic tribes in the State—Gujjars and Bakarwals.

(3) *Kerala*: There are a number of regions in the State which have been considered as backward economically and socially. They include areas like Kasargode and Cannanore districts, Wynad in Kozhikode District and areas in Malappuram and Idukki districts.

(4) *Meghalaya*: The outlay is for border areas regarded as special areas for purposes of accelerated development.

(5) *Nagaland*: The following areas have been identified as backward by the State Government:

- (1) Tuensang District
 - (a) Tuensang Sadar Sub-Division
 - (b) Kiphere Sub-Division
- (2) Mon District
- (3) Meluri Area in Phek District
- (4) Aghunato area in Zunheboto District
- (5) Peren in Kohima District

(6) *West Bengal*: The outlay is meant for the following backward regions in the State:

- (1) Hill Areas
- (2) North Bengal
- (3) Jhargram
- (4) Sundarbans

PEOPLES PARTICIPATION

11.61 The Planning process in a democratic country can acquire fuller meaning and depth if the people not only associate themselves in planning for their development but also participate consciously in plan implementation. The successive five year Plans have emphasised the need for promoting peoples' organisations to secure this end. The very *raison d'être* of Panchayati Raj was to ensure peoples' participation in local planning and implementation. Likewise the emphasis through the Plans on building up cooperatives was to strengthen peoples' involvement in the management of their economic development. Panchayati Raj and cooperative institutions though peoples' organisations are, however, creatures of the Government through various statutes. These have been dealt with in earlier sections of the Chapter. What is of equal importance is the promotion of purely non-governmental organisations, formal or informal in nature, which could motivate and mobilise people in specific or general developmental tasks. Experience suggests that the task of educating and mobilising the people in this direction is more effectively accomplished when it is institutionalised. Individual action though important can only be sporadic in nature, whereas institutionalised action can be distinctly more effective in mobilising local resources, articulating needs and coordinating the developmental tasks which are undertaken by the people. The following are some of the forms of institutionalised action.

- (a) Youth and Women's organisations operating at different spatial levels, particularly for promoting eco-development and environmental sanitation,

- (b) Voluntary organisations engaged in general developmental work in an area or on a specific activity like education or health or a combination of a few such activities.
- (c) Organisations of specific beneficiary or interest groups like self-employed women, or farmers or of people who have common economic interest such as marketing.
- (d) Organisation of the farmers living in command area of irrigation projects catchment areas in the hills and watershed areas in unirrigated regions into cooperatives for improving land and water management without affecting the individuality of holdings.
- (e) Religious, social or cultural organisations or clubs (Rotary, Jaycees, Lions etc.) which often undertake developmental activities in selected areas.
- (f) Professional organisations or educational institutions which take up study, research and social action programmes as part of their professional or social Commitments.
- (c) "Health for all" programmes.
- (d) Water Management and Soil Conservation (warabandi, watershed development etc.)
- (e) Social Welfare programmes for weaker sections.
- (f) Implementation of minimum needs programme.
- (g) Disaster preparedness and management (floods, cyclones etc.).

In all Government programmes touching upon the above areas of development, care will be taken to see that the existing policies and procedures are reviewed and reoriented to motivate, encourage and support peoples' participation in an organised way through local groups and associations, or voluntary organisations.

11.64 Further, supplemental action by voluntary agencies in promoting activities for self-employment as well as development of the rural poor will be of invaluable help in optimising the results of Plan programmes, by enhancing the effectiveness and efficiency of the services provided by governmental functionaries and by motivating the concerned beneficiaries and rendering suitable guidance to them in the formulation of viable projects and sources of funding.

11.62 Success stories in the field of voluntary action are many. To recount only a few of the ones which have attracted country-wide notice are the Jamkhed Project in child and health care in Maharashtra, Bharat Agro Industries Foundation Programme in animal husbandry and social forestry, Lijjat Papads in the fields of cottage industry and Self-employed Women's Association (SEWA) of Ahmedabad. The country is indeed dotted with numerous examples of highly successful voluntary action of this nature. However, considering the vast pool of motivated individuals available in the country, even in the smallest hamlet, what has fructified so far by way of organisational effort in this behalf is not even a fraction of the potential. An important objective of the Sixth Plan is to meaningfully tap this potential.

11.65 Another area of voluntary action is through business houses, which have been given an added incentive of exemption from income tax under section 35CC and 35CCA of the Income Tax Act for expenditure incurred by them on certain permissible items of rural development. There is increasing interest among the business houses for involvement in rural development work. However, the efforts made so far are scattered and sporadic. It is proposed that during this Plan the business houses and their chambers will be persuaded to coordinate their efforts so that a comprehensive programme of development is taken up in selected areas/blocks with the combined resources of the participating business houses. If so required certain specific blocks will be selected in each State for such action. The input of financial and managerial assistance from business houses will need to be utilised as far as possible through local peoples' groups or voluntary organisations.

11.63 Peoples' participation is to be sought in fields of activity. The following, however, is an illustrative list of some of the activities in which awareness and conscious participation of the people is critical for success and would, therefore, be pursued with earnestness:

- (a) Optimal utilisation and development of renewable sources of energy, including forestry through the formation of renewable energy associations at the block level.
- (b) Family welfare, health and nutrition education and relevant community programmes in this field.

11.66 The role of Government agencies should be to help people to help themselves. Success in achieving a rapid improvement in the quality of life of the rural and urban poor will depend upon the extent of involvement of our vast human resources in national development.

Annexure II.1

Sixth Plan Outlays : Special Programmes of Rural Development, C.D. and Panchayati Raj
and Cooperation—Central Sector

(Rs. in crores)

Outlays for 1980-85

I. Special Programmes of Rural Development

1	RDP	750.00
2	DPAP	175.00
3	DDP	50.00
4	National Grid of Rural Godowns	17.50
5	TRYSEM	5.00
6	Council for Advancement of Rural Technology	0.05
	SUB-TOTAL (1- 6)	997.55
	NREP	980.00
	TOTAL (I)	1977.55

II. C. D. & Panchayati Raj	7.17
----------------------------	------

III. Cooperation

1	Cooperative Credit	85.00
2	Cooperative Marketing, Processing & Storage	178.50
3	Consumer Cooperatives	56.00
4	Cooperative Training & Education	10.50
5	Miscellaneous	0.15
	SUB-TOTAL (III)	330.15
	GRAND TOTAL (I+II+III)	2314.87

Annexure 11.2

Sixth Plan Outlays: Special Programmes of Rural Development, C.D. & Panchayati Raj and Cooperation—states, U.Ts.

Sl. No.	Name of the State	(Rs. in crores)		
		Sixth Plan Outlays		
		Special Programmes of Rural Development including NREP	C.D. & Panchayati Raj	Cooperation
(0)	(1)	(2)	(3)	(4)
1	Andhra Pradesh	87.25	59.50	29.5
2	Assam	42.25	8.00	25.60
3	Bihar	190.00	22.35	27.25
4	Gujarat	144.00	6.30	32.00
5	Haryana	28.93	16.50*	26.80
6	Himachal Pradesh	16.90	3.00	6.75
7	J & K.	24.10	6.00	5.00
8	Karnataka	49.15	2.50	50.00
9	Kerala	25.10	41.40	22.00
10	Madhya Pradesh	155.00	15.00	47.90
11	Maharashtra	81.00	0.51	57.44
12	Manipur	7.00	2.00	1.80
13	Meghalaya	3.00	2.40	3.28
14	Nagaland	6.50	7.00	1.50
15	Orissa	105.00	5.25	30.00
16	Punjab	36.00	18.15	41.50
17	Rajasthan	105.75	0.33	24.38
18	Sikkim	—	0.25	1.60
19	Tamil Nadu	120.00	78.00	25.33
20	Tripura	6.55	4.48	5.00
21	Uttar Pradesh	147.96	18.37	55.36
22	West Bengal	126.00	18.00	46.00
	TOTAL STATES	1507.44	335.29	566.00
	U.Ts.	1.78	9.61	18.08
	Grand Total States & U.Ts.	1509.22	344.90	584.08

*Includes Rs. 10 crores for National Rural Employment Programme.

CHAPTER 12

VILLAGE AND SMALL INDUSTRIES

Small scale industries have now been redefined to include those manufacturing and repairing units as have investment in plant and machinery upto Rs. 20 lakhs (and in the case ancillary units upto Rs. 25 lakhs). With this as the upper limit, the village and small industries (VSI) sector consists broadly of (i) traditional industries (*viz.* handlooms, khadi and village industries, sericulture, handicrafts and coir) and (ii) modern small scale industries including 'tiny' units and powerlooms. While the traditional industries are generally artisan-based, located mostly in rural and semi-urban areas, involve lower levels of investment in machinery and provide largely part-time employment, modern small scale industries and powerlooms use mostly power-operated appliances and machinery, have some technological sophistication and are generally located close to or in the urban areas including the large industrial centres.

REVIEW

12.2 The objectives of the programmes for the development of these industries in the preceding Plan

periods have been to generate large scale employment opportunities on a decentralised and dispersed basis, to upgrade the existing levels of skills of artisans as well as quality of their products, and to step up production both for mass consumption and export. To achieve these objectives, the earlier Plans envisaged, *inter alia*, promotion and development of entrepreneurship backed by a package of consultancy services, improvement in production techniques, institutional support in respect of supply of credit and raw materials, formulation of common production programmes, various incentives for organising industrial cooperative societies, rebate on sales of handloom and khadi, etc.

12.3 While the precise impact of the various policy measures and development programmes cannot be assessed for want of adequate data, particularly in respect of the traditional village and household industries, the following table gives a broad picture of the progress made in this sector:

Table 12.1

Estimated levels of output, employment and exports under different village and small industries

Sl. No.	Industry	Output Unit	(Value in Rs. crores)		Employment coverage* (in lakh persons)		Export (Rs. crores)		
			1973-74	1979-80	1973-74	1979-80	1973-74	1979-80	
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	
A. Traditional Industries :									
1	Khadi	Million Sq. Mtrs.	56	81	8.84	11.24	..	..
		Value	33	98					
2	Village Industries	Value	122	314	9.27	18.21	..	..
3	Handlooms	Million Metres	2100	2900	52.10	61.50	77	261	
		Value	840	1740					
4	Sericulture	Lakh Kgs. of raw silk	29	48	12.00	16.00	14	49	
		Value	63	131					
5	Handicrafts	Value	1065	2050	15.00	20.30	195	835	
6	Coir	Lakh Tonnes of fibre	1.50	1.85	5.00	5.59	16	30	
		Value	60	86					
	Sub-Total (A)	Value	2183	4419	102.21	132.84	302	1175	
B. Modern Small Industries :									
7	Small Scale Industries	Value	7200	19060	39.65	64.60	538	1050	
8	Powerlooms	Million Metres	2400	3450	10.00	11.00	—	Neg.	
		Value	1980	3250					
	Sub-Total (B)	Value	9180	22310	49.65	75.60	538	1050	
C. Others :			Value	2237	4206	24.50	25.00	—	—
Total : VSI Sector			Value						
(i) at current prices				13600	30935	176.36	233.44	840	2225
(ii) at 1979-80 prices				20885	30935				

NOTE :—Data for items 1 and 2 relate to units under the purview of the Khadi and Village Industries Commission (KVIC) ; for item 7 with respect to units under the Small Industries Development Organisation (SIDO). Data for 'Others' shown (under C) relate to units not covered under the above specified industry-groups.

*Employment coverage includes both full-time and part-time.

In the six years period 1974—80, the estimated value of production registered a growth rate of 6.8 per cent per annum. The gross value added at factor cost rose from around Rs. 2800 crores in 1973-74 to Rs. 4100 crores in 1979-80 (at 1970-71 prices) registering a growth rate of 6.6 per cent.

12.4 On the basis of data and norms available from the National Accounts Statistics and Central Statistical Organisation, it has been estimated that in the year 1979-80, the share of the VSI Sector* in

the contribution made by the manufacturing sector was around 49 per cent in terms of gross value of output and 51 per cent in terms of value added. As regards employment, this sector had offered employment opportunities to about 23.58 million persons* (both part-time and full-time) as against around 4.5 million persons estimated to be engaged on full-time basis in the large and medium industries sector. In the field of exports, this sector accounted for more than one-third of the total exports of the country.

*This comprises the whole of the unregistered manufacturing sector and certain portion of the registered manufacturing sector units which have investment in plant and machinery upto Rs. 20 lakhs (and in the case of ancillary units upto Rs. 25 lakhs) in terms of the revised definition of Small Scale Industries of July, 1980.

12.5 However, some of the important objectives set for the village and small industries sector are yet to be fully achieved. The dispersal of small scale units far away from the metropolitan areas and large cities has not taken place to an appreciable extent. Available data indicate that the industrially developed States along with Delhi accounted for nearly 67 per cent of the registered small scale units which had come up to 1976 and about 75 per cent of the employment generated by them. And within the developed States, there has been concentration of units in a few areas which are either metropolitan or large cities or industrial complexes. There has not been much improvement in the activation of idle capacities of the units either. It has been estimated that capacity utilisation in different village and small industries has been ranging from about 45 to 60 per cent. Though there are varying estimates regarding the number of sick units in the VSI sector, there is general agreement about the enormity of the problem. In spite of credit expansion (from about Rs. 250 crores in 1973-74 to about Rs. 600 crores in 1979-80), the share of the 'tiny' units with investment of upto Rs. one lakh has been very little. According to a survey conducted by the Reserve Bank of India, of the units assisted financially by the commercial banks upto June, 1976, about 69 per cent of the total credit flow was availed of by 11 per cent of the bigger units in the small industries sector which accounted for 55 per cent of the production. Taking into account the units which could not have access to institutional credit the disproportionate supply of credit becomes more pronounced. The Entrepreneurial Development Programme has not made significant progress except in a few States like Gujarat etc. in widening the entrepreneurial base.

12.6 Low levels of technology resulting in poor productivity and inadequate returns have continued to characterise the traditional industries sector. Coupled with this, the problem of obtaining raw materials of desirable quality at reasonable prices and lack of marketing arrangements for selling their produce at fair prices have deprived the artisans of a good part of the earnings which should have accrued to them.

The increased flow of institutional funds in favour of the decentralised industrial sector has not covered the artisan sector adequately which continues to depend, for a major part of its capital requirements, on non-institutional sources, often, at exorbitant rates of interest.

OBJECTIVES

12.7 Promotion of village and small scale industries will continue to be an important element in the national development strategy particularly because of its very favourable capital-output ratio and high employment intensity. During the Sixth Five Year Plan, the programmes for the village and small industries sector would be so designed as to subserve the following objectives:—

- (i) improvement in the levels of production and earnings, particularly of the artisans, through measures like upgradation of skills and technologies and producer-oriented marketing, etc.;
- (ii) creation of additional employment opportunities on a dispersed and decentralised basis;
- (iii) significant contribution to growth in the manufacturing sector through, *inter alia*, fuller utilisation of existing insatallated capacities;
- (iv) establishment of a wider entrepreneurial base through appropriate training and package of incentives;
- (v) creation of a viable structure of village and small industries sector so as to progressively reduce the role of subsidies; and
- (vi) expanded efforts in export promotion.

TARGETS

12.8 The targets of production and exports set for this sector and the employment to be generated during the 1980-85 Plan period are indicated in the following table:—

Table 12.2

Targets of output, employment and exports for different village and small industries

Sl. No.	Industries	Output (Value in Rs. crores)			Employment Coverage (in lakh persons) @		Exports (Rs. crores)	
		Unit	1979-80	1984-85	1979-80	1984-85	1979-80	1984-85
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
A. Traditional Industries								
1	Khadi	Million Sq. Mtrs.	81	165	} 11.24	15.40	—	—
		Value	98	200				
2	Village Industries	Value	314	1000	18.21	35.10	—	—
3	Handlooms	Million Metres	2900	4100	} 61.50	87.00	261	370
		Value	1740	2460				
4	Sericulture	Lakh Kgs. of raw silk	48	90	} 16.00	21.50	49	100
		Value	131	245				
5	Handicrafts	Value	2050	3200	20.30	28.00	835	1315
6	Coir	Lakh Tonnes of fibre	1.85	2.63	} 5.59	8.00	30	50
		Value	86	122				
Sub-Total (A) :		Value	4419	7227	132.84	195.00	1175	1835
B. Modern Small Industries								
7	Small Scale Industries	Value	21635*	32873	67.00*	89.00	1050	1850
8	Powerlooms	Million Metres	3450	4300	} 11.00	14.00	—	—
		Value	3250	4100				
Sub-Total (B) :		Value	24885	36973	78.00*	103.00	1050	1850
C. Others		Value	4206	5035	25.00	28.00	—	—
Total : VSI (A+B+C) :		Value	33510*	49235	235.84*	326.00	2225	3685

NOTE : Data for items 1 & 2 above relate to units under the purview of the KVIC, and for item 7 relate to units under SIDU, with reference to revised definition of SSI Units of July, 1980. Data for 'Others' (under C) relate to units not covered under the above specified industry groups.

@ Employment coverage includes both full-time and part-time.

*The difference in these figures from those given in Table 1 (page 187) is explained in para 12.66.

12.9 The incremental output target of Rs. 15725 crores in the terminal year 1984-85 would correspond to a growth rate of 8 per cent per annum against the annual growth rate of 7.6 per cent projected for the whole manufacturing sector. Within the village and small industries sector, while the traditional industries (including 'others') would have a projected incremental output of Rs. 3637 crores with a growth rate of 7.3 per cent, the modern small scale industries including powerlooms would account for an incremental output of Rs. 12088 crores and a growth rate of 8.2 per cent. The export target of Rs. 3685 crores at 1979-80 prices for 1984-85 would mean a growth rate of 10.6 per cent per annum. The employment coverage (both

full-time and part-time) is estimated to increase from about 23.58 million persons in 1979-80 to about 32.60 million persons in 1984-85, i.e., the additional employment generation during the Plan period would be of the order of around 9 million. Expressed in terms of standard persons-years, the employment coverage would roughly correspond to 17 million, 22 million and 5 million, respectively.

OUTLAYS AND INVESTMENT

12.10 In the Five Year Plan 1980-85, a public sector outlay of Rs. 1780.45 crores would be provided. Its industry-wise break-up would be as follows:—

Table 12.3
Public Sector Outlay : Village and Small Industries

Sl. No.	Industry	(Rs. crores)								
		1974-79 Outlays			1979-80 Outlays			1980-85 Outlays		
		Centre	States & UTs.	Total	Centre	States & UTs.	Total	Centre	States & UTs.	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1	Khadi & Village Industries .	133.56	9.42	142.98	85.88	7.43	93.31	480.00	67.09	547.09
2	Handlooms . . .	37.30	62.62	99.92	27.64	20.95	48.59	120.00	190.93	310.93
3	Sericulture . . .	7.96	21.72	29.68	8.00	8.62	16.62	31.00	133.56	164.56
4	Handicrafts . . .	18.73	11.07	29.80	13.00	10.18	23.18	56.40	54.50	110.90
5	Coir	2.93	4.73	7.66	1.12	1.20	2.32	15.00	11.72	26.72
	Sub-Total (1-5) . . .	200.48	109.56	310.04	135.64	48.38	184.02	702.40	457.80	1160.20
6	Small Scale Industries including Industrial Estates .	92.88	128.86	221.74	40.00	64.81	104.81	220.00	396.10	616.10
7	Powerlooms	0.16	3.09	3.25	0.33	0.32	0.65	1.00	3.15	4.15
	Sub-Total (6-7) . . .	93.04	131.95	224.99	40.33	65.13	105.46	221.00	399.25	620.25
	Total VSI Sector . . .	293.52	241.51	535.03	175.97	113.51	289.48	923.40	857.05	1780.45

The Sixth Plan outlay would provide a step up of over 3.3 times the outlay during 1974-79. The break-up of the States' sector outlay of Rs. 857.05 crores is indicated in the Annexure.

12.11 The VSI sector outlay of Rs. 1780.45 crores would be supplemented, to some extent, by the provisions made for schemes in other sectors, like (i) the schemes of Industrial Development Areas, Spinning Mills, Investment Subsidy and Transport Subsidy for industrially backward areas, provided for in the programme for Large and Medium Industries sector; (ii) the schemes for development of industrial cooperatives, provided for under Cooperation; (iii) the scheme of Integrated Rural Development (IRD), TRYSEM; etc., provided for under Rural Development; (iv) scheme for Gobar Gas provided under Energy Sector, and (v) special programmes for scheduled castes and scheduled tribes.

12.12 It is estimated that of the total outlay, investment component would be about Rs. 1000 crores in the form of margin money assistance, capital subsidy, creation of infrastructure facilities and investment

in the share capital of the financial, promotional and developmental corporations concerned with the development of village and small industries. Besides the public sector investment, it is estimated that private sector investment in this sector would be of the order of Rs. 12,600 crores which would be forthcoming from financial institutions, promoters' own resources and non-institutional sources.

POLICY MEASURES

12.13 According to the Industrial Policy Statement of July, 1980, "Government is determined to promote such a form of industrialisation in the country as can generate economic viability in the villages... Handlooms, handicrafts, khadi and other village industries will receive greater attention to achieve a faster rate of growth in the villages." Laying emphasis on balanced and harmonious development of all sectors of industries, the Statement adds that "while making all efforts towards integrated industrial development, it is proposed to promote the concept of economic federalism with the setting up of a few nucleus plants in each district, identified as industrially backward, to generate as

many ancillaries and small and cottage units as possible". Also, "Policy regarding marketing support to the decentralised sector and reservation of items for Small Scale Industries, shall continue to be in force in the interest of growth of the small scale industries."

12.14 In the light of the above, the policy support for the development programmes relating to village and small industries during the Sixth Five Year Plan would be along the following directions:—

- (i) integration of the promotional programmes in the sector with other area development programmes and adoption of a cluster approach particularly for the traditional industries;
- (ii) restructuring of the organisational base at the district level to make it more effective and result-oriented;
- (iii) development of appropriate technologies and skills; their effective extension and transmission;
- (iv) increased availability of raw materials including creation of buffer stocks particularly of critical raw materials;
- (v) accelerated flow of institutional funds specially in favour of artisans, village industries and 'tiny' units and rationalisation of the interest rate structure;
- (vi) organisation of producer-oriented marketing both within and outside the country;
- (vii) selective reservation of items for exclusive production and purchase from the cottage and small industries;
- (viii) effective promotion of ancillaries;
- (ix) strengthening and extension of cooperative form of organisation particularly for the cottage and tiny units; and
- (x) building up of a sound data base to facilitate proper policy formulation and evaluation.

12.15 The various policy measures have been spelt out briefly in the following paragraphs.

Industry-cum-area development approach

12.16 The existing programmes for the promotion of village and small industries which have been based mainly on an 'industry' approach have no doubt led to increase in production and employment, but have not helped in raising to an appreciable extent, the levels of income of the artisans. The rural artisans are scattered; they find it difficult to obtain credit and raw materials; the size of the market is small and even at places where there are clusters of artisans engaged in specific industries, their operations are not viable. A strategy based on industry-cum-area development approach leading to vertical and horizontal integration of the programmes can alone sustain the industries in rural areas. This calls for integration of beneficiary-oriented schemes with the overall 'area' development plans to be drawn up after taking the resource endowments into account. All types of industries cannot be developed everywhere; there are certain areas where clusters of

artisans already exist; there may be certain other areas which have potential for the development of a specific industry. For such groups of artisans and craftsmen, the approach would be to provide a package of assistance including setting up of functional industrial estates so that the clusters could turn into growth centres. In fact, the emphasis would be on selected industries with maximum potential rather than on spreading the efforts thinly on promoting all types of industries in the same area.

12.17 A beginning in this direction has already been made by inclusion of the 'Industry', 'Service and Business' component in the programme of IRD which has been extended to cover all the blocks in the country. Of the 600 families to be covered under the programme in each block every year, 100 families would be through village and cottage industries and another 100 families through 'service' activities. It is expected that during the Plan period about 25 lakh families would get assistance in setting up rural industries and an equal number in the 'service' sector for self-employment.

Organisational arrangements at District and Sub-District levels

12.18 By March, 1980, 382 District Industries Centres (DICs) were sanctioned covering 392 districts with the objective of providing all the services and support facilities under a single roof. Although a two year period is too short for any proper evaluation of a new organisational structure, it has been felt that DICs, by and large, have not made a very significant impact particularly in the traditional industries sector. The Industrial Policy Statement of July, 1980 has observed that DICs have "not produced benefits commensurate with the expenditure involved" and that "more effective alternatives are being explored". It is, however, recognised that an industrial promotional structure at the district level seems unavoidable. Also, if the 'alternatives' were to assume larger responsibility for the promotion of traditional industries than hitherto, some technical/extension staff at the sub District/Block level would be necessary. During the Sixth Five Year Plan, it is envisaged that the industrial promotional agencies at the district level would play a catalytic role in generating opportunities for self-employment in close cooperation with the District Manpower Planning and Employment Generation Council. It would also establish purposive linkages with the official and voluntary organisations engaged in the promotion of various traditional industries particularly at the sub-district and the Block levels, and effectively monitor the programmes of rural industrialisation.

Institutional Finance

12.19 Financial assistance to the village and small industries sector is available primarily through commercial banks, cooperative banks, Regional Rural Banks, State Financial Corporations, under the overall guidance of Reserve Bank of India and Industrial Development Bank of

India, etc. Over the period, various measures have been taken to accelerate the flow of credit to this sector. There has been a substantial increase in the number of bank branches covering semi-urban and rural areas; the sector has been included in the list of 'priority' sectors for commercial bank lendings. Because of the various policy and operational measures taken, there has been some increase in the flow of credit to this sector. Loans advanced by commercial banks (loans outstanding) increased from about Rs. 686 crores in March, 1973 to about Rs. 2,633 crores by December, 1979. In the case of cooperatives, the credit limits sanctioned under the Reserve Bank of India scheme of Handloom Finance increased from about Rs. 14 crores in 1973-74 to Rs. 58 crores in 1979-80. Assistance to other 22 groups of industrial cooperatives eligible for such facility, however, was not substantial. The Regional Rural Banks had by March, 1979, granted loans to small borrowers to the extent of Rs. 45 crores of which, it is estimated that, the rural artisans would have availed of about Rs. 14 crores only. The State Financial Corporations had sanctioned medium and long term loans to the tune of about Rs. 702 crores and had disbursed about Rs. 451 crores by March, 1979. The sanctions by the IDBI of re-finance to eligible institutions (including State Financial Corporations and commercial banks) increased from about Rs. 10.5 crores in 1970-71 to about Rs. 300 crores in 1979-80. The RBI continues to operate the Credit Guarantee Scheme for small scale industries and the amount of outstanding guarantees had gone up to Rs. 3289 crores by March, 1980.

12.20 While there has been a step up in the institutional credit flow to this sector, the beneficiaries have mostly been the larger among the small scale units. The availability of finance to 'tiny' and artisan type units has not been commensurate with their needs and levels of production. Of the total limits sanctioned by commercial banks upto December, 1978, the craftsmen and other qualified entrepreneurs had accounted for about 4.2 per cent; the term finance availed of by the 'tiny' units was around 10 per cent of the amount sanctioned by the IDBI. The impact of the scheme of 'composite' loan has been very peripheral, to some extent, due to the reluctance of the bank managers in advancing loans without proper collateral security.

12.21 The target for 'priority' sector lendings by commercial banks has recently been increased from 33 to 40 per cent. The RBI have issued instructions that commercial banks should provide increasing proportion of their total advances to village and small industries so as to reduce their dependence upon non-institutional sources, with the objective that no worthwhile project in this sector should be rejected for want of adequate security. It has been decided that under the Differential Rate of Interest (DRI) scheme, the cooperatives and institutions concerned with the promotion of SC/ST artisans

would also be eligible for concessional assistance. Similarly, instructions have been issued to the co-operative banks to provide finance to individual artisans and village and cottage industries. More branches both of Commercial Banks and Rural Regional Banks are planned to be opened, mostly in the un-banked areas. The IDBI which has been charged with the task of coordinating, guiding and monitoring the entire range of credit facilities offered by various agencies to the sector, has opened a separate window to facilitate automatic re-finance of term loans to the primary lenders for loans upto Rs. 5 lakhs. It has also set up a Credit Committee for Small and Village Industries which over-views the credit needs and the measures taken to augment the flow of credit. It has recently been decided, in principle, to set up a National Bank for Agriculture and Rural Development which would among other activities discharge the functions of an apex institution for flow of credit to the artisan and cottage type units in rural areas.

12.22 While a number of important measures have been introduced recently, there is need for their effective implementation at the operational level. The liberalised scheme of credit to cottage and small industries for providing 'composite' loan upto Rs. 25,000 without insisting on margin money/collateral security would need to be made more effective through proper project formulation facilities, detailed district credit planning, provision of institutionalised support for raw materials and marketing, etc. Proper and continuous monitoring and attitudinal change in the field staff of lending institutions would go a long way in accelerating the credit flow and ensuring the adequacy thereof.

12.23 A related problem is the effective rate of interest for various industries and the concerned promotional institutions. At present, interest is being charged at varying rates from artisans, craftsmen, handloom weavers in the cooperative fold and those outside, the tiny units and comparatively large among the small scale units. A village industry unit with investment of over Rs. 2 lakhs is eligible for funds at an effective rate of 4 per cent under the KVIC programme, while artisans under the 'composite' loan scheme are subjected to pay 9½ per cent to 11 per cent* (depending on whether they are in backward or non-backward areas). Even in the modern small scale sector, an educated/engineer entrepreneur can get funds at an effective rate of 7 per cent, the balance being subsidised from budgetary sources. On the other hand, various States' Development Corporations for handlooms, handicrafts, small industries, etc., are being charged 16 to 18 per cent, as these have paid-up equity exceeding Rs. 1 crore or so. This heavy interest burden virtually deters them from resorting to institutional finance and forces them to depend heavily on budgetary support, thereby restricting their commercial activities. Attempts would

*With effect from July 1, 1980 the interest rates (inclusive of interest tax) have been raised to 10.25 and 11.85 res-

pectively.

therefore, be made to review/rationalise the interest rate structure so as to relate it to the economic status of the direct and/or ultimate beneficiary.

Appropriate Technology, Research and Development and Training

12.24 The need for appropriate technology to achieve better utilisation of locally abundant resources, substitution of raw materials available in plentiful supply in place of scarce and imported ones, development of simple processes and techniques with a view to reduce drudgery and fatigue and better the standard of living of artisans and entrepreneurs, is obvious. Such a technology does not necessarily visualise any reduction in the employment potential; rather it introduces a structural orientation and envisages adaptation of the industrial fabric in a manner conducive to enhancing the productivity and earnings of the small entrepreneurs, artisans and craftsmen. In other words, it contemplates a production process which is most 'appropriate' under any given market input availability and given social conditions at a particular point of time.

12.25 The research and development efforts at present are being carried out by the various all India Boards and Organisations engaged in the field of village and small industries. The development of suitable tools and proto-types is being undertaken by Prototype Development Centres. Institutes engaged in research activity in the field of village industries are the Jammalal Bajaj Research Institute, the Central Bee-keeping and Research Institute, and other organisations for pottery, ceramics, etc. The Sericulture Research Institutes and stations also attempt improvement in practices in mulberry cultivation and tasar food plantations, silk worm rearing and reeling. Besides, a host of other organisations like the Council for Scientific and Industrial Research, Indian Council of Agricultural Research, Institutes of Handloom Technology, etc., are also involved in research activities. However, effective translation of these R&D efforts is still to be achieved and consequently, the impact remains insignificant. Also, even with the introduction of some of the newly evolved technology/techniques, the value added percentage in the final product though high, the gross value continues to remain quite small and the artisans despite being fully employed have remained below the poverty line.

12.26 In the Sixth Plan period, efforts would be made to identify a focal point to coordinate the R&D activities of the various research organisations and boards engaged in the field of village and small industries. Identification of technical problems and areas of research wherein improved technology could yield better returns in relation to time and effort expended, would be done by the concerned industry-specific organisations. The focal point would then entrust the identified problems to specialised institutions and if necessary, meet their financial requirements. In the process of evolving improved tools

and techniques, care would be exercised to deter indiscriminate displacement of traditional crafts and skills or affect adversely their labour intensity but ensure an overall increase in the productivity and earnings of the artisans. The specialised institutions would also be required to examine the economic viability of the various alternatives available and undertake pilot scale/commercial experimentation of the optimal solution evolved. The focal point in conjunction with the organisations concerned would take care of the commercial production of the new technology/techniques, while transmission and dissemination would be the sole responsibility of the specific agencies/boards in charge of the different industries.

12.27 Training is an effective vehicle for wider diffusion of technology and upgradation of skill of entrepreneurs and artisans. The existing training programmes under the aegis of various all India Boards, State Governments and other area development institutions cover entrepreneurs, craftsmen, artisans as well as supervisory staff. It is, however, felt that some of the existing training programmes are not result oriented. In some cases, trainees gravitate to the training centres for the stipend in the absence of anything else to do; as a result, very few persons engage themselves in the trade trained. Most of the training programmes lack post-training tie-up. During the Sixth Plan, the ongoing training programmes would be strengthened and programmes would be expanded in new areas and industries. Provision has also been made for skill formation under IRD and for strengthening and creation of training infrastructure under TRYSEM. While selecting trainees, due emphasis would be laid on the aptitude of the trainees for specific trades; the emphasis being on crafts-training under master-craftsmen rather than mere institutional training. Arrangements would be made to assist the trainees with a package of facilities consisting of tools and equipments, credit, marketing assistance, etc. Arrangements would also be made for a periodic review and evaluation of the training programmes to find out their impact on employment, productivity and earnings of the beneficiaries.

Supply of raw materials

12.28 The general policy in the past in regard to supply and distribution of raw materials to the small scale sector and artisan units has been to earmark specified quantities of raw materials from major suppliers and to route them through the State Small Industries Development Corporations for distribution to the small scale and cottage units. There have also been selective relaxations in the import policy in favour of the small scale sector for the import of certain raw materials both canalised as well as other items. Despite various Government measures, the small scale sector has been facing considerable difficulties on account of the overall shortage of essential raw materials and intermediates. In actual practice, the sector tends to get more or less a 'residuary' treatment in raw material distribution. In some cases, the quality has also been unsatisfactory. Another

problem has been the fluctuation of prices which has affected particularly the artisan type units adversely as they lack holding capacity. The problem of raw material availability has also been among the important factors responsible for under-utilisation of the capacities in the traditional and small industries sector, in spite of various regulatory measures taken by the Government, the handloom weaver has not been able to get hank yarn of requisite quality and quantity from the spinning mills. In the case of handicraft artisans also some of the essential raw materials were either not available in adequate quantity or were available at exorbitant prices.

12.29 In order to overcome the difficulties with respect to availability of various raw materials, the Industrial Policy Statement has envisaged introduction of a scheme for building up of a buffer stock of essential and scarce raw materials. For this, it is envisaged that the existing set-up of National Small Industries Corporation at the Centre and the Small Industries Development Corporations at the State level would be utilised. These Corporations would have to make a precise assessment of the present and future needs of raw materials of small scale units on some realistic norms, and arrange for distribution particularly at the places of concentration of units. The attempt would be to at least ensure that the impact of an overall scarcity is evenly spread among the large and medium and the VSI sectors. In the case of handlooms, a National Handloom Development Corporation would be set up to attend *inter alia* to the problem of yarn supply to handloom weavers at reasonable prices. For the North Eastern region, the problem of supply of hank yarn would be attended to by the North Eastern Handlooms and Handicrafts Development Corporation. The Rural Marketing Centres which have been set up on pilot basis at the block level would also arrange for supply of raw materials required by artisans and tiny units.

Marketing

12.30 The marketing problems of cottage and small industries flow from their scale of operation, lack of standardisation, inadequate market intelligence, competition from large-scale units and insufficient holding capacity. A large number of artisans and craftsmen continue to depend substantially on middlemen for supply of their inputs and marketing outlets who appropriate most of their profits. Sales of traditional industries' products like handlooms, handicrafts and khadi depend very much on the rebate allowed on them; the volume of inventories, when rebates are not operative, becoming quite large.

12.31 Market intelligence and assistance to small entrepreneurs, artisans and craftsmen are presently provided, to a very limited extent, by the National Small Industries Corporation, the Small Industries Service Institutes, State level Corporations for small industries, handlooms and handicrafts, the Central Silk Board and the retail outlets of the Khadi and Village Industries Commission and Coir Board. All India Handloom Fabrics Marketing Cooperative Socie-

ty, Apex Societies and network of States emporia and Handlooms & Handicrafts Export Corporation. A Central Scheme of Rural Marketing Centres at block level was taken up on pilot basis in 1978-79 to cater to marketing requirements of artisans and tiny units. The Government has been providing marketing support to some extent through its scheme of stores purchase. As many as 379 items have been reserved for exclusive purchase from the small scale sector. The products of the small scale sector are also given price preference of upto 15 per cent over those of the large and medium industries in the rest of the items. All these are at best piecemeal and sporadic attempts in marketing promotion and it has not been possible to make any significant headway in this direction. Production targets continue to remain primarily supply-induced in the hope that what is produced, would be marketed.

12.32 During the Sixth Plan, it is proposed to evolve a well coordinated approach in the direction of demand forecasting, collection and collation of market intelligence and to strengthen and expand internal marketing infra-structure with a view to making it producer-oriented. Producers of similar/same goods would be assisted to form groups and consortia so as to market their products under common brands in competition with large industry. The working of Rural Marketing Centres would be evaluated. It is proposed to evolve an integrated system of supply of raw materials and marketing of products through promotion of cooperatives and government sponsored agencies. In the field of government purchase, there is need for identifying more and more items for exclusive purchase from the small scale and developing a system for close monitoring at different levels. It has been decided to have graded reservation lists (at the rate of 100 per cent, 75 per cent and 50 per cent) to be identified on the basis of production and supply capabilities of the small scale units having regard to the actual supplies made by them in the recent past. The policy of price preferences to the products of small scale units would also be continued and implemented more vigorously. The Central public sector enterprises have been directed to fall in line with the policy of preferred purchases from the small scale sector followed by the Centre; the State public sector enterprises are also expected to do so.

12.33 For external marketing, a number of Export Promotion Councils for important manufactured products have been set up; there are Export Promotion Councils for handlooms, gems and jewellery and leather products. It has also been decided to set up separate Export Promotion Council for Carpets and proposals for coir and silk are under consideration. While no separate Council to look after the interests of the small scale sector is visualised, a Steering Committee has recently been set up for promoting their exports. It is also proposed to assist setting up of consortia for small scale industries and establish international sub-contract exchanges, undertake studies on export potential, develop market intelligence, exchange trade delegations, participate in trade fairs, exhibitions and organise seminars and workshops.

Reservation and other measures

12.34 Besides marketing assistance in various forms referred to above, certain areas of manufacture have been reserved for exclusive production in the decentralised sectors particularly in the handlooms and small scale industries. So far 12 items have been reserved for exclusive production in the handloom sector but there have been problems in the effective enforcement of the reservation orders. A Committee has been appointed to go into the question of devising ways and means to make reservation effective.

12.35 In the case of small scale industries, at present 834 items have been reserved for exclusive production. For want of adequate follow up and positive support, the policy of reservation has tended to be negative in character. No worthwhile attempt has been made to forecast demand for the reserved items and ensure that adequate capacity created to meet the likely demand and/or prevent supply demand imbalances. While no precise evaluation of the impact of the reservation policy has been carried out, some studies indicate that the growth of the reserved sector as a whole has not been appreciably faster than that of the non-reserved sector.

12.36 During the Sixth Five Year Plan, the approach would be that the sectors where efficient production can be secured on small scale basis would continue to be reserved for further expansion only by small scale units. However, if the social costs of production of the decentralised sector are to be contained within reasonable limits, there might be greater play of competition in the remaining sectors which are not reserved exclusively for the small scale industries. A high level official committee has been set up to periodically review the list of reserved items. Endeavour would be to pursue a policy of positive support in respect of those items which offer maximum growth and employment potential. What is intended is that the small scale sector acquires sufficient vitality to be able to compete on its own with the large and medium sector over a reasonable period of time. The question of extending legislative support to measures for the promotion of small and cottage industries would also be examined.

Development of ancillaries

12.37 Promotion of ancillary units provides good scope for the development of small scale industries as it facilitates off-loading of the products of the sector and thus providing assured market. It is for this reason that even in the definition of small scale industries, ancillary units have been given a separate identity by relaxation of investment limit in plant and machinery upto Rs. 25 lakhs. Over the last several years, various measures have been taken to promote a healthy relationship between the ancillary small scale units and the parent unit. Inter-departmental teams have been set up to identify items which could be taken up by ancillary units; plant level committees have been asked to work out the details of ancillary develop-

ment programme; and 25 broad groups of industries have been identified for intensive development. The Bureau of Public Enterprises (BPE) have issued detailed guidelines to the public sector undertakings spelling out the measures to be adopted for the promotion of ancillary units. As a result of various promotional measures, the value of purchases from the small scale ancillary units made by the public sector undertakings, railways and defence establishments amounted to about Rs. 150 crores during 1978-79. While there has been increase in the purchases by the public sector undertakings from the ancillary units, still these account for an insignificant percentage in terms of their total turnover. There is need to enforce the guidelines of the BPE at the operational levels in the public sector enterprises.

12.38 'Ancillary' development has to be deemed as a mutually beneficial bipartite arrangement between the parent and the ancillary units. For its success, the parent units should assist in the transfer of technology and in providing necessary technical guidance and arrange supply of quality raw materials so that the end-product of ancillary units come up to the requisite specifications. As regards timely payments by the parent unit for purchases from the small scale units, the RBI have since evolved some measures of part payment in advance from out of the accounts of the parent units with the banks. The ancillary units, on their part, must manufacture the parts and components to specified standards and adhere to the delivery schedules; they must also demonstrate that such arrangements would be financially beneficial to the parent units in terms of the cost of production as compared to the in-house production.

12.39 The Industrial Policy Statement envisages, as already stated, a few 'nucleus' plants in each district identified as industrially backward to generate as many ancillaries and small and cottage units as possible. The 'nucleus' plants would concentrate on assembling the products of the ancillary units, producing the inputs needed by the smaller units and making adequate marketing arrangements.

Industrial cooperatives

12.40 In providing an institutional cover of a non-exploitative nature and creating self-employment, industrial cooperatives have been considered as an ideal form of organisation. In the case of traditional industries like handlooms, coir and village industries, cooperatives occupy an important place. However, the present position of these societies is not satisfactory; between 50 to 60 per cent of them are lying dormant; of those that are active, only a small percentage is viable. The societies at the apex, central as well as primary levels are faced with a host of problems relating to their operation and management. During the Sixth Plan, it is proposed to revitalise the potentially viable and dormant societies and to link the programme of promotion of industrial cooperatives with targets of production, employment and improvement in pro-

ductivity and earnings of the members. The stress would be on increasing the cooperative coverage in both traditional and modern small industries and to improve the economic viability of the societies.

Statistical data base

12.41 Lack of sound statistical data has been the main handicap in proper planning and formulation of the development programmes for village and small scale industries. The Annual Survey of Industries (ASI) covers only small scale units registered under the Factories Act. The data thrown up by the National Sample Survey (NSS), Economic and Population Census are not complementary to those of the ASI to get a total picture of the VSI Sector. The respective implementing organisations have carried out surveys which are also neither comprehensive nor comparable. In the case of handlooms and powerlooms, the estimates of production are being made on the basis of civil deliveries of yarn by mills in the form of hanks and cones and beams respectively. For small scale units, the data thrown up by the Census of Small Scale Industries carried out in 1972-73 are updated on the basis of 2 per cent sample only. In the case of Khadi and Village Industries, data pertain to units under the purview of the Khadi and Village Industries Commission and excludes a big chunk of village industries outside its purview. As for handicrafts, the estimates for production and employment are derived from the export-realizations reported by the DGCI&S. As such, the data flow is neither on a time series basis nor relates to a uniform reference period and/or coverage to facilitate their comparison, proper interpretation and projection.

12.42 In the context of the limitations referred to above, there is need for establishing channels for flow of data on a regular basis so as to enable more meaningful reviews and policy formulation. In the case of modern small scale industries under the purview of SIDO which account for more than two-thirds of the output in the village and small industries sector, it is proposed to increase the size of the sample from 2 per cent to 20 per cent for the annual revision of data and also to update data on census basis periodically. As regards traditional industries, it is proposed to strengthen the data collection machinery at the State level by extending financial assistance for the purpose. The coverage of the NSS rounds meant for the unregistered manufacturing sector is proposed to be enlarged and their frequency increased.

PROGRAMMES

12.43 The industry-wise review of progress and programmes for the Sixth Plan are discussed in the following paragraphs.

Khadi & Village Industries

12.44 The Khadi and Village Industries Commission (KVIC) implements its programmes of Khadi mainly through registered

institutions and those of village industries through State Khadi and Village Industries (KVI) Boards. There are at present 25 KVI Boards, 735 registered institutions and about 27,800 cooperatives spread over 1 lakh villages. Besides khadi, there are 25 village industries, within the purview of the KVIC, the recent additions being lok-vastra, poly-vastra and processing of maize and ragi.

12.45 During the period 1974—80, the gross value of output registered annual rates of growth of 12.3 per cent in khadi and 8.9 per cent in village industries, the overall rate of growth being around 10 per cent at constant prices. The annual per capita value of output increased from Rs. 856 to Rs. 1263 and the per capita earnings from Rs. 217 to Rs. 381 at current prices during the period 1974—79. However, at constant prices, the increase is marginal. Some of the recent developments in the sub-sector are installation of about 1.1 lakh new model charkhas, and about 80,000 gobar gas plants mostly in rural areas, identification of new fibrous raw materials such as banana, screwpine, etc., and their use in manufacture of fancy and utility articles, diversification of activities such as preparation of papad, bakery products, neera collection and manufacture of irrigation pipes, glazed pottery articles, plastic match boxes, leather sports goods and garments and mixing of polyester fibre with cotton for producing blended fabrics. Coupled with these developments, the element of subsidy has also been reduced somewhat; the 20 per cent weaving subsidy on khadi was replaced five years ago by a lower subsidy of 10 per cent as rebate on sale of khadi. Further, loans advanced to village industries by the KVIC which earlier were interest free, are now being charged interest @ 4 per cent.

12.46 There have, however, been certain gaps in the implementation of the programmes. Even among the industries included within the KVIC purview, the coverage of artisans is low and the activities have remained confined to a few traditional States which account for bulk of the production and employment. A large number of cooperatives continue to remain dormant. The existing marketing infrastructure is unable to keep up with the increased level of activities and the inventories have remained at high levels. The productivity and earnings are low, which reflect the low standard of technology in this sub-sector. Some of the problems could be traced to the lack of effective coordination between the KVIC and the State Boards. There has also been inadequate linkage between the KVI programmes and the general programmes of area development.

12.47 During the Sixth Plan period, the value of output in this sub-sector is likely to grow by about 3 times, the annual rate of growth being 15 per cent in Khadi and 26 per cent in village industries and the employment coverage going up from 29.45 lakhs to 50.50 lakhs. The achievement of targets of this magnitude would need structural changes in the organisational and implementational pattern. During the

Plan, the strategy would be to develop and expand the KVI sub-sector both vertically and horizontally and link them with IRD and TRYSEM programmes at the block level. It is expected that about 50 per cent of the coverage target under the village and cottage industries component of IRD would be achieved through the KVIC. Recognising that the responsibility for development of rural industries is primarily that of the States, efforts would be made to strengthen the State Boards through an input of professional and managerial expertise and by establishing organic and meaningful linkages with the KVIC. Greater participation and involvement of the State Governments in KVI programmes would also be aimed at. The KVIC would, however, concentrate on planning and policy formulation, technology development, training, marketing and implementation of programmes in such areas where the State Boards, in the short run, are not likely to be effective.

12.48 Programmes for Khadi would be reoriented to increase production particularly of woollen and silk and to introduce new cotton varieties like muslin khadi. Among the village industries, emphasis would be on gobar gas, village leather, cottage match, non-edible oil and soap, pottery, cane-gur and khandari, etc. Efforts would be directed to have a dispersed development of these industries so that the non-traditional States have a larger share in the increased production and employment. Emphasis would be placed on programmes benefitting the weaker sections of the society; the share of Scheduled Castes, Scheduled Tribes and inhabitants of hill and border areas in the employment coverage through the KVIC is expected to increase from 23 per cent in 1979-80 to 36 per cent by 1984-85 and the share of women from 45 per cent to 47 per cent during the period.

12.49 During the Plan, greater emphasis would be laid on evolution and adoption of proper technology through research and development with a view to increasing productivity and earnings of artisans. A programme of the magnitude envisaged cannot obviously be implemented with more or less exclusive dependence on budgetary resources as at present. Efforts would, therefore, have to be made to accelerate the flow of institutional funds into the sub-sector. It has been envisaged that during the Plan period, around Rs. 500 crores of institutional credit would be available for development programmes in the sub-sector. To introduce an element of viability, loans for khadi would be advanced at 4 per cent interest rate. An aggressive and broad-based marketing strategy would need to be evolved with the objective of progressively reducing the volume of inventories and the rate of subsidy.

Handloom Industry

12.50 During the period 1974-80, production in the handloom industry is estimated to have gone up from 2100 to 2900 million metres. The employment coverage increased from 52.1 lakh persons to 61.5 lakh persons and exports (excluding silk goods) from Rs. 77

crores to Rs. 261 crores, respectively. These developments were made possible, to a large extent, by a package of support programmes that were implemented following the recommendations of a study team in 1973.

12.51 By March, 1980, of the 30.21 lakh handlooms in the country 13.17 lakh looms had been brought under the cooperative fold. But the effective coverage is estimated at about 9.4 lakhs or 31 per cent as against the Fifth Five Year Plan target of 60 per cent. Under the RBI scheme of handloom finance for weavers' cooperatives for production and marketing, the amount of credit sanctioned was about Rs. 58 crores in 1979-80 but it fell short of the estimated requirement of Rs. 140 crores. Twenty-five Intensive Handloom Development Projects (IHDPs) with a coverage of a little more than 1 lakh handlooms and 21 Export-oriented Production Projects (EPPs) with a coverage of about 10,000 looms had been set up. But the performance of these projects has not been uniformly satisfactory. Weaknesses have been noticed in terms of poor coverage of looms; low productivity of weavers, static product-mix and inadequate institutional finance and marketing support. Nine new Weaver Service Centres were set up; the North Eastern region received special attention accounting for three Centres at Gauhati, Agartala and Imphal.

12.52 In keeping with the emphasis on development of handlooms during the Sixth Plan, its production is envisaged to increase from 2900 million metres in 1979-80 to 4100 million metres (including 500 million metres of Janata Cloth) in 1984-85 with a growth rate of 7.2 per cent per annum as against 5.2 per cent during 1974-80. The employment coverage is expected to go up from 61.5 lakh persons to 87 lakh persons and exports from Rs. 261 crores to Rs. 370 crores over the Plan period.

12.53 The major thrust of the programme would be on augmenting the supply of hank yarn to weavers through setting up of additional spinning capacity, setting up of a National Handloom Development Corporation to facilitate, *inter alia*, the supply of hank yarn and other inputs at reasonable prices throughout the year, to bring 60 per cent of handlooms under effective cooperative coverage, increasing productivity through modernisation and renovation of looms, strengthening the technical extension systems for improving the quality and design of handloom products and reactivation of looms in the North-East. In order to augment yarn supply, assistance would be given through the National Cooperative Development Corporation to promote new weavers' cooperative spinning mills and for expansion of the existing ones upto 50,000 spindles, according to priority to areas deficient in spinning capacity but having a concentration of weavers. New and potentially viable cooperative societies would be assisted under a Central programme in the appointment of paid secretaries through managerial subsidy on a tapering basis. In selected areas, loomless weavers would be assisted to organise themselves into industrial-type cooperative societies with the

ultimate intention of becoming loom-owners. In the establishment of processing facilities, emphasis would be laid on small dyeing and processing units on a dispersed basis and in backward areas. The All India Handloom Fabrics Marketing Cooperative Society would be assisted to expand their network of retail outlets, ensuring the procurement of goods, by and large, from primary production-cum-sale societies. A much larger flow of RBI funds is expected as a result of, extension of cooperative coverage and augmentation of share capital base of primaries and apex societies, the looms outside the cooperative fold including those covered by the State Corporations looking forward to commercial bank credit on softer terms. An evaluation of the working of the existing IHDPs and EPPs would be undertaken with a view to strengthen their viability and to establish market linkages, including for exports.

12.54 Special efforts, including supply of yarn and marketing of products would be taken to reactivate a large number of dormant looms in the North East under the aegis of the North Eastern Handlooms and Handicrafts Development Corporation (NEHHDC). The NEHHDC would secure effective working participation of State Handloom Corporations and apex societies in the region. A new Institute of Handloom Technology would be set up at Gauhati to help diversified and commercialised production in the region based on its traditional designs and motifs.

Sericulture

12.55 Although all the four varieties of silk, viz., mulberry, tasar, eri and muga are produced in the country, mulberry silk accounts for 88 per cent of the total production of raw silk in the country. The production of mulberry raw silk has registered a significant increase from an estimated 24 lakh kgs. in 1973-74 to 42 lakh kgs. in 1979-80. The growth in tasar and eri silk was marginal, the tasar production increased from 2.57 lakh kgs. to 2.81 lakh Kgs. and eri from 1.42 lakh kgs. to 1.83 lakh kgs., but that of muga silk declined from 0.75 lakh kgs. to 0.42 lakh kgs over the same period. The employment coverage is estimated to have gone up from about 12 lakh persons to 16 lakh persons. The value of exports of silk fabrics and waste increased from about Rs. 14 crores to Rs. 49 crores over this period, but the export growth translated into physical terms, would not be equally appreciable.

12.56 The area under mulberry plantation rose from 1.10 lakh hectares in 1973-74 to 1.41 lakh hectares in 1978-79. The R&D programme was intensified during the period. Research Institutes and Stations were strengthened and training and extension facilities expanded. A scheme for the production of bivoltine industrial silk-worm seed was taken up in the multivoltine regions of Karnataka, West Bengal, Tamil Nadu and Andhra Pradesh in 1975-76. This had resulted in the increased production of bivoltine silk and brought highest returns

to the sericulturists. To increase the supply of basic tasar seed in the traditional areas, Pilot Extension-cum-Training Centres were organised in the States of Bihar, Madhya Pradesh and Orissa. For the temperate region, the Central Silk Board set up four oak tasar grainages in the North-East. Intensive Sericulture Development Projects (ISDPs) were taken up in the States of Karnataka, West Bengal, Tamil Nadu and Uttar Pradesh. Under the ISDPs, silk farms, grainages and chowki rearing centres were organised and assistance for digging of new wells, construction of rearing and reeling houses was provided. A Central scheme for stabilising prices of mulberry raw silk was taken up in 1977-78; a similar scheme for tasar cocoons is also in operation for the benefit of tribal areas.

12.57 During the Sixth Plan, production of raw, silk is expected to increase from 48 lakh kgs. in 1979-80 to 90 lakh kgs. in 1984-85. Exports are expected to go up from Rs. 49 crores to Rs. 100 crores and employment coverage from 16 lakh persons to 21.5 lakh persons over this period. The targeted incremental production would be achieved partly through extension of area and partly through increased per hectare productivity as a result of research and extension and bringing of larger area under irrigated conditions. The increase in productivity would call for reorganisation and intensification of R&D efforts with a view to moving nearer to international norms. Technical extension would be designed to ensure that laboratory results are, in fact, translated into the field. In the mulberry sector, the Karnataka State has taken up a project with World Bank assistance; as a result of its implementation, production of mulberry raw silk in the State is envisaged to double by 1984-85. Andhra Pradesh and Tamil Nadu would also launch programmes of substantial expansion of mulberry culture during the period.

12.58 The development of non-mulberry sericulture has not so far received adequate attention. An inter-State Tasar Project for tropical tasar would, therefore, be taken up to benefit the tribal areas of the country. Eri and muga silk are specific to the North-East, though there is potential for mulberry silk also. In order to provide a fillip to these different varieties, three separate institutions, one each for mulberry, eri and muga would be set up in the region. Further, price support operations which hitherto were applicable to mulberry raw silk and tasar cocoons, would be extended to cover muga cocoons as well.

Handicrafts

12.59 During 1974-80, production of handicrafts is estimated to have increased from Rs. 1065 crores to Rs. 2050 crores. The growth in production in this sector has been substantially oriented towards exports, which increased from Rs. 195 crores in 1973-74 to Rs. 835 crores in 1979-80. Employment, full time and part-time, went up from about 15 lakh to 20.3 lakh persons. The activities of the All India Handicrafts Board

have been re-oriented towards increased production of selected crafts having export potential. Thus, a massive training programme in carpet weaving was launched in 1976-77. So far about one lakh persons have been trained in carpet weaving mostly in the States of U. P. and Jammu & Kashmir. Training centres in other important crafts such as hand printed textiles, art metalware and cane and bamboo have also been started. For internal marketing, a scheme of Rural Marketing Centres was taken up in 1978-79 on a pilot basis; about 220 Centres have been sanctioned, of which about 60 have become functional. These Centres have been set up at the block level to provide marketing facilities for handicrafts and other cottage industries and also to provide raw materials etc. The working of these Centres is being reviewed to determine their effectiveness.

12.60 During the Sixth Five Year Plan, production of handicrafts is envisaged to increase from Rs. 2050 crores in 1979-80 to Rs. 3200 crores in 1984-85, exports from Rs. 835 crores to Rs. 1315 crores and employment coverage from about 20.3 lakh to 28 lakh persons. The training centres for carpet weaving presently being run by the All India Handicrafts Board would be continued. But the training content of the programme would be reoriented to meet the changing demand patterns in the international market. The training centres would be suitably strengthened to impart training in processes like washing and finishing. Training facilities for hand printed textiles, cane and bamboo and art metalware would be expanded and new training programme introduced for gem and jewellery and wooden artware. Efforts would be made to ensure that training programmes are backed by a package of assistance for setting up of production centres so that persons trained engage themselves in actual production; nevertheless, some of the trainees would find absorption in the private sector. To conduct R&D for evolving new designs and techniques and to improve products and tools with the objective of increasing productivity, it is proposed to set up two National Institutes—one for carpets and the other for hand printed textiles. To promote cooperatives among the craftsmen, it is proposed to assist primary handicraft cooperatives and apex societies towards share capital, common facilities and appointment of paid secretaries. The equity base of the State Handicrafts Corporations would be strengthened to enable them to obtain larger institutional finance and to afford marketing assistance to craftsmen.

Coir Industry

12.61 India accounts for more than two-thirds of the world production of coir and coir products. Kerala is the home of Indian coir industry, particularly white fibre, accounting for 61 per cent of coconut production and over 85 per cent of coir products. Although India has a long coastline dotted with coconut palms, growth of coir industry in other coastal States has been insignificant.

12.62 Not more than 50 per cent of the coconut husks is utilised in the coir industry, the remaining being used as fuel in rural areas. Production in the cooperative fold is not more than 20 to 25 per cent. The development programmes so far undertaken aimed at revitalisation of coir cooperatives, improvement in quality and products diversification. Efforts were also made for exploring wider export markets for coir and coir products. Judged from the increase in production and employment, the progress has been rather slow and exports in physical terms have remained mere or less static.

12.63 The problems of the coir industry have been reviewed by a high level Study Team; its recommendations are under consideration and Government decisions thereon would be taken shortly. During the Plan, the main thrust would be on revitalisation of existing coir units/cooperatives particularly in Kerala and expansion of activities in the non-traditional States. Measures would be taken to strengthen the existing cooperatives and promote new viable cooperatives. Training, production and marketing infrastructure would be strengthened. Efforts would be made for greater utilisation of available husk commensurate with the economics of the cost of collection. Research activities would be intensified in the fields of retting, equipment for extraction, design, bleaching, dyeing and utilisation of raw material for new products.

Small Scale Industries

12.64 During the period 1974—80, the production in the small scale industries (under SIDO) went up from Rs. 7200 crores to Rs. 19060 crores; the growth rate works to 9.5 per cent per annum. Employment and exports registered increase from 39.65 lakh to 64.60 lakh persons and from Rs. 538 crores to Rs. 1050 crores, respectively. The new programmes initiated during this period comprised entrepreneurial development, establishment of sub-contracting exchanges and modernisation of selected industries. The policy measures included: (a) increase in the number of items reserved for (i) exclusive production in the small industry sector to 807 items; and (ii) exclusive purchase from this sector by the Government and related organisations to 257 items; (b) identification of 'tiny' units with investment upto Rs. 1 lakh in plant and machinery and located in towns with population less than 50,000 for offering special incentives; (c) liberalisation of procedures and conditions of financial assistance from commercial banks and other institutions; (d) special facilities for import of raw material and components; and (e) intensification of extension services through the Small Industries Service Institutes, Branch Institutes and Extension Centres apart from Tool Rooms and Regional Testing Centres. As stated earlier, District Industries Centres were introduced at the district level with the object of providing all the services required by the small scale and decentralised industries relating to pre-investment, investment and post-investment stages, under one roof.

12.65 There have, however, been certain weaknesses in the development process. The quality of goods in some areas of production has not always been upto the desired level and there has been lack of standardisation. There is also need for upgradation and diffusion of new technology. The programme of modernisation has also not been able to make a significant dent so far. The small scale units continue to be plagued by the shortage of raw materials leading to underutilisation of capacities. The ancillary development programme has yet to make much headway in terms of its share in the total production in the small scale sub-sector. The proportion of purchases from small scale sub-sector by the DGS&D has failed to register a significant increase over the years, although the number of reserved items has been going up.

12.66 It has since been decided to increase the limit of investment (i) in the case of 'tiny' units from Rs. 1.00 lakh to Rs. 2.00 lakhs and (ii) small scale units from Rs. 10 lakhs to Rs. 20 lakhs; this may go upto Rs. 25 lakhs in the case of ancillaries. This revision, however, would remain, as before, subject to the proviso that no undertaking shall be a subsidiary of or owned or controlled by any other undertaking. If the value of production and employment of those units which now stand categorised as small scale were to be added to the output of those existing small scale units covered by the earlier definition, in the base year 1979-80, they would add up to Rs. 21635 crores and 67 lakh persons respectively.

12.67 During the Sixth Five Year Plan production in this sub-sector is expected to increase to Rs. 32873 crores in 1984-85 with a growth rate of about 8.7 per cent per annum. Resultantly, employment is expected to go up to 89 lakh persons, while exports are expected to increase from Rs. 1050 crores to Rs. 1850 crores. Since more than 90 per cent of the existing small scale units are 'tiny' in terms of their investment in plant and machinery, endeavour during the Sixth Plan period would be to see that all kinds of budgetary support are primarily utilised for their promotion.

12.68 To achieve these targets, a pragmatic approach would be adopted. A carefully worked out time-bound programme for ancillary development would be drawn up leading towards dispersal of industries and growth of entrepreneurship. It is proposed to establish 'nucleus' plants in industrially backward districts to generate a spread out network of small scale units. Efforts would be made to effect an attitudinal change on the part of large scale producers to increasingly off-load production of parts and components to ancillary units. For ensuring prompt payment, the question of a sub-limit in the account of large scale industries as well as penal rates of interest on amount outstanding would be examined. A buffer stocking scheme of essential raw materials would be devised to supplement the normal supply and distribution channels. In the field of marketing, the policies of exclusive purchase from and price

preference for the sub-sector in the Government purchases would be vigorously pursued. Public sector undertakings would be desired to adopt a similar preferential policy. Marketing assistance would be rendered to small scale units to form consortia to undertake aggressive marketing in same/similar items preferably under common brand name. Improvement in quality and standardisation of products would also be aimed at for improving their marketability. Exports from the small scale sector would be given added impetus by diversification of the product-mix. A Steering committee on Export Promotion has been set up to recommend measures for boosting exports. The National Small Industries Corporation would be revamped and strengthened to enable it to render effective raw material and marketing support and generate adequate financial resources internally for its expanded role.

12.69 Although a number of measures have recently been taken to augment the flow of credit, it is proposed to further streamline the procedures and increase the availability of funds especially to tiny units. To facilitate the flow of risk capital, the concept of 'limited partnership' would be introduced through legislative measures. A scheme to improve and restore the borrowing capacity of small scale units through provision of margin money, with other inputs and active involvement of financial institutions would be evolved to deal effectively with the problem of sickness. The scope and content of the managerial training and entrepreneurial development programmes would be redesigned to match the sophistication already achieved in regard to product technology and keeping in view the need for a wider dispersal of entrepreneurship. Efforts would be made to constantly improve and upgrade the technology of the sub-sector. Tool rooms and regional testing centres would be strengthened and field testing facilities provided to cluster of units. Product and process development centres would be suitably strengthened for developing appropriate technology packages.

Industrial Estates

12.70 By March, 1979, there were 662 completed industrial estates wherein 13467 small scale units were functioning, accounting for an annual production of about Rs. 636 crores and providing employment to about 2.19 lakh persons. While the number of industrial estates and areas is fairly large, their functioning has not been uniformly satisfactory, the sheds and plots developed have not been fully occupied and become functional. The performance of semi-urban and rural industrial estates has been relatively less encouraging. In this Plan, industrial estates and area programmes would get added emphasis particularly in industrially backward areas. Location of new industrial estates would be decided on purely techno-economic considerations. The size of the programme would be expanded by resorting to institutional funds utilising the budgetary provisions as margin money.

Functional industrial estates both for groups of artisans and small scale units would receive special attention. More effective measures including incentives and assured supply of raw material and power would be provided to induce the entrepreneurs to occupy sheds in the rural and backward areas. It would also be necessary to provide common service facilities, technical guidance, etc., to make a success of rural industrialisation programmes.

Powerlooms

12.71 During the Sixth Plan, the Production of powerloom cloth is expected to increase from 3450 million metres in 1979-80 to 4300 million metres in 1984-85 including cotton, artsilk and blended fabrics. With regularisation of unauthorised powerlooms, the loomage as at the end of December, 1979, is estimated to have gone up to 4.83 lakhs. The increase in production would be achieved primarily through fuller utilisation of the existing capacity.

12.72 Under a Central scheme, six Technical Service Centres are functioning in different parts of the country. It is proposed to set up 16 new Centres during 1980—85 in a phased manner in various parts of the country depending on the concentration of looms. The functions of these Centres are diversification of production and design development, improvement in the quality of fabrics, training of weavers in maintenance of powerlooms, and collection of statistics. The schemes included in the State Plans mainly relate to creation of processing facilities and assistance to cooperatives in various forms.

Subsidies

12.73 Over the period certain subsidies and differential tax rates have been given in favour of the village and small industries sector from the point of view of protecting and promoting the growth of employment-oriented production in the decentralised sector. While fiscal concessions are subjected to periodical review, as to whether those have served the purpose and also their cost benefit to the society, other subsidies like rebate on sale of the products of the decentralised sector and interest subsidy etc. have been continued without any such review.

12.74 While the volume of subsidies being given to different village and small industries is not alarming, it is considered necessary to review the various incentives as to the need for their continuance in the present or modified form in the context of changed conditions. Broadly speaking, the programmes of development during the Sixth Five Year Plan period as outlined in the Chapter would make the village and small industries sector somewhat more viable and may facilitate some reduction in the nature and quantum of subsidies. It is, however, realised that subsidies would need to be provided selectively keeping in view the economic status of the beneficiaries, and capital subsidies would be preferred wherever possible over subsidies of a recurring nature.

Monitoring and Evaluation

12.75 The programmes taken up in the village and small industries sector are mainly promotional in nature rather than being project-oriented as in large and medium industries etc. The public sector outlay in the VSI sector plays the role of a catalyst to generate investment, employment and output in the private sector. It has been realised that there have been significant gaps in planning and implementation of VSI programmes on account of various factors including the inadequacy of data base, poor monitoring and evaluation and information system. As regards inadequacy of data, the steps being taken and those proposed to be taken have been referred to earlier. As for monitoring and evaluation and information system, it has been noted that a large number of promotional schemes have been in operation for more than a decade or so and have not been subjected to any proper evaluation nor any monitoring of progress or identification of impediments in their implementation has been undertaken. Only recently some of the implementing agencies have set up monitoring cells but those are yet to become fully functional.

12.76 In the Sixth Five Year Plan, the thrust of efforts would be to monitor and evaluate the major programmes and policies so as to identify and remove constraints which impede progress. The concerned all-India organisations would take suitable steps for effective monitoring and periodic evaluation of the programmes to assess the impact of various measures taken for the promotion of these industries.

Annexure 12.1

Sixth Plan Outlays : Village and Small Industries—State/Union Territories

(Rs. lakhs)

Sl. No.	States/Union Territories	Outlay
States :		
1	Andhra Pradesh	3000
2	Assam	3000
3	Bihar	4700
4	Gujarat	6150
5	Haryana	1946
6	Himachal Pradesh	905
7	Jammu & Kashmir	3470
8	Karnataka	7400
9	Kerala	4980
10	Madhya Pradesh	3340
11	Maharashtra	6026
12	Manipur	1250
13	Meghalaya	400
14	Nagaland	500
15	Orissa	2700
16	Punjab	2061
17	Rajasthan	1950
18	Sikkim	360
19	Tamil Nadu	8000
20	Tripura	850
21	Uttar Pradesh	12523
22	West Bengal	6000
	TOTAL (States)	81511
Union Territories :		
23	Andaman & Nicobar Islands	100
24	Arunachal Pradesh	275
25	Chandigarh	60
26	Dadra & Nagar Haveli	55
27	Delhi	2564
28	Goa, Daman & Diu	250
29	Lakshadweep	30
30	Mizoram	400
31	Pondicherry	460
	Total (U.Ts.)	4194
	Grand Total	85705

MANPOWER AND EMPLOYMENT

One of the principal objectives of the Sixth Five Year Plan is the progressive reduction of unemployment in the country. In order to frame appropriate policies and programmes in different economic sectors towards realisation of this objective, a realistic appreciation of the nature and magnitude of the problem in all its ramifications is essential. An attempt has been made in this Chapter to obtain labour force projections for the base and terminal years of the Sixth Plan and to examine in some detail the main aspects of employment and unemployment situation based on the latest available data. Suitable policy measures are then proposed. Estimates of employment likely to be generated as a result of the Plan allocations and policies and programmes are also presented. Special attention has been paid to women and educated manpower both in the analysis of the existing employment market and formulation of suitable policies for them. The section on 'New Deal for the Self-Employed' enumerates the various measures by the Government to help persons who desire to take up self-employment ventures.

LABOUR FORCE, UNEMPLOYMENT AND EMPLOYMENT

13.2 In the next few sections, the concepts and definitions of various measures under discussion are presented and the broad characteristics of unemployment and employment analysed.

Concepts and Definitions

13.3 In the light of long experience in field surveys and the recommendations of the Committee of Experts on Unemployment Estimates set up by the Planning Commission in 1969 (Dantwala Committee), the National Sample Survey Organisation (N.S.S.O.) has developed and standardised the concepts and definitions of labour force, employment and unemployment suitable to our socio-economic conditions and adopted them in quinquennial surveys on employment and unemployment since 1972-73 (27th Round). The various estimates are based on three concepts namely, Usual Status, Weekly

Status and Daily Status. These are explained below:—

(i) *Usual Status Concept*: This concept is meant to measure the usual activity status—employed or unemployed or outside the labour force of those covered by the survey; thus the activity status is determined with reference to a longer period than a day or a week*.

(ii) *Weekly Status Concept*: Here the activity status is determined with reference to a period of preceding 7 days. A person who reports having worked at least for one hour on any day during the reference period of one week while pursuing a gainful occupation was deemed to be employed. A person who did not work even for one hour during the reference period but was seeking or available for work was deemed to be unemployed.

(iii) *Daily Status Concept*: Here activity status of a person for each day of the preceding 7 days is recorded. A person who worked at least for one hour but less than four hours was considered having worked for half a day. If worked for four hours or more during a day, he was considered as employed for the whole day.

Labour Force

13.4 Labour force is estimated on the basis of usual status participation rates. Estimates of participation rates for different age groups for male and female and for rural and urban areas have been provided by the N.S.S. surveys on employment and unemployment during 1972-73 (27th Round) and 1977-78 (32nd Round). Assuming that the participation rates provided by the N.S.S. 32nd Round (1977-78)** would not have undergone any significant change and applying them to the corresponding official population projections furnished by the Registrar General of India, the sex-residence labour force projections for March 1980 and 1985 are shown in Annexure 13.1. For the age-groups 5+, 15+ and 15-59, the all India labour force projections are as follows:

*The period of reference in the NSS 27th Round was a long period spanning over the past and future; the period was restricted to the preceding 365 days in the NSS 32nd Round (1977-78).

**The NSS 32nd Round participation rates excluded certain marginal workers (persons engaged in domestic duties and in addition engaged in free collection of fire-wood, vegetables, cattle-feed etc., and weaving, tailoring etc.). This has significantly brought down rural female participation rates as compared to N.S.S. 27th Round.

All the results quoted from NSS 32nd Round are provisional.

Table 13.1
Labour Force

Age-group	Labour Force		Annual Increase
	1980 (March)	1985 (March)	
	(millions)		(Percent)
5+	268.05	302.29	2.43
15+	251.41	285.07	2.55
15-59	236.95	268.22	2.51

These projections show that the labour force would grow at an annual growth rate of 2.43 per cent to 2.55 per cent during the Sixth Plan.

13.5 In addition to the above estimates of labour force there is a sizable population which is economically active in the subsidiary occupations. Applying the relevant rates of the NSS 32nd Round to the corresponding population figures, the number of subsidiary workers in March 1980 is estimated at 24.09 million. This group is dominated by women who constituted nearly 87 per cent of it.

13.6 The quantitative growth in labour force has gone along with qualitative improvement. The two surveys N.S.S. 27th and 32nd Rounds have brought out that the literacy level of labour force has been growing at an average rate of about 1 per cent per annum between 1972-73 and 1977-78—males from 46.3 per cent to 51.6 per cent and females from 10.7 per cent to 15.5 per cent.

Unemployment Estimates

13.7 Estimates of unemployment are available on the basis of the three concepts mentioned above (Usual Status, Weekly Status and Daily Status). Usual status unemployment refers to relatively long term unemployment *i.e.* chronic unemployment and is measured in numbers (of persons). This measure is more appropriate to those in search of regular employment (*e.g.* educated and skilled persons) who may not accept casual work. The weekly status and daily status unemployment estimates bring out the seasonal and part time unemployment and under-employment effectively. These represent the average number of persons unemployed per week and per day respectively during the survey period. Daily status unemployment is considered to be the most inclusive and significant indicator of the magnitude of unemployment.

13.8 Assuming that the rates of unemployment observed in the N.S.S. 32nd Round would not have changed, the estimates of unemployment in 1980

according to the three concepts for different age-groups are as follows:

Table 13.2
Estimated Unemployment in March 1980

Concept	Unemployment in March 1980		
	(5+)	(15+)	(15-59)
(1)	(2)	(3)	(4)
	(millions)		
Usual Status	12.02	11.42	11.31
Weekly Status	12.18	11.64	11.36
Daily Status	20.74	19.77	19.17

Some of the salient findings based on the NSS 32nd Round analysis of unemployment by age-group, educational level and household type are reviewed below.

13.9 Usual status unemployment estimates noted above take account of only the principal activity of the individuals; but some of them might have had subsidiary occupations. Applying the NSS 32nd Round rates, it would seem that out of the 12.02 million unemployed persons in March 1980, 4.19 million were having some gainful subsidiary work. Further, analysis by age-group showed that three-fourths of Usual Status unemployment was concentrated in the fresh entrants (age group 15-29) to the labour force. The unemployment rates were higher in urban areas and higher for women. (Details are given in Annexure 13.2 at the end of the Chapter).

13.10 Only weekly status estimates of unemployment are available by education levels and age-groups. Focussing attention on the young entrants (aged 15-29) to labour force, the following table illustrates their initial absorption problem analysed by general educational attainments:—

Table 13.3
Distribution of youth labour force and Unemployment by education levels

Education level	Percentage share in		Rates of unemployment
	Labour force	Unemployment	
(1)	(2)	(3)	(4)
	(Percentage)		
Illiterate	48.9	25.0	3.97
Primary & Middle	39.6	41.8	8.17
Secondary	8.8	23.8	21.05
Graduates and above	2.7	9.4	26.97
TOTAL	100.0	100.0	7.75

This shows that the young educated category (Secondary and above) constituted 11.5 per cent of the total young labour force, but accounted for one-third of the total unemployment.

13.11 The Plan programmes like NREP, IRD, SFDA etc. are oriented to approach the beneficiaries through households. An assessment of the employment and unemployment situation by household type would also be helpful in according priorities to selected target groups. The NSS 32nd Round (1977-78) had analysed the daily status unemployment situation for a limited classification of household types (Annexure 13.3). A significant finding that emerges from the analysis is that the rural agricultural labour households covering about 21.2 per cent of the all India population accounted for 46.7 per cent of the total daily status unemployment. The unemployment rates were the highest in labour households. Self-employed households (whether in agricultural or non-agricultural occupations) had both the lowest rates and shares of unemployment. Apart from variation between households, there was also considerable variation in the incidence of unemployment between regions. The table in Annexure 13.4 presents the state-wise picture of unemployment rates and shares in labour force and unemployment all based on daily status concept.

Unemployment in 1972-73 and 1977-78

13.12 Usual status unemployment rates between NSS 27th Round (1972-73) and 32nd Round (1977-78) are not strictly comparable because of the change in the reference period. Though the concepts and definitions of weekly status and daily status remained unchanged between the two Rounds, the change in coverage of labour force (*i.e.* exclusion of certain marginal workers in the 32nd Round who were included in the 27th Round) has affected their comparability, particularly in the case of rural females category which has in turn affected the aggregate (rural/female/all-India) rates of unemployment. Assuming that the categories other than rural female are roughly comparable over the two Rounds for data based on daily status and weekly status, it is observed (Annexure 13.5) that there was a slight deterioration in the unemployment situation between 1972-73 and 1977-78.

Employment Profile

13.13 Employment data on a reliable and regular basis are available for relatively large establishments, which may be called 'organised sector' for this purpose. However, this covers only a small fraction of the total work-force. The employment in this sector in 1967-68 was 18.8 million and has been rising at the rate of about 0.8 million per year (growth rate of 3.4 per cent) to reach 27.3 million in 1978-79 (Annexure 13.6). It is expected to have reached 28.3 million in March 1980.

13.14 The NSS 27th and 32nd Rounds have analysed the composition of workers by employment status (Annexure 13.7). Certain shifts in the pattern of employment between 1972-73 and 1977-78 are apparent from a comparison of the two sets of results*. Notably, the proportion of casual labour in agriculture has increased along with a reduction in self-employment in agriculture; the share of regular salaried/wage employment for urban males has come down while urban females have a reduced proportion in self-employment in non-agriculture; and both sexes in urban areas have increased shares as casual labour in non-agriculture. These shifts could indicate the changing pattern of land holding, pressure of population on land and employee-employer relationship in agriculture and outside agriculture. In the light of the finding that labour households suffer from higher rates of unemployment (Annexure 13.3), these shifts could themselves be a cause for the increase in overall unemployment rates.

13.15 The sectoral distribution of male and female workers in 1972-73 and 1977-78 based on the usual status data of NSS can be seen in Annexure 13.8. Data pertaining to female workers are not strictly comparable due to change in the coverage of certain marginal workers. The Annexure shows that the proportion of male workers in agriculture declined during this period while there was a marginal increase in trade and manufacturing.

Perspectives for the Sixth Plan

13.16 Projections of labour force in 1980 and 1985 (Para 13.4) and estimates of usual status unemployment in 1980 (Para 13.8) reveal the overall magnitude of employment to be generated during the Sixth Plan. These broad dimensions are indicated below:

Table 13.4

Backlog of Unemployment 1980 and Net additions to labour Force 1980-85 (Usual Status basis)

Age-group	Backlog 1980	Net addition 1980-85	Total
(1)	(2)	(3)	(4)
		(Millions)	
5 +	12.02	34.24	46.26
15+	11.42	33.66	45.08
15-59	11.31	31.27	42.58

*Rural female category is not strictly comparable due to change in the coverage of certain marginal workers.

The backlog here takes note of only the long term unemployment; in addition, there would be seasonal unemployment and part-time under-employment prevalent largely in labour households. It is an objective of the Plan to expand educational facilities for children and as these facilities are made use of, it would be appropriate to expect a decline in the backlog of children counted as unemployed as also in the net addition to labour force in the age-groups below 15 years.

13.17 At the present rate of growth, the organised sector can provide only four to five million regular additional jobs in the course of the Sixth Plan period. This would still leave large numbers for absorption in agriculture, small scale sector and other unorganised activities. While as a long term strategy we may rely upon the secondary and tertiary sectors for sustaining a greater labour absorption, appropriate short term measures are essential in order to mitigate distress resulting from conditions of unemployment and under-employment.

Educated manpower : Employment situation

13.18 The gravity of the unemployment situation as a whole has been brought out earlier. To find meaningful solution to this complex problem there has to be disaggregated examination of its different segments. It is hence necessary to examine the problems of educated unemployment separately. The educated manpower in this context refers to those persons who have obtained at least a matriculation or a higher secondary certificate. The unemployment rates in this category specially in the younger group (15-29) have been relatively high for sometime and an equilibrium between the growth of educated labour force and employment opportunities has not been reached. The former is related to the demand for education which remains high because the private cost of education is low and a higher level of education is generally associated with "better" employment, higher level of income and better status in society. Many who would like to start working after secondary school find that they are neither able to get jobs nor are fit for self-employment. Thus they continue with higher education not because of a strong academic urge but rather because there is not much else they can do.

13.19 Even though the educated manpower currently accounts for only 10 per cent of the total labour force (age group 15-59), the problem of unemployment of this segment of the population looms large in any discussion on employment and unemployment because of the investment by the society of considerable sums of money in their education and training. Also, their problem is different from that of uneducated manpower because of the need for proper utilisation and matching of jobs with qualifications and expectations in their case.

13.20 The unemployment problem is most acute among educated persons who are relatively young and belong to the age group 15-29, probably because they are relatively inexperienced and have expectations

of jobs with adequate security. The predominance of unemployment among 15-29 age-group is borne out by the provisional usual status unemployment data thrown up by the 32nd Round of the National Sample Survey and presented in Annexure 13.2.

13.21 Though the educated youth (15-29) constituted 11.5 per cent of the corresponding labour force, they accounted for 33.2 per cent of the total unemployment—23.8 per cent at the secondary level and 9.4 per cent at the level of graduates and above. About three-fourths (73.8 per cent) of the total educated unemployed youth were men. About 45 per cent were in rural areas.

13.22 An analysis of long-term unemployment for the entire labour force by education level would better illustrate the overall magnitude of the unemployment among educated. The preliminary results of the 32nd Round of the National Sample Survey (1977-78) indicate that the rate of usual status unemployment rose progressively from 2.28 per cent in the case of illiterates to 3.61 per cent at the primary level, 15.15 per cent at the secondary level and 15.76 per cent at the level of graduates and above. The Live Register statistics of Employment Exchanges also indicate that more than 50 per cent of the job-seekers are educated. All this perhaps indicates that there has been mis-match between job expectations generated by the education system and actual job opportunities provided by the developmental system.

13.23 The estimates of total stock of educated manpower denoted as matriculates and graduates and above (MGP) in 1980 and 1985 are presented in Annexure 13.9. The economically active population in each of the 16 educated categories has been estimated and the number of unemployed in each category computed. There is likely to be an increase in total stock of MGP from 34.76 million to 46.60 million between 1980 and 1985. Matriculates account for nearly 80 per cent of the stock. Of the total increase of 11.84 million MGPs over five years, new matriculates will be 9.21 million and new graduates 2.63 million.

13.24 All matriculates and graduates are not economically active. In particular, matriculates and graduates going for higher education or otherwise not actively seeking jobs (e.g. women in some classes/areas) are not counted as members of the labour force. It is estimated that the number of economically active matriculates and graduates and above will rise from 22.66 million to 30.37 million between 1980 and 1985. Thus, though the total MGP stock will rise by 11.84 million in the Plan period, there will be an increase of only 7.71 million in the active MGP.

13.25 According to the 32nd Round of the National Sample Survey, the unemployment rates for matriculates and for graduates and above were 15.15 and 15.76 per cent respectively of the corresponding labour force. The 1980 estimates have been made on the assumption that there has not been any significant change in unemployment rates since 1977-78. In the

27th Round of the National Sample Survey (1972-73) these rates were, however, lower. The unemployment rates vary from category to category. They are low for engineering/medical/veterinary/commerce graduates as also for post-graduates but are rather high for engineering diploma holders and graduates in arts/science/education. Though the rate of unemployment of matriculates is not high as compared to those of general arts/science/commerce graduates, they constitute over 71 per cent of the total MGP unemployment because of their preponderance in the total labour force.

13.26 The number of unemployed matriculates and graduates and above at the beginning of 1980 is estimated to be 3.47 million (Annexure 13.9). If there is no further deterioration in the unemployment rate, this number is likely to go up to 4.66 million in 1985 due to the expansion of the educated labour force. This would imply the need for the creation of at least 6.52 million jobs over the Plan period. On the other hand, the total of backlog of unemployment and increase in labour force amounts to 11.18 million.

13.27 We can also try to extrapolate the growth in recorded (organised sector) employment in the recent past shown in Annexure 13.6. The increase from year to year has been around 0.8 million. Even if it is assumed that the future increase in employment in the organised sector is wholly taken by the educated persons alone we find that there is not enough room for the educated persons unless they are diverted either into self-employment or the absorptive capacity of the organised sector is increased substantially. The second alternative does not seem to be feasible leaving us the option of self-employment as the major mode of employment.

EMPLOYMENT POLICY

13.28 As has been noted above, the employment opportunities have not been adequate in the recent past either for the educated manpower or for the overall population. Even in terms of long term unemployment as indicated by the usual status estimates, the position has not been satisfactory. Therefore, the employment policy during the Sixth Plan has to meet the two major goals of reducing under-employment for the majority of labour force and cutting down on the long term unemployment. Though a lasting solution to these problems could be found only within the framework of a rapid and employment-oriented economic growth, suitable measures have also to be evolved in the short term in a co-ordinated way particularly for the benefit of the weaker sections.

13.29 In the context of a growing labour force (34 million over five years) and the mixed economy, the policy measures have necessarily to cover not only the direct employment generation in the public sector but also the entire gamut of economic activity in the public, co-operative and private sectors. Since the public sector employment accounts for only a small fraction

of the total employment and since there is no likelihood of its rising appreciably, the policy measures must seek to influence the private demand and utilisation of manpower in all sectors of activity. Therefore, emphasis will have to be placed on self-employment ventures both in agriculture, village and small industries and allied activities and in non-farm occupations. Such measures to encourage employment generation are discussed in subsequent sections.

13.30 Special attention is being given towards providing adequate outlays in agriculture and related activities as also irrigation. Several steps are being initiated to increase greater utilisation of labour in agriculture, animal husbandry, forestry, plantation crops, etc. The pace of mechanisation in agriculture will have to be carefully regulated so as to ensure that labour absorption is not adversely affected. A massive irrigation programme with a high component of minor irrigation is being included in the Plan and efforts would be made to improve the availability of agricultural inputs specially for small farms. For this purpose, the Integrated Rural Development Project has been extended to all blocks of the country from October 2, 1980. Irrigation tends to increase labour absorption per hectare through multiple cropping and mixed farming and small farms utilise more labour than large farms. More allocations are being made for small scale and Khadi and Village Industries since next to agriculture, this sector provides the largest number of jobs in the rural areas.

13.31 In the production of many goods and services, a given target can be reached by allocating production to the small scale or to medium/large scale units or to a mix of the two. In the Sixth Plan, it is proposed that wherever clear alternatives for production of goods or services are available, labour intensive technologies and processes must be preferred provided the productivity is not unduly affected. Also there is scope for ancillary units linked to large and medium units so as to secure for the small units advantages in quality control, marketing and standardisation. The employment impact of various programmes would be carefully considered and other things being equal, programmes/projects with higher employment potential would be given preference. An All-India Coordinated Research Project on technologies for landless labour families will be organised.

13.32 The Government is already committed to a policy of reservation and excise protection for the small scale, village and cottage industries where 834 items have been reserved for production exclusively in the small scale sector while 379 items have been reserved for exclusive purchases from small scale units. The list of items to be reserved and given excise protection is continuously under review. Two Committees have already made several recommendations for rationalising tax incentives to encourage labour intensive production. Effective measures will be adopted to enhance the productivity and competitive power of cottage, village and small scale industries so as to fully exploit their employment potential without loss of efficiency.

13.33 Some of the major plan programmes with significant employment potential (or otherwise benefiting the poor), details of which are given in the relevant Chapters, are listed below. The estimates of beneficiaries from each listed programme are tentative and since the same person could derive benefit from more than one programme, the figures are not additive:

- (i) The Integrated Rural Development Programme, now extended to all the blocks in the country, would benefit 3000 poor families in each block over the plan period by providing them work opportunities both in agricultural and non-agricultural occupations. Under this programme, the rural poor would also be provided with assets in the form of improved breeds of cattle, equipment and agricultural inputs. The enforcement of land ceiling legislation as well as the allotment of ceiling surplus land to landless labour families will be completed. In this way, it is expected that 15 million families would be benefited during 1980-85 and brought over the poverty line.
- (ii) The Operation Flood II Dairy Development Project envisages organisation of Dairy Federation and District Unions to ensure milk supply to the Metropolitan cities and towns with a population of more than one lakh. This project is expected to benefit about 8 million basically milk producing families during the Sixth Plan period. Other dairy development schemes would also benefit about 5 million additional families.
- (iii) Fish Farmers' Development Agencies will provide assistance to fisherman families for adopting modern agriculture techniques. In addition to traditional fisherman families, other landless labour families will also be trained in fisheries culture, both in inland and coastal waters. Thriving coastal communities engaged in the culture of prawns, oysters, mussels, eels, etc., and in growing casuarina, cashewnut and coconut will be fostered.
- (iv) In the Village and Small Industries Sector, there are numerous schemes to assist in the development of khadi, village and small industries, including handloom, handicraft, sericulture etc. These are expected to benefit an additional 9 million persons during the Sixth Plan period.
- (v) The National Rural Employment Programme (NREP) would cover all the blocks in the country and provide wage employment particularly during the slack agricultural season. This programme would generally cover those groups of persons who are not likely to be benefited by other sectoral plan programmes. It is expected that this

programme would generate about 300 to 400 million mandays of employment per year during the Plan period.

- (vi) Since the urban poor generally happen to be the unorganised labour who currently get employment only during a part of the year, it is envisaged that the various works for environmental sanitation, slum improvement, tree plantation, construction of houses for the economically handicapped people etc., would help to increase their income.
- (vii) Various components of the Minimum Needs Programme including water supply, health, roads and electrification of rural areas and elementary education, house sites for landless labourers, etc., are likely to generate considerable employment in construction industry. Such expansion of infrastructure and social services particularly in the rural areas would also generate substantial additional employment of an indirect nature.
- (viii) Under the National Scheme of Training Rural Youth for Self-employment (TRYSEM), 2 lakh rural youth would be trained every year to equip them for self-employment and would be helped to set up their own ventures through the block agency. Both individual and group self-employment enterprises will be promoted in the agriculture, industry and services sectors.
- (ix) State Governments of Maharashtra, Tamil Nadu, Madhya Pradesh and Karnataka are operating special employment schemes in the rural areas for the benefit of unskilled labour. Many State Governments are also implementing schemes for the benefit of educated unemployed by providing them training facilities, financial assistance and other incentives. These programmes will be further strengthened and expanded.
- (x) Under the Plan programmes for Scheduled Castes and Scheduled Tribes, a wide variety of income earning occupations will be promoted.

13.34 It has been noticed from time to time that though there is a general surplus of unskilled/semi-skilled labour in the entire country, there are pockets where temporary shortages of such labour induce a tendency to mechanise operations such as in farming and construction projects. It is a fact that if greater outward mobility was feasible, many areas would be able to bring down their rate of unemployment. A Working Group which looked into various proposals for balancing the supply of and demand for unskilled and semi-skilled labour in terms of areas, occupations and time had made various recommendations towards better use of institutions like Land Army, Labour-Cum-Development Bank, Construction Corporations and Border Roads Organisations. These recommendations would be considered and ways and means of promoting mobility of labour so as to utilize

potential for employment available in areas of labour scarcity would be explored.

13.35 Though the sectoral plan programmes would take care of work opportunities for both men and women it is necessary to pay special attention to women's employment. An awareness would therefore be created among the planners and development administrators about the employment of women in greater numbers without any bias relating to type of occupation. Modernisation of traditional occupations of women would be selective and would include simultaneous development of skills for alternative employment for them.

13.36 All agencies which are responsible for generating employment opportunities for women or training them for self-employment or wage-paid employment will need to monitor the share of women in the benefits provided particularly in respect of stipends, hostel facilities etc. At the district level, a suitably qualified person in the District Manpower Planning and Employment Generation Council will assess women's needs

for vocational training. Wherever Women Development Corporations have been set up their services will be utilised for promoting the employment of women.

13.37 As indicated elsewhere, employment in standard person-year terms in the entire economy is expected to go up from about 151 million to 185 million or an increase of about 34 million by the end of the Sixth Plan. These estimates of employment in standard person-year terms have been generally based on output levels achieved in 1979-80 and expected output levels in 1984-85 which have been related to labour absorption through labour co-efficients in particular sectors based on past data and experience. Though the increase in employment in standard person-years is about 34 million, the actual number of beneficiaries is expected to be much more since not every member of the labour force may be full-time worker during the entire year. The following table gives the employment generation and the rates of growth in five major sectors of the economy during the Sixth Plan period.

Table 13.5
Projected Growth of Employment 1979-80/1984

No.	Sector	Employment in million person years		Increase	Annual growth of employment (%)	Annual growth of	
		1979-80	1984-85			Value added (%)	Gross Output (%)
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Agriculture and allied	80.331	95.251	14.920	3.47	3.83	5.20
2	Mining	0.724	0.894	0.170	4.31	11.25	11.50
3	Manufacturing	22.012	27.759	5.747	4.75	6.50	7.62
4	Construction	9.286	11.321	2.035	4.04	5.10	7.10
5	Others (including services)	38.757	50.164	11.407	5.30	5.47	6.36
Total		151.110	185.339	34.279	4.17	5.20	

NOTE : An earlier exercise for the 1978-83 Plan Period had estimated higher employment generation figures for 1977-78 and 1982-83. This was mainly due to the assumption of unit employment/output elasticity between the year of the data base and the plan years. The present estimates take note of lower elasticities observed in many sectors. The utilisation of more recent data for different sectors as also the poor performance of the economy in 1979-80 contributed to the lower estimates of employment indicated here.

EDUCATED MANPOWER—POLICY FOR

13.38 The problem of unemployment among the educated should be viewed as a part of the total problem of unemployment and under-employment and the policy measures initiated should not result in merely reducing the unemployment of high level educated manpower at the cost of those who are less educated. Further, as the dimension and gravity of educated unemployment vary from State to State, a decentralised approach would be adopted based on the district employment plan described later.

13.39 Since it is not possible to have separate employment programmes exclusively for the educated manpower, those programmes which are likely to generate substantial employment opportunities for the educated have been analysed here. In particular, various programmes in the primary sector are found to have considerable potential for the educated. These include not only rural development but also agriculture, animal husbandry, fisheries and agro-forestry. Expansion of the extension system is one such important programme. It is estimated that when this programme covers all the States, about 25,000 additional village level workers will be required. Over and above this, another 32,000 will be employed in agricultural research. The Central schemes of agricultural census and farm management studies would provide additional employment to about 34,000 persons. The Operation Flood II has an employment potential of 167,000 persons by 1984-85 to be engaged in infrastructural support, technical input supply and milk processing operations. Most of these personnel are likely to be educated. Similarly, the inland fishery project would provide opportunities for 2,40,000 persons, many of whom are likely to be educated. Block level planning will also generate employment opportunities for the educated in work relating to survey, planning, monitoring etc.

13.40 The expansion of rural infrastructure and social services under the minimum needs programmes will also absorb a sizeable number of educated persons on a part-time or full-time basis. In particular, there would be greater scope for employment of various kinds of para-professionals specially para-medical staff to ensure the extension of services in rural/backward areas. Most of these opportunities would be of wage paid type.

13.41 Work opportunities for the educated people are, however, not confined to the above mentioned schemes with largely wage paid/regular employment. For example, even within agriculture and allied activities a large number of matriculates and degree holders would be utilised in the farming operations, dairies, fisheries and other projects. The number of such self-employed secondary passed persons was substantial in 1977-78 and would surely pick up during the Sixth Plan. Processing, marketing and trade operations will need increasingly growing numbers of educated persons. The commercial banks under their schemes of providing credit to at least two additional persons per branch every month are likely to cover almost 39 lakh per-

sons by 1984-85. The District Industries Centres and the various Public Sector Corporations would also be involved in assisting the educated people to set up self-employment ventures. The education and training systems would promote self-employment and the Industrial Training Institutes (ITIs) would be revamped to involve them in training for self-employment and making their existing training programmes production oriented. This would include preparation of the project profiles, market research and tying up of credit needs etc.

13.42 However, it seems clear that even if these programmes generate employment as per expectations, unemployment would not be eliminated within the Sixth Plan unless efforts are immediately made to make the current unemployed more employable through short-term training/vocational programmes and special employment programmes are directed towards their absorption. Efforts would be made, in particular, to divert matriculates, who form the bulk of the educated unemployed, to non-clerical occupations and self-employment. Concurrently steps will be taken to link education, employment and development in a virtually supportive manner.

A NEW DEAL FOR THE SELF-EMPLOYED

13.43 The bulk of the labour force is in the unorganised sector with a preponderance of self-employment since the absorptive capacity of the organised sector is extremely low. In fact, the trends in recent years indicate that only about 12 per cent of the increase in the labour force is absorbed in the organised sector. The remaining members of the labour force will have to seek employment in agriculture and allied sector and in non-farm activities, characterised by a high degree of under-employment and self-employment.

13.44 The provisional results of the 32nd Round of the NSS indicate that the majority of the work force (58.1 per cent) were self-employed, mostly in agricultural activities. Only 15.8 per cent of the workers were engaged in regular wage paid employment and 25.9 per cent were casual labour. The details of the work force in rural and urban areas by employment status are given in Annexure 13.7. Annexure 13.10 gives industry-wise distribution of the educated self-employed workers.

Policy Measures

13.45 Since only a small proportion of the increase in labour force will be taken care of by the organised sector, it will be necessary to make a determined effort to promote self-employment for ensuring a progressive reduction in the incidence of poverty and unemployment.

13.46 The main areas in which public institutions can provide assistance for self-employment are training, credit, marketing and general guidance about the various facilities available to the people for starting their own ventures for organising relevant services.

Training Programmes

13.47 To make self-employment a success, not only should requisite training be organised on a massive scale but necessary facilities for running a self-employment unit should also be provided. Such facilities will have to be particularly provided to matriculates, who form the bulk of the educated unemployed. The existing ITI training which is mostly oriented for the service sector will be revamped to make it self-employment and production oriented. The areas having potential for self-employment for ITI trainees will be identified, orientation courses organised, project profiles prepared and credit needs tied up. The training programmes in ITIs and other institutions will be enlarged to include project formulation as an essential part of the curriculum along with management, accounting and marketing.

13.48 The National Scheme of Training Rural Youth for Self-employment (TRYSEM) will provide short training courses to the rural youth and give them incentives to set up their own ventures. Other training facilities available through different Boards like the Handicraft Board, Dairy Development Board etc. would be expanded. Post-training tie-up would also be provided through a package of assistance for promoting self-employment. Linkages will be maintained between the trainees and training institutions until the trainees become self-reliant.

Credit Facilities

13.49 The existing margin money scheme does not cover self-employment ventures set up in sectors other than village and small scale industries. A new scheme on the model of the existing margin money scheme will need to be taken up to encourage self-employment in sectors such as agriculture and allied activities, trade, transport and other ventures. Commercial Banks have already set the goal of providing credit to at least two additional persons per branch every month, the benefit of which will largely accrue to the educated unemployed. Special facilities will be provided to the home based units to obtain suitable machinery and hand tools, etc. on easy terms. In this endeavour full use will be made of the existing organisations like State Agro-industries Corporation, Leather Development Corporation, Handloom Development Corporation, Handicrafts Board, Forest Development Corporation, etc.

Marketing Facilities

13.50 A large number of cottage and village industries rely on middle men or otherwise face problems of marketing. Steps will be taken for the setting up of suitable producer-oriented marketing organisations and strengthening the existing ones. These organisations will be responsible not only for marketing the products of small scale units but also for carrying out market intelligence and other surveys, quality control, standardisation of products and active sales promotion. Arrangements would also be made for the timely

supply of essential raw material to the self-employed persons including petty traders and vendors. Training facilities in designs based on consumer preference and marketing management would also be provided.

Guidance

13.51 Many unemployed persons are not aware of the various facilities available for starting their own ventures. It is, therefore, necessary to give wide publicity to the facilities that are being provided by Government, as well as by public, cooperative and private sector enterprises in the matter of training, credit and marketing facilities. For this purpose University Employment Bureaus and Employment Exchanges would be strengthened to make them also centres for dissemination of information on and registration for self-employment and for providing such registrants guidance in various ventures. It would be ensured that the information on and application forms for various facilities admissible for self-employment are available at one place. The help of mass media will be enlisted in this task.

Other Measures

13.52 A large number of urban self-employed consist of petty vendors, traders, hawkers, repairers and home-based producers. The following steps will be taken to assist such persons:

- (i) Municipal authorities and Town Planning Organisations will survey the population of self-employed workers in their respective areas by occupation and determine their basic minimum needs with regard to production, transport and sale of commodities.
- (ii) Specific attention will be paid to provide work sheds within industrial estates to the small self-employed, especially women and handicapped persons at suitable places. Separate handicraft estates may also be organised in big cities and towns for women and physically handicapped.
- (iii) There is often no specific provision for providing capital or institutional marketing support to such persons. Like the Development Boards for village and cottage industries, Advisory Boards for the self-employed workers like petty vendors, traders etc. will need to be set up to help formulate suitable policies and ensure minimum facilities for them.
- (iv) Possibilities of industrial home work, geared to industries particularly export industries which will provide employment to women and the handicapped at their door step will be explored, and
- (v) The problems faced by the self-employed urban poor will be kept under continuous monitoring so that timely and appropriate assistance can be given.

DECENTRALISED STRATEGY FOR MANPOWER PLANNING AND EMPLOYMENT GENERATION

13.53 Human resource development achieves its full expression through the provision of opportunities for gainful employment to all citizens. Poverty persists under conditions where the human resources are undervalued and material resources are over-valued. The primary objective of planned development should, therefore, be the provision of work opportunities to all. Education, employment and development should become catalysts of each other and should lead to the improvement of quality of life both in rural and urban areas. Manpower planning and employment generation programmes would, therefore, receive more detailed attention during the Sixth Plan period. All the three major components of the human resource development strategy, viz., effective implementation of the minimum needs programme, employment generation and the voluntary adoption of the small family norm will be suitably integrated in the household approach to the alleviation of poverty and destitution.

13.54 So far, the problems of unemployment and under-employment have been analysed by and large at a macro-level, such as several special programmes for employment. However, these have neither made the necessary dent on the problem nor have been relevant in operational details to specific socio-economic and socio-cultural conditions. It is, therefore, necessary that a disaggregated approach is introduced to find meaningful solutions to this complex and challenging problem. For this purpose it is proposed to organise during the Sixth Plan period in all the districts of the country a *District Manpower Planning and Employment Generation Council* with appropriate professional staff support. While the precise composition of the Council could vary from State to State or even within a State, the following four groups should find representation on such a Council:—

- (a) Peoples' representatives like the MLAs and MPs from the district;
- (b) Suitable professional experts from local educational, research and credit institutions who can help in identifying economically viable avenues of employment in agriculture and industry and in the organisation of services;
- (c) Voluntary agencies; and
- (d) Administrative Departments connected with development.

13.55 The District Manpower Planning and Employment Generation Council will have to be assisted by the District Employment Exchange, District Industries Centre, District Agricultural Office, lead bank and those connected with the organisation of services in preparing a portfolio of opportunities for salaried, self and wage employment during the Plan period.

13.56 While it will be easy to assess the number of salaried positions that may become available both in the public and private sectors, and while estimates of the potential for wage employment under the various Plan projects as well as under NREP can be made, the difficulty will lie in assessing the opportunities for gainful self-employment. This is where the maximum technical and professional input from Universities, research institutes, and credit institutions will be necessary. Based on an analysis of the manpower needing jobs and opportunities available for salaried, wage and self-employment, a suitable strategy will be designed for launching a minimum of "one job per family" programme. The District Manpower Planning and Employment Generation Council should also stimulate the organisation of relevant skill upgradation and training programmes, particularly in areas where there are critical gaps in available competence. This will enable employment generation to be based on the scientific utilisation of local resources. This exercise will be particularly important in tribal, hill and other economically backward areas.

13.57 The Council should also prepare a manpower budget for the district. This will entail working out the employment implications of Government schemes and programmes, thereby instilling employment consciousness in district level functionaries who will come to assess Government programmes in terms of their employment benefits, among other things and the contribution they will make to bridging the unemployment gap. An excellent indicator of progress on the employment front is the movement of real wages over time. If the labour market tightens, one would expect wages to go up. The Council might, therefore, keep a watch on wages, especially agricultural wages. By doing so it will draw attention to the fact that the concept of full employment has several dimensions. Not only must it promote a full utilisation of surplus and idle labour time, but it should also ensure that the productivity and earnings of time devoted to labour are maximised.

13.58 Employment Exchanges in the country can become nodal agencies for providing the necessary data input in the work of the District Manpower Planning and Employment Generation Council. There are at present 632 Employment Exchanges including University Employment Information and Guidance Bureaux, Project Employment Exchanges, Colliery Employment Exchanges, Special Employment Exchanges for Handicapped, Professional and Executive Offices and Plantation Exchanges. The three broad functions of the Employment Exchanges have so far been: (i) registration and placement of job seekers, (ii) rendering vocational guidance and career advice services; and (iii) collection and dissemination of manpower data. While the placement activity of the Employment Exchanges has been their important function, it has not been possible to provide all the persons registered with suitable jobs. Since it is clear that the only immediately feasible method of providing at least one job per family is through an integrated attention to salaried, self and wage-employment, it is

necessary to re-structure the Employment Exchanges in such a way that they can render a more effective service in assisting those seeking opportunities for self-employment.

13.59 For this purpose, the Vocational Guidance Officers in the Employment Exchanges will be equipped to assist young men and women to enter suitable self-employment professions. Those registering at the Employment Exchanges will be requested to fill two different forms: (i) the existing form for suitable jobs, and (ii) a new form which will seek information on the area of self-employment of interest to the candidate. The filling of the self-employment form will be voluntary and the choice of the field will also be according to the aptitude and preference of the candidate filling the form. All the forms relating to self-employment will then be analysed and classified according to (a) land and water based occupations (*i.e.*, agriculture, horticulture, animal husbandry, fisheries and forestry), (b) small and village industries including agro-processing and other areas of post-harvest operations, such as packaging, forwarding and marketing, sericulture, apiculture etc. and (c) organisation of relevant services such as farmers agro-service centres, repair and maintenance of farm equipment, marketing etc. On the basis of an analysis of the preferences of candidates and of possibilities in the district, suitable arrangements will be made to provide the necessary training and to secure the needed credit and other facilities which will help the youth to launch on a career of self-employment. The District Manpower Planning and Employment Generation Council should identify the avenues of self-employment which are sound from the point of view of their cost, return and risk structure. Where a group of young men and women have indicated preference for the same field of self-employment, such as poultry or fish farming, sericulture, etc., efforts should be made to promote group self-employment. If a group of boys and girls are willing to join together to run a group enterprise training should be imparted to each member of the group in a specific area of the enterprise. For example, one or two persons can be trained in the production aspects, while others could be trained in the sales and marketing aspects of the enterprise. Thus each member of the group will bring in complementary skills and know-how so that the team as a whole has a balance in terms of its production capability and marketing skill. Unfortunately, so far no systematic attempts have been made to promote in a scientific

manner group self-employment. Even where attempts have been made, they have by and large, tended to relate to individual self-employment. The greatest opportunity for viable self-employment lies in groups of youth running together suitable commercial or service enterprises with a high management efficiency. The opportunities for providing relevant services to small and marginal farmers as well as rural artisans are great.

13.60 The role of the Employment Exchanges in the field of self-employment will be: (a) collecting the relevant data, and (b) providing staff support to the District Manpower Planning and Employment Generation Council. All University Employment Guidance Bureaux will also be strengthened so that they can assist not only the students of the respective university in getting suitable placement but also all the youth in the area where the educational institution is located.

13.61 A National Level Guidance Committee for organising this work on a systematic basis will be set up. Similarly the State Planning Boards could set up State Level Committees so that all the families in the State are assisted to have a reasonable income through the available opportunities for salaried, self and wage-employment. Based on the experience gained during the Sixth Plan, the manpower planning and employment generation work can be organised during the next Plan. This will help to link strategies for employment generation and resource utilisation at the local level in a more meaningful manner. Such a decentralised approach will also help to provide specific attention to special problems such as women's employment and alternative job opportunities for those displaced from traditional work due to modernisation (*e.g.*, civic sanitation work, hand-driven rikshaws, etc.). The District Manpower Planning and Employment Generation Council should develop the capacity to get 'employment impact' statements prepared with regard to every major development and modernisation project, both in public and private sectors, so that development can be channeled in directions which can help all citizens to earn their daily bread.

13.62 Finally, linkages between the District Manpower Planning and Employment Generation Councils with the local educational and training institutions should help in bringing about a proper match between admission policies and course-curriculum organisation on the one hand and employment opportunities and skill requirements, on the other.

Annexure 13.1

Labour Force in 1980 and 1985

Sl. No.	Category	Labour Force		Annual Growth Rate (1980-85)
		1980	1985	
(0)	(1)	(2)	(3)	(4)
		(million)		(%)
1	Rural Male	149.24	166.22	2.18
2	Rural Female	66.69	74.35	2.20
3	Rural	215.93	240.57	2.19
4	Urban Male	42.08	49.72	3.39
5	Urban Female	10.04	12.00	3.61
6	Urban	52.12	61.72	3.44
7	Male	191.32	215.94	2.45
8	Female	76.73	86.35	2.39
9	All India	268.05	302.29	2.43

Note : Labour force projections in 1980 and 1985 are obtained by applying the N.S.S. 32nd Round age-groupwise sex-residence Usual (Principal) Status participation rates to the corresponding official population projections for March 1980 and 1985.

Annexure 13.2

Usual status unemployment rates by residence, sex and age-group during 1977-78

Sl. No.	Age Group	Rural male	Rural female	Urban male	Urban female	Rural	Urban	Male	Female	All
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		(Percentage)								
1	5-14	2.00	4.72	7.72	9.69	3.05	8.46	2.53	5.17	3.54
2	15-29	4.89	8.47	13.99	31.40	6.02	17.63	6.81	11.51	8.20
3	30-44	0.57	4.11	1.30	10.38	1.74	3.03	0.73	4.86	1.98
4	45-59	0.38	2.96	1.01	4.78	1.14	1.71	0.50	3.18	1.24
5	60+	0.31	1.97	1.53	2.21	0.64	1.66	0.48	2.00	0.78
6	All ages	2.22	5.52	6.48	17.75	3.26	8.77	3.07	7.01	4.23

Note : The rates are based on the N.S.S. 32nd Round Survey (1977-78). These are the percentages of unemployed (Principal Status) to the corresponding labour force.

Annexure 13.3

Analysis of daily status unemployment situation by household type based on N.S.S. 32nd Round (1977-78)

Sl.No.	Household Type	Percentage of population	Rate of unemployment	Percentage share of unemployment
(5)	(1)	(2)	(3)	(4)
			(Percentage)	
1	Rural	79.6	7.70	76.8
	1 Self-employed households			
	(i) in agricultural occupations	40.9	2.68	13.5
	(ii) in Non-agricultural occupations	8.4	5.49	5.6
	TOTAL	49.3	3.16	19.1
	2 Labour households			
	(i) agriculture	21.2	15.82	46.7
	(ii) others	5.2	12.73	8.2
	TOTAL	26.4	15.27	54.9
	3 Other households	3.9	8.80	2.8
11	Urban	20.4	10.34	23.2
	1 Self-employed in non-agricultural occupations	7.9	6.04	5.3
	2 Other households	12.5	13.14	17.9
	GRAND TOTAL (Rural & Urban)	100.00	8.18	100.0

Note : The figures relate to all ages 5 and above.

Annexure 13.4

Daily status unemployment rates by States 1977-78 based on N.S.S. 32nd Round

Sl.No.	States/UTs.	Unemploy- ment Rates	Share of State in All India Un- employ- ment	Share of State in All India Labour Force
(0)	(1)	(2)	(3)	(4)
			(Percentage)	
1	Tamil Nadu	15.59	16.48	8.65
2	Andhra Pradesh	10.67	12.37	9.49
3	Kerala	25.69	11.09	3.54
4	Maharashtra	7.99	10.16	10.41
5	West Bengal	10.15	9.08	7.33
6	Bihar	8.01	8.71	9.81
7	Uttar Pradesh	4.12	7.01	13.92
8	Karnataka	9.36	6.61	5.78
9	Orissa	8.13	3.81	3.83
10	Gujarat	6.24	3.80	4.99
11	Madhya Pradesh	3.09	3.21	8.50
12	Rajasthan	2.99	1.92	5.26
13	Punjab	4.82	1.34	2.27
14	Haryana	6.41	1.22	1.56
15	Delhi	10.96	1.10	0.82
16	Jammu & Kashmir	5.70	0.52	0.74
17	Assam	1.81	0.47	2.15
18	Goa	14.63	0.29	0.16
19	Pondicherry	22.62	0.20	0.07
20	Tripura	5.04	0.19	0.31
21	Himachal Pradesh	1.92	0.16	0.66
22	Manipur	2.00	0.04	0.18
23	Chandigarh	4.94	0.02	0.04
24	Arunachal Pradesh	0.35	0.01	0.11
25	Meghalaya	0.41	0.01	0.24
26	Nagaland	1.03	₹	0.01
27	All India	8.18	100.00	100.00

NOTE: (1) The data relate to all ages five and above.

(2) Totals of figures under Cols. 3 and 4 may not add up to 100 due to incomplete data in respect of Union Territories.

₹. Negligible.

Annexure 13.5

Daily status and weekly status unemployment rates during 1972-73 and 1977-78 based on N.S.S.
27th and 32nd Rounds

Sl. No.	Category	UNEMPLOYMENT RATES			
		Daily Status		Weekly Status	
		1972-73	1977-78	1972-73	1977-78
(0)	(1)	(2)	(3)	(4)	(5)
		(Percentage)			
1	Rural Male	6.84	7.12	3.03	3.57
2	Rural Female	11.17	9.18	5.53	4.13
3	Rural	8.21	7.70	3.89	3.74
4	Urban Male	8.02	9.41	5.97	7.12
5	Urban Female	13.63	14.55	9.18	10.92
6	Urban	9.00	10.34	6.55	7.86
7	Male	7.08	7.59	3.63	4.29
8	Female	11.43	9.86	5.90	4.97
9	All India	8.95	8.18	4.34	4.48

NOTE : The figures relate to all ages 5 and above.

Annexure 13.6

Recorded employment by Industry Divisions (as at the end of financial year)

Year	Agri- culture and Allied activi- ties	Mining and Quarry- ing	Manu- factur- ing	Elect- ricity Gas & Water Supply	Const- ruct- ion	Whole sale, Retail Trade and Hotels etc.	Trans- port, Stor- age and Communi- cations	Finan- cial and other Servi- ces	All Indus- tries
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(thousand)									
1967-68	1355	731	4362	391	902	2216	2413	6431	18801
1968-69	1376	711	4404	433	942	2217	2431	6575	19069
1969-70	1395	723	4547	446	949	2951	2475	6795	20281
1970-71	1416	697	4678	480	1021	3112	2540	7002	20946
1971-72	1417	715	4868	505	1081	3203	2565	7251	21616
1972-73	1449	789	5005*	539	1193	3345	2631	7601	22552
1973-74	1500	840	5141	524	1111	3451	2659	7932	23158
1974-75	1516	905	5409	547	1083	3623	2683	8137	23903
1975-76	1562	945	5661	571	1086	3604	2748	8367	24544
1976-77	1670	973	5866	598	1092	4069	2807	8575	25650
1977-78	1842*	953	6221	633	1081	4212	2874	8788	26604
1978-79	1980*	964*	6141*	668	1115	4402*	2974	9059	27303

SOURCES :

- (a) Employment figures for Tea, Coffee & Rubber plantations have been taken from Tea Board, Coffee Board and Rubber Board respectively.
- (b) Employment figures for non-coal mines have been taken from the Director General Mines Safety.
- (c) Employment figures in Manufacturing are taken from Annual Survey of Industries.
- (d) Employment figures in Trade & Hotels etc. are taken from Labour Bureau.
- (e) Employment figures in Railways are taken from Railway Board.
- (f) Employment figures in Posts & Tele-communication are taken from Directorate General of Posts and Telegraphs.
- (g) For rest of sectors, Employment Market Information figures have been taken.

*Estimated.

Annexure 13.7

Distribution of Workers by Employment status 1977-78 based on NSS 32nd Round
(Weekly status)

Sl.No.	Employment Status	Rural Male	Rural Female	Urban Male	Urban Female	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)
		(percentage)				
1	Bonded Labour	0.3 (NA)	0.1 (NA)	Neg. (NA)	Neg. (NA)	0.2 (NA)
2	(a) Self-employed in Agriculture	51.6 (53.2)	51.1 (55.3)	5.3 (4.5)	12.1 (11.1)	43.2 (45.4)
	(b) Self-employed in Non-agriculture	11.4 (11.6)	9.3 (12.0)	33.4 (32.9)	32.1 (37.9)	14.9 (15.6)
	(c) Self-employed, Total	63.0 (64.8)	60.4 (67.3)	38.7 (37.4)	44.2 (49.0)	58.1 (61.0)
3	(a) Regular salaried/wage employees in Agriculture	4.3 (6.3)	1.4 (2.3)	0.9 (0.9)	0.9 (1.0)	3.0 (4.2)
	(b) Regular salaried/wage employee in Non-agriculture	6.8 (6.2)	2.5 (2.2)	48.6 (52.3)	30.7 (29.6)	12.8 (12.6)
	(c) Regular salaried/wage employees, Total	11.1 (12.5)	3.9 (4.5)	49.5 (53.2)	31.6 (30.6)	15.8 (16.8)
4	(a) Casual labour in Agriculture	20.5 (17.5)	31.2 (23.0)	2.6 (2.7)	10.2 (9.9)	20.1 (16.6)
	(b) Casual labour in Non-agriculture	5.1 (5.2)	4.4 (5.2)	9.2 (6.7)	14.0 (10.5)	5.8 (5.6)
	(c) Casual Labour, Total	25.6 (22.7)	35.6 (28.2)	11.8 (9.4)	24.2 (20.4)	25.9 (22.2)
	Grand Total :	100.0	100.0	100.0	100.0	100.0

NOTE : The figures relate to age group (15-59). Corresponding NSS 27th Round (1972-73) results are shown in brackets; comparable figures for all ages five and above for both Rounds are not available.

NA : Not available.

Self-employed includes helpers in house-hold enterprises.

Neg. : Negligible.

Annexure 13.8

Industrial distribution of work force (Usual Status) during 1972-73 and 1977-78

Sl. No.	Industry	1972-73			1977-78		
		Male	Female	Total	Male	Female	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
		(percentage)					
1	Agriculture, Hunting, Forestry & Fishing	68.9	84.4	74.0	66.9	80.2	70.7
2	Mining & Quarrying	0.6	0.3	0.5	0.6	0.3	0.5
3	Manufacturing	9.9	6.5	8.8	10.5	8.6	10.0
4	Electricity, Gas and Water Supply	0.2	0.1	0.2	0.4	0.1	0.3
5	Construction	2.1	1.3	1.8	2.2	0.9	1.8
6	Trade, Restaurants and Hotels	6.5	2.2	5.1	7.4	3.0	6.2
7	Transport, Storage and Communication	2.6	0.1	1.8	2.9	0.2	2.2
8	Financing, Insurance, Real Estates and Business Services	0.7	0.1	0.5	0.7	0.1	0.5
9	Community, Social and Personal Services	8.5	5.0	7.3	8.4	6.6	7.8
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE : N.S.S. 27th and 32nd Rounds.

Annexure 13.9

Estimates of stock of Manpower, economically active and unemployment at the beginning of the years 1980 and 1985 and addition to the economically active persons during 1980—85

Sl. No.	Manpower Educational Category	At the beginning of 1980				At the beginning of 1985			
		Stock of Manpower	Economically active popn. (i.e. labour force)	Unemployed persons	Percentage of unemployed persons in labour force	Stock of Manpower	Economically active popn. i.e. labour force)	Unemployed persons	Addition to the economically active popn. during 1980—85
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(in thousands)									
1	Engineering degree holders (BE)	254.5	221.4	15.7(0.5)	7.09	306.1	266.3	18.9(0.4)	44.9
2	Engineering diploma holders	378.6	329.4	65.5(1.9)	19.88	494.1	429.9	85.5(1.8)	100.5
3	Medical Graduates (MBBS)	178.5	155.3	10.1(0.3)	6.50	211.9	184.3	12.0(0.3)	29.0
4	Dental Surgeons (BDS)	11.6	10.1	0.2(0.01)	1.98	13.4	11.6	0.2(0.00)	1.5
5	Nurses (B.Sc. Nursing)	2.2	2.2	..	..	2.8	2.8	..	0.6
*6	Agricultural graduates	98.8	77.1	8.8(0.3)	11.41	115.9	90.4	10.3(0.2)	13.3
*7	Veterinary graduates	22.3	19.4	0.7(0.02)	3.60	27.3	23.7	0.9(0.02)	4.3
8	Education graduates (B.Ed.)	852.7	665.1	104.2(3.0)	15.67	1136.7	910.4	142.7(3.1)	245.3
9	Arts graduates (B.A.)	1931.4	1506.5	337.9(9.7)	22.43	2597.6	2026.1	454.5(9.8)	519.6
10	Arts Post-Graduates (M.A.)	957.3	746.7	29.9(0.9)	4.00	1296.3	1011.1	40.4(0.9)	264.4
11	Science Graduates (B.Sc.)	961.9	750.3	154.3(4.4)	20.57	1226.3	956.5	196.8(4.2)	206.2
12	Science Post graduates (M.Sc.)	278.9	217.5	10.6(0.3)	4.87	350.0	273.0	13.3(0.3)	55.5
13	Commerce Graduates (B. Com.)	810.1	631.9	111.4(3.2)	17.63	1126.1	878.3	154.8(3.3)	246.4
14	Commerce Post graduates (M. Com.)	121.9	95.1	6.2(0.2)	6.52	176.3	137.5	9.0(0.2)	42.4
15	Other graduates	1249.6	974.7	153.6(4.4)	15.76	1654.2	1290.3	203.4(4.4)	315.6
	<i>Total Graduates and above including Diploma holders</i>	8110.3	6402.7	1009.1(29.1)	15.76	10735.0	8492.2	1342.7(28.8)	2089.5
16	Matriculate/Hr. Secondary passed	26650.5	16256.8	2462.9(70.9)	15.15	35860.3	21874.8	3314.0(71.2)	5618.0
	<i>Total Educated</i>	34760.8	22659.5	3472.0(100.0)	15.32	46595.3	30367.0	4656.7(100.0)	7707.5

Note :—Figures in parantheses in columns 4 & 8 indicate percentages to total.

*Includes post-graduates.

Annexure 13.10

Industrial distribution of educated (secondary and above) self-employed workers based on NSS 32nd Round (1977-78) (Weekly Status)

Sl. No.	Industry	Secondary					Graduate and above				
		Rural		Urban		Total	Rural		Urban		Total
		Male	Female	Male	Female		Male	Female	Male	Female	
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(Percentages)											
1	Agriculture, Hunting, Forestry and Fishing	49.28	1.64	3.05	0.25	54.22 (30327)	31.09	0.77	3.67	0.00	35.53 (4117)
2	Mining and Quarrying	0.04	0.00	0.02	0.00	0.06 (31)	0.07	0.00	0.06	0.00	0.13 (15)
3	Manufacturing	2.93	0.39	5.52	0.75	9.59 (5366)	2.22	0.10	10.25	0.50	13.07 (1515)
4	Electricity, Gas and Water Supply	0.10	0.00	0.04	0.00	0.14 (76)	0.11	0.00	0.05	0.00	0.16 (18)
5	Construction	0.45	0.00	0.81	0.00	1.26 (705)	0.58	0.00	1.41	0.00	1.99 (231)
6	Trade, Restaurants and Hotels	6.76	0.15	17.21	0.14	24.26 (13569)	3.04	0.00	19.88	0.26	23.18 (2686)
7	Transport, Storage and Communications	0.28	0.00	1.05	0.01	1.34 (750)	0.00	0.00	0.85	0.00	0.94 (109)
8	Finance, Insurance, Real Estate and Business Services	0.32	0.00	1.18	0.04	1.54 (860)	0.58	0.00	8.56	0.18	9.32 (1080)
9	Community, Social and Personal Services	2.85	0.20	4.07	0.47	7.59 (4248)	3.87	0.15	9.77	1.89	15.68 (1817)
TOTAL		63.01	2.38	32.95	1.66	100.00 (55932)	41.65	1.02	54.50	2.83	100.00 (11588)

NOTE : Figures in parantheses in columns 6 and 11 are absolute numbers in hundreds based on provisional population data used by NSSO.

Self-employed includes helpers in household enterprises.

MINIMUM NEEDS PROGRAMME

The concept of the MNP emerged and crystallised out of the experience of the previous plans that neither growth nor social consumption can be sustained, much less accelerated, without being mutually supportive.

14.2 The programme is essentially an investment in human resource development. The provision of free or subsidised services through public agencies is expected to improve the consumption levels of those living below the poverty line and thereby improve the productive efficiency of both the rural and urban workers. This integration of social consumption programmes with economic development programmes is necessary to accelerate growth and to ensure the achievement of plan objectives.

14.3 In the absence of such a programme, the pressure for investments in the development of infrastructure and production sectors left relatively small allocations for social services. Even such outlays as were available were the first to get reduced in any conflict of priorities created by resource constraint. Further, the benefits of social services cannot reach the poorest without conscious efforts to that end. Disparities in social consumption obtain not only between income groups but also between areas. The level of development of the various social services and infrastructure varies widely from State to State.

14.4 The Minimum Needs Programme lays down the urgency for providing social services according to nationally accepted norms within a time bound programme. Its allocations are earmarked and it seeks to ensure the necessary provision of resources.

14.5 The programme introduced in the Fifth Five Year Plan will continue during the Sixth Plan. Its components are as follows:

1. Elementary Education
2. Rural Health
3. Rural Water Supply
4. Rural Roads
5. Rural Electrification
6. Housing assistance to rural landless labourers
7. Environmental improvement of urban slums
8. Nutrition

14.6 For optimising benefits, these programmes have to be taken as a package and related to specific areas and beneficiary groups. A sectoral approach in which programmes are formulated and implemented departmentally will not be adequate either for the overall development of the area or for bringing about the desired distribution of benefits. The need for integration is especially greater at the micro-level where the programmes are implemented.

REVIEW

14.7 With the Sixth Five Year Plan 1980—85, this programme would enter the seventh year of its implementation. During the past years States such as Punjab, Haryana, Maharashtra, Gujarat, Kerala, Andhra Pradesh, Tamil Nadu and Karnataka have made good progress, while States like Madhya Pradesh, Rajasthan, Uttar Pradesh, Bihar, Orissa, West Bengal and the North Eastern States have lagged behind.

14.8 The approved outlays and expenditure on the programme from its beginning in the Fifth Plan are as follows:

Table 14.1
Outlay and Expenditure on Minimum Needs Programme 1974-80

(Rs. crores)

Sl. No.	Item	1974-75 Outlay	1974-78 Expenditure	1978-79		1979-80	
				Outlay	Expd.	Outlay	Expd.
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Elementary Education	463	230	139	132	88	61
2	Adult Education . . . . .	..	1	7	4	13	7
3	Rural Health	296	74	40	33	39	33
4	Rural Water Supply	563	262	114	133	152	188
5	Rural Roads	502	231	120	152	121	182
6	Rural Electrification	282	103	52	34	53	45
7	House-sites/Houses for Rural Landless labourers	109	50	16	22	32	53
8	Environmental Improvement of Slums	105	38	11	10	16	16
9	Nutrition	287	49	26	20	21	22
10	TOTAL	2607	1038	525	540	535	607

14.9 The present data base of physical achievements is weak and some systematic arrangements are required to be made to build it and maintain it up to date. The position is discussed in detail under each component of the programme.

PROGRAMMES

14.10 The components of the programme would basically be the same as for the Fifth Plan 1974-79. A total provision of Rs. 5807 crores has been made in the Plan as against Rs. 2607 crores for the Fifth Plan. Targets have been fixed after taking into consideration financial and physical constraints so that the programme is a realistic one. The outlays to be provided would continue to be earmarked so that the investment under these programmes is assured. It is expected that this programme coupled with various other programmes of rural development would enhance opportunities for employment and improved life of the rural poor. A high level machinery for monitoring the implementation of the programme at Central and State level would need to be set up, which would also ensure improvement in data base. The physical constraints of the programme would be kept under constant review to achieve the stated objectives and effort will be made to overcome them. The norms, targets and outlays for the different components of the programme are given in the Annexure 14.1.

Elementary Education

14.11 The objective continues to be the universalisation of elementary education. But taking into consideration the progress made in the various States and Union Territories, it is proposed through the formal system, to achieve this objective in two stages, i.e. 95 per cent of enrolment in the age group 6-11 and 50 per cent in the age

group 11-14 by 1985 and universal enrolment in the age group 6-14 by 1990. The availability of funds will not be allowed to stand in the way of more rapid universalisation of primary education wherever it can be achieved. The Planning Commission will keep this matter under review. The formal system would be supplemented by non-formal education. In achieving cent per cent enrolment for the age group 6-11, the constraint is predominantly the socio-economic circumstances of families below the poverty line. This aspect will hence need special attention.

14.12 The position in respect of elementary education varies from State to State and would continue to be so at the end of the Sixth Plan even though steady progress would be maintained in all the educationally backward States. As against 13 States and Union Territories, which are yet to universalise primary education for boys in 1979-80, their number would be reduced to just 4 by 1984-85, these being Haryana (93.4 per cent coverage expected), Karnataka (86.2 per cent), Rajasthan (94.3 per cent) and Uttar Pradesh (97.0 per cent). In the case of girls education, there is a wide variation in coverage from about 30 per cent in Rajasthan to virtually complete coverage in States like Kerala, Meghalaya, Nagaland, Punjab and Tamil Nadu in 1979-80. The gap would be reduced and the lowest expected coverage is about 43 per cent in Rajasthan in 1984-85. With a view to making up this deficiency the States lagging behind would need to strengthen the non-formal classes for elementary education.

14.13 In regard to enrolment in classes VI-VIII, the target for formal education of 50 per cent in relation to the population of 11-14 would be achieved in 23 States and Union Territories; those lagging behind would be Andhra Pradesh, Bihar, Madhya Pradesh, Orissa, Rajasthan, Tripura, Uttar

Pradesh, and Arunachal Pradesh. These States have a backlog to be cleared in respect of primary education for which concerted efforts would be made during the Sixth Plan. Universalisation of middle school education in these States as also in others would be a major task to be taken up during 1985-90.

14.14 Special efforts will have to be made to reach backward and remote areas and the more socially and economically disadvantaged, specially girls and children belonging to scheduled castes and scheduled tribes, who constitute the bulk of non-starters and drop-outs. At present, out of every 100 children that enter Class I, only 36 complete Class V. The proportion of drop-outs has remained almost unchanged since the beginning of the planning in the country. Therefore, efficiency of the system will have to be improved to retain students. Appropriate incentive programmes will be designed to ensure regular presence of the students. On this basis, an outlay of Rs. 905 crores has been provided for this programme in the Plan 1980—85.

14.15 Non-formal education for adults, particularly in the productive age group 15—35 years would also be part of the elementary education component of the MNP. The target will be 100 per cent coverage of the age group 15—35 years by 1990. As the programme is just developing, it is difficult to lay down the target for 1980-85. An outlay of Rs. 128 crores has been provided for adult education under this component. Thus the total outlay on elementary education in the Plan 1980-85 is Rs. 1033 crores i.e. Rs. 905 crores plus Rs. 128 crores.

Rural Health

14.16 Rural health infrastructure would be further strengthened in order to achieve the objective of Health-for-All by 2000 A.D. The norms envisaged are:

- (i) One Community Health Volunteer for every village or a population of 1000 chosen by the community to form the base unit.
- (ii) One sub-centre for a population of 5000 in plains and 3000 in hilly and tribal areas.
- (iii) One PHC for 30,000 population in the plains and 20,000 in hilly and tribal areas.
- (iv) One Community Health Centre (CHC) for population of one lakh or one C.D. Block.

14.17 The Community Health Volunteer scheme and the scheme of training and employment of multi-purpose workers will be continued under the MNP. It is proposed to increase the number of Community Health Volunteers from 1.40 lakhs as on April 1, 1980 to 3.60 lakhs by 1985. 40,000 sub-centres will be added to the 50,000 centres existing on 1-4-1980. This would account for about 74 per cent of the total number of 122,000 sub-centres to be set up on the basis of mid-1984 rural population. Additional 600 Primary Health Centres will be set up during 1980-85 and priority will be given to tribal areas. In addition to the existing 1,000 Subsidiary Health Centres, another 1,000 will be added during 1980-85 by con-

verting the rural dispensaries into Subsidiary Health Centres. All these Subsidiary Health Centres will in subsequent Plans be converted into Primary Health Centres. Thus there will be 6,000 PHCs and 2,000 Subsidiary Health Centres. The Community Health Centre (CHC), a modified form of the upgraded 30 bedded hospital, would provide for necessary specialities of gynaecology, paediatrics, surgery and medicine along with the provision of beds. In addition to the existing 340 rural hospitals, 174 new rural hospitals (CHC) will be set up in the Plan period.

14.18 The backlog of construction works of sub-centres, PHC buildings and residential accommodation, along with construction works of new units will be taken up and completed to the extent resources are available. A total provision of Rs. 577 crores has been made for Rural Health for 1980-85.

Rural Water Supply

14.19 The total number of problem villages conforming to the following criteria is estimated to be 1.90 lakh as on 1-4-1980:

- (i) those which do not have an assured source of drinking water within a reasonable distance, say 1.6 kms;
- (ii) those where the sources of water supply are endemic to water-borne diseases like cholera, guinea-worms etc.; and
- (iii) those where the available water suffers from excess of salinity, iron or fluorides or other toxic elements hazardous to health.

14.20 During the Sixth Plan, the effort will be to cover all the problem villages of the three categories mentioned above. With the financial provisions made in the State Plans, it will be possible to achieve this objective except in certain difficult areas in the hill and desert regions where, because of physical constraints, the programme may take a longer time.

14.21 A recent study made by the Programme Evaluation Organisation of the Planning Commission has shown that in the past the scheduled castes and other weaker sections have not gained proportionately from the facilities created for water supply under the Minimum Needs Programme. In this context, during the Sixth Plan period, special attention will need to be paid to the location of safe drinking water points in a manner such that these Communities can benefit fully.

14.22 The average cost per village for providing safe drinking water varies widely according to the type of facility such as hand pumps, wells or piped water supply. In Karnataka for example, it is Rs. 1600, while in Nagaland it is Rs. 2.16 lakhs. In Punjab where only pipe water supply schemes are being implemented it is Rs. 4.26 lakhs. On the basis of average cost per village in each State, the cost of the programme during 1980-85 is estimated to be around Rs. 2007 crores and provision has been made accordingly.

Rural Roads

14.23 Under the Fifth Plan the norm was to link up all villages with a population of 1500 or more with all weather roads. It is proposed to con-

nect with roads all the remaining villages with a population of 1500 and above and 50 per cent of the total number of villages in the population group 1000-1500 by 1990. On 1-4-80, the number of villages remaining to be linked according to the above norms was about 40,000. About 50 per cent of the physical programme, i.e. 20,000 villages would be completed by 1985 for which an outlay of Rs. 1165 crores has been provided in the Plan, though some of the States namely, Andhra Pradesh and Orissa may lag behind in achieving the MNP objective.

Rural Electrification

14.24 In the Fifth Plan the target was to cover 40 per cent of the rural population under electrification. It has been decided to shift the criterion of population coverage to village coverage and to ensure that at least 60 per cent of the villages in each State and Union Territory are electrified by 1990. Of the total number of 1,15,165 villages required to be electrified to achieve this target, 40 per cent i.e. about 46,464 additional villages will be electrified during 1980-85. The States in which more intensive MNP effort is required are Uttar Pradesh, Himachal Pradesh, Madhya Pradesh, Bihar, Orissa, Rajasthan, West Bengal, Sikkim and North Eastern States. The total cost of this programme during 1980-85 has been estimated to be Rs. 301 crores—Rs. 160 crores for completing spillover works and Rs. 141 crores for new works. The rural electrification programme would include provision of street-lights on internal village roads and in Harijan bastis.

Housing for Landless Labour Households

14.25 It has been estimated that the number of landless labour households needing housing assistance would be around 14.5 million by March 1985. So far 7.7 million landless families have been allotted house-sites. It is proposed to allot house-sites to the remaining 6.8 million families during the Plan period. Of the 14.5 million families eligible for assistance for construction of houses/huts, about 0.56 million families have already been provided with assistance for construction. It is proposed to provide assistance to about 25 per cent of the eligible households i.e. about 3.6 million families by 1985. An assistance of Rs. 250 per family is envisaged for provision of developed plots, a masonry well for a cluster of 30-40 families and approach road. Assistance of Rs. 500 per family is visualised for local building materials for construction of a house. All labour inputs will be provided by the beneficiaries. Accordingly, an outlay of Rs. 354 crores has been provided for this programme—Rs. 170 crores for provision of house-sites and Rs. 184 crores towards construction.

Environmental improvement of Urban Slums

14.26 A particular area becomes a slum not because of its structure but because of its environment and insanitation. Of the urban population nearly a fifth is estimated to constitute slum population. The slum popula-

tion in 1985 needing attention is estimated to be about 33.1 million. Of this only 6.8 million have been covered by March 1980. It is proposed to cover about 40 per cent of the remaining slum population i.e. 10 million slum population by 1985. Assuming per capita investment of Rs. 150 the total cost of this programme during the Plan would be Rs. 151 crores. Depending on the strategy to be adopted in the area, facilities to be provided under the programme are water supply, storm water drains, paving of streets, street-lighting and community latrines. Areas inhabited by the scheduled castes are to be given priority.

Nutrition

14.27 The nutrition programme has two components—(a) Special Nutrition and (b) Mid-Day Meals.

14.28 *The Special Nutrition Programme (SNP)* was introduced on the non-Plan side during 1970-71 and subsequently was brought into the Fifth Plan as a part of the Minimum Needs Programme. It provides 300 calories and 8-12 grams of protein for the age group 0-6 for 300 days and 500 calories and 25 grams of protein for the pregnant and nursing mothers for 300 days. The eligible target group for this programme as on 1-4-1980 is 70 million children of 0-6 years and 7 million mothers.

14.29 The programme is likely to achieve a cumulative coverage of 8.18 million i.e. 5.73 million outside the Plan and 2.45 million under the Plan by 31-3-1980. The programme would be expanded to cover the additional 400 Integrated Child Development Services (ICDS) Projects. The scheme would thus cover additional about 5 million children and 500,000 women during the Plan period. The scheme outside the ICDS projects will be restructured by providing health and other welfare inputs and also adequate staff for supervision and monitoring. It will be linked to projects of economic activity particularly in areas of women's employment so as to meet the felt needs of the women from poorer sections.

14.30 *The Mid-day Meals (MDM) Programme* for the age group 6-11 was introduced in 1962-63. It provides for mid-day meals to these children for 200 days in a year and 300 calories and 8-12 grams of protein per child per day. It was made a part of the Minimum Needs Programme in the Fifth Plan. It will continue as part of the MNP in the Sixth Plan. About 15.1 million children are being covered outside the Plan and 2.3 million under the Plan. Recent studies have shown that the scheme has not made much impact in increasing enrolment or in reducing the drop-out ratio. It would, therefore, be necessary to reorganise it and link it with health services, safe drinking water, environmental and personal hygiene, incentive schemes and kitchen and horticultural gardens in the schools, from where vegetables and fruits would be available for the feeding programmes, before any further expansion is undertaken.

14.31 The total cost of the Nutrition Programme for the Plan 1980-85 is estimated to be Rs. 219 crores

Annexure 14.1

Minimum Needs Programme : Targets and Outlays

Head	Objective	Target by 1985	(Rs. crores)	
			States/UTs Plan	Central Plan
Elementary Education	100% enrolment in the age group 6—14 by 1990. It would be supplemented with non-formal education.	95% enrolment in the age group 6—11 and 50% in the age group 11—14. It would be supplemented with non-formal education.	851	54
	100% coverage of adults in the age group 15—35 by 1990 through non-formal education.	Target not fixed.	68	60
Rural Health	1. One Community Health Volunteer for a population of 1000 or a village by 1990.	To increase the number of Community Health Volunteers from 1.4 Lakh as on 1st April, 1980 to 3.60 Lakhs.	408	169
	2. Establishment of one sub-centre for a population of 5000 in plains and 3000 in tribal and hilly areas by 2000 A.D.	To increase the number of sub-centres from 50,000 to 90,000 or 75% achievement of the objective.		
	3. One PHC for 30,000 population in plains and 20,000 in tribal and hilly areas by 2000 A.D.	To establish 600 additional PHCs and 1000 SHCs over and above 5400 PHCs and 1000 SHCs existing now for achieving about 45% of the number required.		
	4. Establishment of one Community Health Centre for a population of one lakh or one C.D. Block by 2000 A.D.	To establish 174 Community Health Centres in addition to converting existing 340 upgraded PHCs into Community Health Centres.		
Rural Water Supply		Coverage of all the remaining problem villages by 1985 excepting in some difficult areas like hilly and desert regions.	1407	600
Rural Roads	Linking up of all remaining villages with a population of 1500 and above and 50% of the total number of villages with population of 1000—1500 by 1990.	To cover about 50% of the total number of villages required to be covered to achieve the objective i.e., additional about 20,000 villages.	1165	
Rural Electrification	At least 60% of the villages in each State and Union Territory to be electrified by 1990.	40% of the villages required to be covered to achieve the objective i.e., additional 46,464 to be electrified.	361	
Housing assistance to rural landless labourers.	Provision of housing assistance to all landless labour households by 1990. Assistance to include house-site construction materials, drinking water well for a cluster of houses and approach road.	To cover all the remaining households for allotment of house-sites and 25% of the eligible households i.e. about 3.6 million for provision of assistance for construction of houses.	354	
Environmental Improvement of urban slums.	100% coverage of the urban slum population by 1990. Facilities to include water supply, sewerage, paving of streets, storm water drains, community latrines. Areas inhabited by scheduled castes particularly scavengers would be given priority.	40% of the remaining slum population i.e. additional 10 million slum population to be covered.	151	
Nutrition		<i>SNP</i> : 5 million children in 600 ICDS blocks and 5 lakh women to be covered by providing integrated services of feeding, health, welfare, etc. <i>MDM</i> : The existing level of beneficiaries i.e. about 17.4 million children to be continued and the programme to be integrated with other essential services.	219	

Annexure 14.2

Minimum Needs Programme -1980-85 States and Union Territories

(Rs. lakhs)

States/UTs.	Rural Electri- fication	Rural Roads	Elemen- tary Educa- tion	Rural Health	Rural Water supply	Rural Housing	Environ- mental Improve- ment of Slums	Nutrition	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1 Andhra Pradesh	420	1500	3850	2439	9500	7675	800	1100	27284
2 Assam	3500	3600	5250	1200	3000	1000	75	270	17895
3 Bihar	3304	14000	11000	3627	7500	1100	410	1000	41941
4 Gujarat	364	13500	3500	2039	6500	3085	500	1650	31108
5 Haryana	..	350	2100	853	8000	990	380	400	13073
6 Himachal Pradesh	240	3500	822	500	3500	25	40	117	8744
7 Jammu & Kashmir	250	1600	1950	903	4500	100	440	120	9363
8 Karnataka	110	4500	3000	2003	1000	5500	1500	243	20786
9 Kerala	..	1300	1650	954	4500	1200	600	1400	11604
10 Madhya Pradesh	4855	4000	6460	3607	6000	2900	800	2000	30622
11 Maharashtra	..	9400	3300	3000	23000	3500	1400	2600	46200
12 Manipur	376	1000	600	527	1750	..	25	110	4388
13 Meghalaya	318	520	520	443	1950	..	30	125	3906
14 Nagaland	126	325	480	297	1175	..	..	130	2533
15 Orissa	2034	3000	2890	1600	3400	800	100	650	14384
16 Punjab	..	2000	2200	1377	6800	1200	500	80	14157
17 Rajasthan	2810	6500	6900	1743	10629	475	250	327	29634
18 Sikkim	60	900	390	139	600	..	15	125	2229
19 Tamil Nadu	..	7000	2400	2182	5000	2500	2500	2600	24182
20 Tripura	229	1100	940	336	1200	100	50	580	4535
21 Uttar Pradesh	8879	31500	11300	7489	22000	1800	1000	883	84851
22 West Bengal	1388	3750	12750	2588	4800	1200	2700	2500	31676
TOTAL—States :	29293	114845	84162	39816	137204	35150	14115	21010	475595
U.Ts.									
1 Andaman & Nicobar Islands	90	450	434	44	405	5	..	15	1443
2 Arunachal Pradesh	568	300	2720	400	1277	..	..	50	5315
3 Chandigarh	..	10	418	85	..	..	..	125	638
4 Dadra and Nagar Haveli	..	40	70	37	60	10	..	20	237
5 Delhi	..	30	2950	12	700	45	920	450	5107
6 Goa, Daman & Diu	..	25	380	55	170	50	75	40	795
7 Lakshadweep	..	10	58	22	13	..	..	5	108
8 Mizoram	154	720	520	326	800	..	..	50	2570
9 Pondicherry	..	60	195	49	82	90	35	109	626
TOTAL—UTs	812	1645	7745	1030	3507	200	1030	864	16833
GRAND TOTAL	30105	116490	91907	40846	140711	35350	15145	21874	492428

Note: In addition Rs. 600 crores are provided for accelerated Rural Water Supply Programme under the Central Government Schemes.

ENERGY

The vital importance of energy, the growing problems of energy supply and the possibilities of inter-fuel substitution require that the policy and plans for individual energy producing sectors should be part of an overall energy strategy. Energy is an essential input to all productive economic activity and the process of economic development inevitably demands increasingly higher levels of energy consumption.

THE ENERGY STRATEGY

15.1 The present per capita commercial energy consumption in India is only about a tenth of the global average reflecting the country's low level of income. While India, in common with many developing countries, consumes energy in a variety of forms ranging from electricity obtained from nuclear fuels to agricultural waste and animal dung, the pattern of commercial energy consumption is characterised by a high degree of oil dependency, the share of oil products (measured in coal replacement terms) being close to fifty per cent. Just when the Indian economy had managed to adjust itself to the oil price increases of 1973-74, there has been a three-fold increase in oil prices in the last two years. Apart from the heavy strain this will cast on the country's balance of payments, even the physical availability of oil in the international markets will pose a problem in the years to come. This means be hampered by inadequacies of energy supply, that if India's plans of economic growth are not to be reduced dependence on imported oil has to be a key element in our development strategy. The main elements of such a strategy are as follows:

- (1) accelerated exploitation of domestic conventional energy resources—oil, coal, hydro and nuclear power;
- (2) management of oil demand;
- (3) energy conservation;
- (4) exploitation of renewable sources of energy like energy forestry and bio-gas, specially to meet the energy requirements of rural communities; and

- (5) intensification of research and development in emerging energy technologies.

The Energy sector of the Plan is geared to implement this basic strategy.

Pattern of Energy Consumption

15.2 The total commercial energy consumed increased five-fold during the last twenty-five years. Between 1953-54 and 1975-76, the annual growth rate in commercial energy consumption was 6.78 per cent as against the GDP growth rate of 3.68 per cent, the GDP—energy elasticity co-efficient has remained stable at around 1.8 and is high compared to developed countries. Fire wood, agricultural waste and animal dung (which are commonly referred to as non-commercial forms of energy) continue to contribute a substantial proportion of the total energy consumed in the country, though reliable data on the extent and pattern of their use are not available. Rough estimates indicate that between 40 and 45 per cent of the total energy consumed is still accounted for by non-commercial fuels.

15.3 The household sector in India is the largest consumer of energy accounting for about 50 per cent of the total energy consumption. Most of the energy used in this sector is in the form of non-commercial energy. Of the total of 5.7 lakh villages, about 2.5 lakh villages have been electrified, but the percentage of households electrified is about 14 per cent only. Only an estimated 5 million households use kerosene for cooking. Firewood, animal and vegetable waste constitute the cooking fuel in over 90 per cent of total households in the country. The share of agriculture in commercial energy consumption is still small (10 to 11 per cent), though it has increased rapidly during the last decade. With an estimated 80 million work animals and 44 million plough shares, animal power still provides the overwhelming share of draught energy in agriculture.

15.4 The industries sector has the largest consumption of commercial energy (about 38.5 per cent). What is more, the intensity of energy use in this sec-

tor has been rising sharply mainly on account of higher electricity consumption. The electricity consumed per rupee of value added went up sharply from 0.54 kwh in 1960-61 to 1.02 kwh in 1975-76. The relatively high proportion in the industry mix of power-intensive primary metal industries in the initial stages of industrialisation and substitution of other energy forms by electricity appear to have contributed to the high electricity intensity. Road and rail transport dominate the transport scene, accounting for as much as 95 per cent of the fuel-using transport. Of the two, the road system has expanded faster than the rail system in the last three decades. Air transport has registered an increase in the last fifteen years with an annual growth rate of about 10-11 per cent. On the other hand, there has been no striking development in water transport, including coastal shipping. As for bullock carts, their number is estimated to have increased slightly from 12 million to 13 million during the sixties.

15.5 Viewed overall, the energy consumption pattern in India shows a high commercial energy-GDP elasticity caused partly by a steady substitution of non-commercial by commercial fuels. The bulk of commercial energy consumption is in the industry and transport sectors, while the domestic and the agriculture sectors continue to rely mostly on the so-called non-commercial fuels.

Energy Resources

15.6 The most important source of commercial energy in India is coal. The reserves of coal in seams upto a depth of 600 metres and of thickness of 1.2 metres and above are estimated at 85,444 million tonnes, of which 24604 million tonnes are categorised as 'proved' reserves. Of the balance, 37585 million tonnes are 'indicated' reserves and the rest 'inferred' reserves. The bulk of the coal reserves are of the non-coking variety (67,533 million tonnes). In the context of the recent developments on the world energy scene, the possibilities of mining at greater depths and from thinner seams are coming up for consideration. A quick inventory shows that there could be possible additional reserves of 26,184 million tonnes of coal in seams between 600 and 1200 metres depth and thickness of 0.5 to 1.2 metres.

15.7 As on 1st January, 1980, the balance of net recoverable reserves of oil in the 'definite' category was about 360 million tonnes and of gas about 350 billion cu-metres. Prognostic studies indicate a bright picture regarding the balance potential. But such estimates, it should be remembered, are based on a multiplicity of variables and imponderables and are, as such, subject to wide fluctuations.

15.8 A systematic survey of India's hydro-electric potential undertaken in the fifties by the Central Water & Power Commission assessed the total firm hydro-potential to be equivalent to an annual generation of 216 Twh (41155MW at 60 per cent load factor). A fresh survey has been initiated in 1976

by the Central Electricity Authority. The tentative results of the reassessment exercise, which is still incomplete, indicate that the total hydro-electric potential is equivalent to 75400 MW at 60 per cent load factor. The potential which has already been developed till the end of 1978 is 39.4 Twh or about 10 per cent of the total available potential. Besides, it is estimated that an annual energy generation of about 25 Twh could be obtained economically through mini and micro hydels, canal drops and other possible low head development.

15.9 The reasonably assured uranium resources in India are placed at about 34000 tonnes of U_3O_8 , of which about 15000 tonnes are considered economically exploitable at current international prices. The established uranium resources are estimated to be capable of supporting a first stage nuclear power programme consisting of natural uranium reactors of about 8000 MW of installed capacity. When thorium fuelled breeder reactors are constructed in the subsequent stages of the nuclear programme, the country could draw on an estimated 363,000 tonnes of thorium deposits (ThO_2).

15.10 Large as the commercial energy resources of India appear, the reserves are small in per capita terms compared to many other countries. While India has reserves of 176 tonnes of coal per person, USA has 13488 tonnes, USSR 22066 tonnes and China 1168 tonnes. The balance of our proven reserves of oil are also very limited being only 0.55 tonnes per capita as against 34.83 tonnes in USSR, 16.32 tonnes in USA and 2.86 tonnes in China. As exploration proceeds, more reserves may no doubt be found, but the overall picture is unlikely to show any marked change.

Future Energy Demand

15.11 In spite of the uncertainties which affect the factors that determine future energy demand, there is need to make long term forecasts of such demand, as the long gestation of energy supply projects necessitates decisions to be taken far ahead of the materialisation of demand. The Working Group on Energy Policy estimated that if no deliberate measures were initiated to manage the demand, the energy requirement would register a fourfold increase within the next twenty years, if the economic growth rates were to be in the range of 5.5-6 per cent during this period. Even if measures were taken to increase the efficiency of fuel utilisation, reduce energy consumption by adopting more energy-efficient technologies and achieve desirable inter-fuel substitution, the energy demand by the turn of the century would be nearly three times what it is at present. According to these projections, the requirements of coal, oil and electricity generation would be of the order of 426 million tonnes, 69 million tonnes and 464 Twh respectively in the year 2000.

15.12 Maintaining a reasonable balance between energy requirement and energy availability will it is apparent, pose a serious challenge in the coming

decades. As stated earlier, it calls for a coherent energy strategy which takes into account the country's own resource endowments, the degree to which the energy demand could itself be managed through more efficient utilisation of energy and the extent to which renewable energy technologies appropriate to Indian conditions could be inducted.

Accelerated Exploitation of domestic energy resources

15.13 A faster exploitation of our domestic energy resources has clearly to be a basic element in our energy strategy. While several measures have been initiated in the last few years to accelerate exploration for oil and gas, there are still large areas, both on shore and off-shore, where the exploratory effort needs to be intensified. As oil prices rise, exploration of even relatively less promising areas becomes economic despite a higher discovery cost of oil. Equally, attention would have to be paid to a rapid development of proven hydro carbon reserves. India has had a long history of coal exploration and though a considerable amount of exploratory drilling remains to be carried out to upgrade and extend the reserves in many areas, the major thrust in the coal sector will have to be on increasing production. Coal being the only fossil fuel in which India is relatively well endowed, it is generally agreed that this would have to be the main source of commercial energy in the next few decades. There are, without doubt, formidable problems which stand in the way of large and sustained increase in coal production, but these would have to be faced.

15.14 Among the non-fossil conventional sources of energy, we have so far exploited only a small fraction of our substantial potential for hydro electric generation. As hydro power is both renewable and non-polluting, we must develop our hydel resources with a sense of urgency. The task is by no means easy: a substantial proportion of the potential yet to be exploited lies in the sub-Himalayan regions of northern and north-eastern India where the sites are not easily accessible, the working seasons are limited and the geological conditions are difficult. Exploitation of the hydro-potential in some of the river valleys is dependent on satisfactory agreements being reached between the different riverine States. Further, on account of the long gestation and higher initial capital cost, hydro development also involves the problem of finding additional investment funds. Nevertheless, this programme has to be given a major push forward.

15.15 While the contribution of nuclear power to the total power generation has remained modest, the need to pursue further development of nuclear power with greater vigour is clearly established. There are regions of the country located far from the coal-fields where establishment of coal based power stations will cast a heavy burden on the railway system for transporting coal. Moreover, if the country is to exploit its abundant thorium reserves in future

breeder reactors, we must develop a high degree of self-reliance in nuclear power technology and constantly upgrade our scientific and manufacturing capabilities by maintaining an adequate tempo of construction of conventional nuclear reactors.

Management of Oil Demand

15.16 Though India's domestic oil production has gone up in the last twenty years, about sixty per cent of the requirements of crude oil and petroleum products are still being met through imports. As it is, over two thirds of the country's earnings of foreign exchange through merchandise exports have to be utilised for oil import. Unless we are able to strike new oilfields, there is little prospect of decreasing the country's dependence on imports. The demand management of petroleum products therefore assumes vital importance; the object would be to minimise the consumption of oil without hindering the growth of various sectors of the economy. This will require two-pronged action, namely, ensuring adequate availability of alternate sources of energy viz. coal and power, and more economic use of petroleum products in sectors where use of oil is unavoidable.

15.17 Since the transport sector is the largest consumer of petroleum products, a major issue is the steady increase in the share of road transport, which is less efficient than railways from the point of view of energy use. The long term transport policy would therefore have to provide for optimal use of scarce fuels. Within the railway system, the electrification of high density traffic trunk routes would have to be accelerated, as this would be beneficial from the point of view of both energy efficiency and conservation of oil. The consumption of oil as industrial fuel, fortunately, is not large in India. Even then, a concerted effort would have to be made to encourage substitution of oil by coal wherever technically feasible. This process could be accelerated through provision of appropriate financial and fiscal incentives and pricing policies. A rapid extension of the electricity system to the rural areas will also help in curbing growth of oil consumption; the use of diesel pumps could be minimised, while house-hold electrification could reduce the demand for kerosene to some extent.

15.18 Apart from these long-term measures, considerable savings could be achieved through improvement in the efficiency of use of oil products. For instance, it has been estimated by experts in glass making that the average norm in India is four tonnes of glass drawing per ton of furnace oil, as against seven to nine tons in the developed countries. Studies by the Petroleum Conservation Research Association (PCRA) indicate a savings potential of 12—13 per cent of furnace oil in the industrial sector. Similar possibilities exist in other sectors: to illustrate diagnostic studies conducted by PCRA in twenty-four depots of various State Transport Undertakings revealed potential of at least 6 per cent saving by better driving practices and better maintenance of vehicles. In the domestic sector

kerosene stoves with a thermal efficiency of 55 to 60 per cent against the average efficiency of 35 to 40 per cent of a large variety of stoves now sold in the country have already been introduced in the market; supplies of such improved devices need to be vastly stepped up.

Energy Conservation

15.19 It is not as if energy conservation is needed only in the use of oil. The cheapest form of alternative energy is energy saved. More attention will therefore have to be paid to the efficiency of energy generation and energy utilisation. It is well known that the proportion of energy consumed in the production and distribution of electricity is abnormally high in our power system. While the transmission and distribution losses in a country like India with a low load density are bound to be higher than in the highly industrialised countries where the loads are more concentrated, it should be possible to bring down the losses well below the current level of twenty per cent. There can also be no question that improvement in the capacity utilisation of existing generation equipment can be more cost effective than addition of new capacity. While it is true that power system load factors in India are already quite high, there is still some scope for increasing them through demand management.

15.20 The industrial sector, which consumes the largest proportion of commercial energy, must pay special attention to energy conservation. In many industries in India, the energy consumption per unit of output is distinctly higher than in other countries. It is possible that uneconomic unit size and obsolete technology contribute to higher energy consumption in some industries. Besides, low price of power and sheltered markets have fostered a climate in which the need for energy economy is not sufficiently appreciated. Measures have to be initiated for drawing up energy consumption norms for various kinds of fuel using equipment. Training programmes would have to be launched on a wide scale for the operating personnel in order to inculcate procedures and methods of achieving energy economy. For the small scale sector, assistance would have to be rendered to improve their designs and by providing test facilities. In evaluating new technologies, energy efficiency would hereafter have to be treated as one of the criteria. Simultaneously with offer of incentives for capital investment needed for achieving higher energy efficiency and the desired inter-fuel substitution, one should begin to move towards a package of regulatory measures for energy audit with a view to penalise wasteful energy use.

15.21 Combined generation of electricity and process heat or 'co-generation' has to be encouraged in all industries where it is technically feasible, as this optimises energy utilisation. This is already being practised for instance, in the sugar industry, but there is scope in several other industries such as

fertilizer, paper, etc. While in new industries facilities for co-generation should be insisted upon wherever it is appropriate, the grant of incentives for the capital investment which may be needed for installing such facilities in existing industries needs to be examined.

15.22 The scope for energy conservation is not confined only to the industrial sector. Earlier, we have seen how savings in the use of oil could be achieved in the transport and domestic sectors. Such possibilities exist even in the agricultural sector, studies of electric pump sets indicate that even though the design efficiencies of the pumps and the motor are not unsatisfactory, mis-match between their capacity (i.e. of the pump and the motor) and wrong choice of suction and delivery pipes among others, result in low overall efficiency of the pump set installations on the ground. Here again, mechanisms would have to be developed to provide technical guidance to farmers and to ensure proper choice of equipment.

Pricing of Energy

15.23 In parallel with action on the technological front, an appropriate energy pricing policy would have to be followed in order to induce economies in the use of energy in all sectors and encourage the desired forms of inter-fuel substitution. In the past, the pricing of energy has not always reflected either the true costs to the economy or helped to ensure the financial viability of the energy industries. This situation cannot be allowed to continue for long. It is wrong to think that an adjustment in the prices of a basic input like energy would aggravate the inflationary situation; the costs to the economy are not reduced by not reflecting them in proper pricing. Indeed, the continuance of wrong pricing policies has a far more deleterious effect on the health of the economy than is often realised. Given the pressure of international oil prices and rising domestic energy costs, a high priority will have to be given early in the Plan period to the evolution of a structure of energy prices which reflects true costs, encourages economy in energy use and promotes replacement of scarce fuels.

New Energy Sources

15.24 As mentioned earlier, India's endowments of energy resources are by no means large. There are also obvious limitations to the extent to which savings in energy consumption could be achieved through conservation. It is apparent, therefore, that if the country's growing demand of energy are to be met, new and renewable sources of energy must be developed. The new energy technologies are particularly suited for the introduction of decentralised or small scale energy supply systems which fit in with India's rural agricultural economy. Remote communities which cannot be reached by an electricity grid except at prohibitive cost or do not have easy access to conventional commercial fuels could, through renewable energy technologies, be provided

with energy sources for domestic use as well as for rural industry and agriculture. In general, these technologies have the additional merit of having less adverse impact on the environment than the conventional fossil fuel systems. Even though the immediate contribution of the new energy technologies to energy supply may be limited and many of them are not economically competitive at the moment, there is no doubt that they will play a predominant role in future.

Animal and human energy

15.25 The heavy dependence of the rural economy on inputs of animal and human energy has already been stated. This situation is bound to continue for several decades to come. The main effort would have to be to reduce the drudgery of life in villages by developing devices, e.g., pedal operated mechanisms, which are more productive and less tiring than hand operated ones. Only some stray efforts have been made so far in this direction with little impact. The development of technologies which put human energy to more productive use and reduce drudgery needs to be set on a more organised basis with the requisite institutional support. Likewise, efforts should be made to raise the draught power of animals through improved breeds so that they become more efficient converters of fodder into energy.

The Programme

15.26 As mentioned earlier, conventional energy technologies are characterised by long gestation periods. It takes even longer to bring about significant changes in the pattern of energy consumption. Appropriate policy and investment decisions have therefore to be taken without loss of time if the country is to meet the challenge which the energy problem will pose in the coming decades. This concern is reflected in the increased allocation made in this Plan for accelerated exploitation of India's domestic resources of oil, coal, hydro and nuclear power. The scale of the energy forestry and bio-gas programmes is being expanded sharply. Funds have also been provided for a more intensified research, development and demonstration effort in the area of renewable energy technologies, as also for a more efficient harnessing of animal energy. The details of the programmes and schemes are set out in the sections which follow. As for measures of energy conservation, the need is not so much for Plan investments as for appropriate fiscal policies and establishment of institutional mechanisms for regulation, extension and training. These will be pursued during the plan period.

POWER

Review

15.27 The total installed generating capacity which was only 2300 MW in 1950, increased to a little over 31000 MW by the end of March, 1980. The

total generating capacity at the commencement of the Sixth Plan was as below:

Table 15.1
Installed capacity as on 31-3-1980

Region	Installed capacity			MW
	Hydro	Thermal	Nuclear	Total
(1)	(2)	(3)	(4)	(5)
Northern	3945.28	4082.94	220	8248.22
Western	1790.30	5624.04	420	7834.34
Southern	4593.23	2613.88	..	7207.11
Eastern	906.48	3959.28	..	4865.76
North-Eastern	145.93	188.35	..	334.28
Total Utilities	11381.22	16468.49	640	28489.71
Total non-Utilities (as on 31-3-1979)	2.56	2532.44	..	2535.00
Total (All India)	11383.78	19000.93	640	31024.71

15.28 During the decade 1970—80, installed capacity has grown at an average annual rate of 7.2 per cent. While over this period, thermal capacity increased at the rate of 8.0 per cent the capacity of hydro units registered a growth rate of 6.4 per cent. The share of nuclear capacity continues to be modest, accounting for a little over 2 per cent of the total capacity at the end of March, 1980.

15.29 In parallel with the increase in generation capacity, there has been a steady expansion of the transmission and distribution networks. It is estimated that by March, 1980, the total length of 400 and 220 KV lines was of the order of 33000 ckt. kms., while that of 132 and 110 KV lines was about 58000 ckt. kms. Apart from the increase in number of lines, a significant step in the recent past has been the introduction of 400 KV transmission for bulk power transfer over long distances. Considerable progress has also been made in the construction of inter-State and inter-Regional lines to facilitate grid operation and transfer of power from surplus to deficit areas.

15.30 As a result of the high priority extended to rural electrification, there has been a spectacular increase in the last three decades in the number of villages electrified and irrigation pumps energised. This would be apparent from the table below:

Table 15.2
Progress of Rural Electrification

Year	No. of villages electrified	Number of pumps energised
1950-51	3061	21000
1960-61	21750	198704
1968-69	73732	1088804
1973-74	156729	24266133
1979-80	250112	3949120

With a coverage of 2.5 lakh out of the total 5.7 lakh villages in the country, the percentage of villages which have access to electricity has touched 43 per cent. Though, since the commencement of the Third Five Year Plan, the primary focus of the rural electrification programme has been on the stabilisation of agriculture through the exploitation of ground water resources, village electrification gained importance with the introduction of the Minimum Needs Programme in the Fifth Plan, which aimed among other things at providing basic amenities to the rural areas. Since 1973, special schemes have also been introduced for accelerating electrification in the remote and backward areas.

15.31 Substantial as the growth of the power sector has been, power shortages have become almost endemic in various parts of the country. The rate of growth of power generation has not matched the growth of installed capacity, much less the growth of demand for electricity. There have been persistent delays in construction of projects, the commissioning of new capacity falling short of targets year after year. In the five year period 1974-79, the shortfall in the addition of new generating capacity compared with the target was as high as 40 per cent. Delays in equipment delivery by manufacturers, inadequacies in the organisational capabilities of State Electricity Boards in regard to investigation, project formulation, project implementation and management, and in a few cases, mismatch between actual flow of funds to Electricity Boards and project requirements, have been the major factors responsible for the time and cost over-runs of power projects. The slippages in commissioning schedules have been aggravated by deterioration in the performance of thermal power stations, whose plant load factor came down to 45 per cent in 1979-80 as against the peak level of 56 per cent achieved in 1976-77. The abnormal time taken for stabilisation of new generating units, deficiencies in operation and maintenance and inadequacies in coal supply and deterioration of quality of coal, have been identified as the major factors responsible for the sub-optimal performance of thermal power units in the recent years.

15.32 The percentage of energy lost in the transmission and distribution systems continues to be high and has remained at about 20 per cent over the last several years. Non-availability of aluminium, steel, insulators, etc., have adversely affected the progress of construction of major transmission lines. In general, the growth of transmission and distribution system has not fully matched the expansion of generation capacity thereby affecting both the quality and reliability of supply and posing problems in transfer of power between different electricity systems. While no doubt the growth of rural electrification has been phenomenal when viewed from an all-India angle, a disaggregated analysis discloses wide inter-State and intra-State differences in coverage. Even in villages to which the power supply lines have been drawn, the proportion of rural families using electricity continues to be quite low and the impact on rural industrialisation has also not been significant. These are all areas of concern which call for remedial action.

PLAN 1980-85

Generation

15.33 Considering the deleterious impact of power shortage on the productive sectors of the economy, the objective has to be to achieve a balance between supply and demand in as short a time as possible. The all-India consumption of electricity in 1984-85 is estimated at 148 Twh. This will require a generation of 191 Twh compared with the actual generation of 112 Twh in 1979-80, implying an average annual growth rate of 11.3 per cent during the Plan period. Taking into consideration the gestation lags in the construction of power projects, advance action had been taken to meet the power demand anticipated to arise during the Sixth Plan period. At the end of March 1980, generating capacity totalling 29,665 MW had been sanctioned and the projects were in different stages of construction. Of this, it is anticipated that 19666 MW would be commissioned during the period 1980-85 comprising 13,846 MW of thermal, 5130 MW of hydro and 690 MW of nuclear units. As would be apparent from these figures, the bulk of the addition would be thermal: by the end of the Sixth Plan, the proportion of thermal units in the total installed capacity would increase to 65 per cent. The commissioning programme, while being realistic, is predicated on the maintenance of delivery schedules by the various manufacturers and timely availability of cement, steel, etc. Arrangements for monitoring the progress of the projects and flow of materials have already been made.

15.34 In a sector like power, it is obvious that planning has to be based on a longer time horizon, specially as the construction period of hydro and nuclear power projects extends well beyond a Plan period. The economic perspective indicates a generation requirement of 287 Twh in 1989-90 and 380 to 400 Twh in 1994-95 which would call for an addition of 20,000 to 25,000 MW of capacity in the Seventh Plan period. Of this the schemes already under construction would

contribute about 10,000 MW between 1985 and 1990. For the rest, action will be initiated during the next five years to take up construction of new projects to synchronise with the build-up of power demand. Every effort will be made to give an impetus to hydro power generation since this is a replenishable form of energy. This will by no means be easy; in a situation of resource constraints, high initial costs and long gestation periods of hydro development can prove to be formidable hurdles, apart from the fact that the balance of the unexploited potential is largely in remote and inaccessible areas, sometimes also posing major technical problems. In the choice of locations for thermal power stations, preference will be given to pit head sites, but given the rigidities inherent in the pattern of investment flows in the Central and the State Plans as well as technical considerations of system stability and the economics of power transmission, these would necessarily have to be supplemented by some load centre based power stations.

15.35 As explained earlier, it has become necessary to accelerate nuclear power development in the country. While the full benefits of the Rajasthan and Madras atomic power stations would become available during the Sixth Plan, the construction of the Narora Power Station will reach an advanced stage, the first unit at this station going on stream in 1985-86. The Plan makes provision in addition, for investments on phased starts on three more nuclear power stations, each of which would have two generating units of 235 MW capacity. While this would undoubtedly mean a step up in the tempo of exploitation of nuclear power, it has to be recognised that in relation to the total capacity of the power systems in India and their rates of growth, the contribution of nuclear power will remain relatively modest in the coming two decades.

15.36 For historical and other reasons, the burden of power development has mostly been borne by the State Governments in the past. To begin with, the role of the Central Government in power generation was confined to the atomic power stations. Thereafter the Centre entered the area of hydro power development in a limited way, taking up construction of selected projects in the relatively remote areas of the North and the North-east. It was only during the Fifth Plan that a marked increase in the Central involvement in power generation was visualised and a beginning made in the construction of super thermal power stations, which would benefit more than one State. For construction, operation and maintenance of thermal and hydro projects in the Central Sector, the National Thermal Power Corporation and the National Hydro-electric Power Corporation were accordingly set up. Having regard to the special conditions of the North Eastern region, another agency, viz., North-Eastern Electric Power Corporation was also established to take up the construction of medium sized power projects in the region.

15.37 The future approach to the demarcation of responsibilities between the Central and the State Governments in respect of power generation has be-

come a crucial issue for the long-term power planning of the country. Power development has become increasingly capital intensive and the construction of big hydro power projects or large pit head thermal power stations involves investments of an order which is beyond the capacity of individual States. With increasing capital intensity, it has become more important than before that the country should derive optimal benefit by the integrated operation of power stations, which confer the dual benefit of minimising costs and improving system reliability. Past experience indicates that multiple ownership of power stations and the tie lines leads to almost insuperable technical and commercial problems in the way of truly integrated operation of electricity grids. The Committee on Power (Rajadhyaksha Committee) has suggested that the majority of the new power stations should be implemented in the Central sector in order that about 45 per cent of the total generating capacity in the country may be under Central ownership and control by the close of the century. The recommendations of the Committee are as yet under examination. Meanwhile, the new Plan seeks to continue the process of enlargement of the Central power sector, though not at the pace contemplated by the Committee on Power. At present, the total installed capacity in the Central Sector stands at 3277 MW. With the completion of the various schemes already under execution, this will go up to about 7742 MW by 1984-85. Provision has been made in the Plan for taking up the super thermal power stations at Singrauli, Korba, Ramagundam, Farakka and Neyveli to their full capacity; a start has also to be made on a new set of similar stations at other pit head locations. Nuclear power capacity, as already stated, would be expanded. A few hydro electric projects are also slated for Central implementation.

15.38 Installation of captive power stations will be encouraged in industries where there is scope for combined heat and power generation. Captive units will be permitted in large power intensive industries such as steel and aluminum which require installation of power stations of reasonable size and efficiency to cater exclusively for their requirements. Fertilizer and other plants, which have expensive equipment sensitive to power system fluctuations would also be allowed the facility of having their own power supply arrangements. In other cases, the present policy of discouraging captive units will continue.

15.39 Over the years, the trend has been to install thermal generating units of increasingly larger capacity in order to take advantage of higher thermal efficiency and accelerate the rate of addition of new capacity. During the Sixth Plan, the overwhelming bulk of new thermal capacity will be accounted for by units of 210 MW each. This plan period will also witness a move to the next size of 500 MW, the first unit of which is being installed in the Trombay power station during 1982-83. Installation of similar units in the second phase of the Central super thermal stations is programmed. The location of such large units and their phasing would naturally have to take into account considerations of system stability.

15.40 With the capacity addition projected in the next five years, there should be an improvement in the power situation in the country by the close of the Plan. The forecast is that in 1984-85, with the exception of the Northern Region, the energy requirement and peak demand in other regions would be either fully met or the deficit would be marginal. There would, however, be shortages in the intervening periods in some parts of the country. In the Northern Region, the gap between requirement and availability will not be fully bridged within this Plan period. To the extent possible, the shortages will have to be met through inter-State transfer of power and demand management by staggering holidays and working hours, rostering agricultural pump sets, etc.

15.41 The above forecast is predicated on a distinct improvement in the working of thermal power stations. The poor performance of these stations has been the subject of study by various committees and expert groups and the areas where action is needed for effecting improvement have been identified. A project renovation programme is already in progress. Roving teams of experts have been constituted to monitor the operation of certain identified thermal stations. The supply of coal and furnace oil is also being closely monitored. Training of engineers and technicians in the operation and maintenance of stations has been intensified. A central bank of critical imported spares is being operated to minimise delays in procurement of spares and thereby reduce the down-time for maintenance. Steps have also been taken for design improvements and greater attention to quality control in the process of manufacture. All these efforts, it is expected, would lead to higher availability of thermal power sets in the coming years.

Transmission and Distribution

15.42 Besides maintenance of the tempo of expansion of EHT, sub-transmission and distribution lines commensurate with the growth of generation capacity, the most significant feature of the T & D programme in the Sixth Plan will be the proliferation of the 400 KV system. Long term power system studies have been carried out and are being constantly up-dated to evolve the configuration of the major 400/220 KV lines needed for evacuating power from generating stations and to establish inter-grid and intra-grid linkages. Several of the State Electricity Boards have already initiated steps to develop design, construction and erection capability required for 400 KV lines.

15.43 Considerable progress has been made in the establishment and operation of the five regional electricity grids. While the Southern Region Load Despatch Centre has become fully operational, interim RLDCs are functioning in the other regions. Construction of the permanent RLDCs and procurement and installation of equipment have reached an advanced stage. The permanent RLDCs are expected to attain operationality by 1983.

15.44 The regional grids have ultimately to be welded into a national grid, which would enable the country to get maximum benefit from the complemen-

tarity of the electricity generating potential in different parts of the country and the diversities of system demands. The different segments which would constitute the national net-work have been identified through the long-term system studies referred to earlier. Some of the lines which fit into this net-work have already either been completed or are under construction. Some more would be added in the coming five years. There are, however, major operational and technical problems involved in grid operation, whether at the regional or the national level. One of the major recommendations of the Rajahyakhya Committee is that the ownership and operational control of the RLDCs and the key transmission lines should be with the Centre, with power to regulate the generation pattern, tie-line flows, etc. Involving as it does a major change in the structure of the electricity industry, this recommendation needs to be examined in consultation with the States. Provision has been made in the new plan for the construction of some of these lines in the Central sector.

15.45 As mentioned earlier, the T & D loss in most of the State electricity systems continues to be at a fairly high level. An increasing proportion of inductive connected loads, over-extended distribution lines, inadequate transformer capacity and the inability of transmission lines to cope with the increasing load, have resulted in poor voltage conditions and interruptions of supply specially in the rural areas. Reduction of system losses and improvement in the quality of supply call for systematic planning of the T & D system and a continuous programme of system improvement which comprehends all the stages starting from the power station busbars to the consumer outlet. The State Electricity Boards, it is expected, would give as much attention to the improvement of the T & D net-work as to addition of new generating capacity.

Rural Electrification

15.46 With the ground water potential available in the country, it is estimated that there is scope for installation of 120 lakh pump sets spread over the different parts of India. It is, therefore, proposed to energise 25 lakh pump sets during the Sixth Plan in addition to nearly 40 lakh electrical pump sets in operation at the commencement of the Plan period. Special attention would have to be paid to pump set energisation in the States of U.P., Bihar, West Bengal, Orissa and Madhya Pradesh which still have a large untapped ground water potential. While the Rural Electrification Corporation would step up its assistance to State Electricity Boards to take electricity to new rural areas, the programme of energising pumpsets is expected to receive a boost from a scheme initiated two years ago of joint financing of a special programme for agriculture by REC, ARDC and commercial banks.

15.47 The target for village electrification under the Sixth Plan has been fixed at one lakh villages. A part of this target would be accounted for under the Minimum Needs Programme, which would cover 46,000 villages. A major proportion of the MNP

target lies in U.P., M.P., eastern and north-eastern India. Having regard to the thin population density, difficult terrain, etc., in the north-eastern region and in other hill and tribal areas, the Rural Electrification Corporation has liberalised its criteria for judging the viability of rural electrification schemes prepared for such areas in order to facilitate the extension of electrification to them. The Corporation is also operating a special programme for electrification of Harijan bastis all over the country. Schemes for extension of electric supply to small-scale and tiny industries in the rural and semi-urban areas have also been introduced.

Training

15.48 Recognising the importance of training engineers and technicians at all levels for efficient operation and maintenance of power stations and the transmission and distribution lines, a fairly extensive training network has already come up in the country. A number of State Electricity Boards have set up their own training establishments, specially for the first and second level operating staff. In addition, Government of India set up some time ago four thermal power station personnel training institutes in the context of the induction of large sized thermal sets based on sophisticated technology. A power system training institute to cater for the training requirements of EHT systems and a hot line training centre for training personnel in the modern techniques of live line maintenance are already in operation. These facilities, however, have been found to be inadequate in terms of both quality of training and capacity to meet the increasing need for trained personnel. In order to bring all the Central training establishments under unified control and management and with a view to give concerted attention to their improvement and expansion, the Power Engineers Training Society has recently been constituted as an autonomous body. The Sixth Five year Plan makes provision for new schemes to be implemented by the Society, including the installation of simulators.

Research and Development

15.49 The major R&D activities in the power sector have so far been carried out by the Central Power Research Institute and the Central Board of Irrigation and Power (CBIP) through the agency of the State Electricity Boards and research institutions, apart from equipment R & D carried out in-house by the major manufacturers. While the studies sponsored by the CBIP have mostly been on operational problems, the thrust of the work in the CPRI has been on material testing, such as of transformer oils and insulation materials. However, in relation to the massive investment being made on the power sector, the overall R&D effort has remained inadequate. There has also been insufficient involvement of existing research and academic institutions such as IITs and Regional Engineering Colleges in tackling R & D problems of the power sectors. Beside increasing the

financial allocation for S & T programmes in this area, it is proposed to strengthen the institutional arrangements for carrying out an effective R & D programme.

Organisation and Management

15.50 Among the major recommendations of the Committee on Power are those relating to the restructuring of the State Electricity Boards, which will continue to shoulder the major responsibility for implementing the ambitious power programme projected in the coming years. The Committee has made detailed suggestions regarding the composition of SEBs, manner of selection of the top personnel, improvement of management systems and procedures and information and control systems. It is important that measures for strengthening the organisation capabilities of the SEBs are implemented expeditiously. Attention would have to be given to the improvement of systems and procedures for project formulation and implementation, monitoring and inventory control. Also, the formation of specialist cadres within the the staff of the Boards which has already been accepted by the States, needs to be pursued vigorously.

Financial Performance

15.51 As is well-known, most SEBs are operating at loss and the losses have been on the increase from year to year. The total commercial loss of the SEBs which was about Rs. 103 crores in 1973-74 increased to about Rs. 450 crores in 1979-80. High capital costs caused by delay in completion of projects, high overheads caused by over-staffing, high operating costs on account of low capacity utilisation and a tariff structure which continuously lags behind the rise in incremental costs, have been mainly responsible for the increase in losses. Though the Electricity Supply Act was amended some time ago to make it mandatory for a SEB to earn a positive return, there is no noticeable sign of improvement as yet. The investments in the power sector are rising at a rapid rate which makes it imperative that the industry should meet a sizeable proportion of its investment requirements through generation of internal resources. The Committee on Power has recommended that the power utilities should aim at generating internally about 50 per cent of the resources required for their expansion. A carefully worked out package of measures to improve the financial condition of SEBs needs to be put into action by the State Governments without further loss of time.

Targets and outlays

15.52 The physical targets and financial outlays under the various categories are set out in the Table below:

Table 15.3
Sixth Plan Outlay on Power

(Rs. crores)

Item	States	U.Ts.	Centre	Total
1 Generation	8002	59	3791	11852
2 Transmission & Distribution	4548	159	705	5412
3 Rural Electrification	1859	17	..	1576*
4 Miscellaneous	184	12	229	425
Total	14293	247	4725	19265

*Exclusive of the outlay included in Rs. 285 crores for Special Project Agriculture (SPA) (REC's share), Rural Co-operation, System Improvement Schemes and Harijan Bastis.

Table 15.4
Expected Generating Capacity by 1984-85 (MW)

Utilities	Hydel	Thermal	Nuclear	Total
Northern Region	5240	7743	440	13423
Western Region	2247	11104	420	13771
Southern Region	6798	4504	470	11772
Eastern Region	1409	6779	..	8188
N.E. Region	457	546	..	1003
All India (utilities)	16151	30676	1330	48157
Non-utilities	3	3032	..	3035
All India (including non-utilities)	16154	33708	1330	51192

Capacity additions planned during the period 1980—85 from the projects which are in the implementation stage are shown in Annexure 15.1. The State-wise installed capacity by the end of 1980—85 is given in Annexure 15.2 and the State-wise outlays are set out under Annexure 15.3.

COAL

Review

15.53 The need for systematic and scientific development of the coal industry has been recognised from the inception of the process of national economic planning in the country. Over the successive Plan periods, several measures were introduced to up-grade our knowledge of the coal resources, introduce scientific classification, promote conservation, improve mining techniques, regulate distribu-

tion, optimise utilisation and stimulate research and development covering all the facets of the coal industry. These measures could not, however, achieve full impact since the coal industry was almost wholly under private ownership and management which tended to adopt a profit-oriented approach without always taking note of the long term interest of the industry. As the first major step towards achieving the objective of a sound development of the coal industry in India through the induction of the public sector, the National Coal Development Corporation was set up in 1956. But it was not until the nationalisation of coking coal mines in 1972 and of non-coking coal mines in 1973 that a comprehensive programme of development of coal mines which covered introduction of newer production technologies, standardisation of equipment and development of infrastructure facilities, together with a significant step up in social security and welfare measures for the coal mines, could be initiated.

15.54 Coal production, which stood at 33 million tonnes at the beginning of the First Five Year Plan, rose to 78 million tonnes by 1973-74, the terminal year of the Fourth Plan. The production build up during the successive Plan periods was as follows:—

Table 15.5

(Million tonnes)

Plan period (Terminal year)	Production Target	Actual Production		
		Public	Private	Total
1955-56 (First Plan)	39.0	4.6	33.7	38.3
1960-61 (Second Plan)	60.0	10.7	43.1	53.8
1965-66 (Third Plan)	97.3	13.7	54.1	67.8
1973-74 (Fourth Plan)	93.5	75.6	2.6	78.2

Following the dramatic increase in oil prices in 1973-74, the Fuel Policy Committee had underscored the imperative necessity of giving a major push to coal development in the country. It was against this background that, compared with the public sector outlay of Rs. 110 crores in the Fourth Plan, the outlay for the coal sector in the Fifth Plan was raised to Rs. 1025 crores. Through reorganisation and reconstruction of existing mines and the introduction of new methods and techniques in the development of mines, production was raised by as much as 22 million tonnes in the first two years of the Fifth Plan period, the hundred million tonnes level being touched in 1975-76. But, on account of recession in certain sectors of the economy, the production outpaced demand, with the result that pit-head stocks accumulated to the extent of 14.6 million tonnes by the end of 1976-77. Considering the

trends in the pattern of demand, the requirement of coal at the end of the Fifth Plan (1978-79) was reassessed at the mid-term review at 124 million tonnes as against 135 mt. visualised at the beginning of the Plan. The later half of the Fifth Plan period witnessed a reversal of the situation; the demand for coal built up once again, but production failed to pick up and stagnated at around 101 million tonnes a year. The continuing coal shortage had a pervasive impact on the overall economic growth of the country. An analysis of the reasons for the non-materialisation of the production targets revealed that while deficiencies in internal management at different levels was a contributory factor, the major factors which impeded increase in coal production were shortage of power, absenteeism and labour unrest, shortage of explosives and bottlenecks in the movement of coal. In 1978-79, the loss of production on account of these constraints which were external to the industry, is placed at 16 million tonnes.

15.55 The pattern of coal consumption has undergone a significant change during the past two decades. Till the beginning of the Second Plan, Railways were the single largest consumer accounting for a third of the total consumption. With increasing dieselisation and electrification, the consumption of coal by Railways has been declining steadily. On the other hand, the demand of coal by steel industry and for power generation has increased sharply, other major consumers being cement, fertilizers, textiles, paper and brick manufacturing industries.

PLAN 1980-85

Demand

15.56 By the end of the Sixth Plan (1984-85), the demand of coal is expected to be 173 million tonnes (Raw Coal: 168 million tonnes and washery middlings: 5 million tonnes), the sectoral break-up of which is as shown in Table 3.13 in Chapter 3.

Exploration

15.57 From a consumption level of around 102.6 million tonnes in 1979-80, the demand is expected to rise to 168 million tonnes in 1984-85. A tentative estimate places the demand at the end of the decade in the range of 230—250 million tonnes. According to the Working Group on Energy Policy, coal requirement by the turn of the century may exceed 400 million tonnes. These imply sharp and sustained increases in coal demand over the next two decades, calling for a matching production programme. To enable optimal choices being made in the selection of projects for meeting the additional demand of coal it will be necessary to prepare a shelf of new projects. Since exploration is the first essential step in this direction, programmes of coal exploration find an important place in the Sixth Five Year Plan. The exploratory activities will be extended both to delineate new areas and to demarcate the lay and disposition of coal seams at deep

horizons. In order to combine larger coverage with economy in cost, conventional methods of drilling for coal will be supplemented by newer techniques, such as geo-physical surveys, non-coring drilling etc. In terms of metrage, the programme of drilling during the period 1980-85 is projected as under:

Table 15.6

(In '000 metres)	
Company	Drilling metrage
Eastern Coal fields Ltd. (E.C.L.)	380.5
Bharat Coking Coal Ltd. (B.C.C.L.)	357.5
Central Coal fields Ltd. (C.C.L.)	293.0
Western Coal fields Ltd. (W.C.L.)	447.0
Sub-total-Coal India Ltd. (C.I.L.)	1478.0
Singareni Collieries Co. Ltd.(SCCL)	190.0
Total :	1668.0

Production

15.58 Compared with the actual production of about 104 million tonnes of coal in 1979-80, the increase in production during the Sixth Five Year Plan would have to be about 64 million tonnes, if the anticipated demand of 168 million tonnes in the terminal year of the Plan period is to be fully met. The gross increase in production would, in fact, have to be higher. This is because of the natural process of depletion in the existing mines, which accounted for almost 80 per cent of the production in 1979-80. Although a large number of reconstruction and new projects, with a cumulative capacity of about 80 million tonnes, have been sanctioned between 1974-80, the contribution from these mines will not fully meet the gap between demand and availability on account of gestation lags. Experience has shown that the period required to achieve the targeted capacity ranges from 5 to 12 years, depending on the nature of the project. Further, it is considered unlikely that constraints such as shortage of power in some of the major coal producing areas in the country will totally disappear within the remaining years of the Plan period. There are also limitations to the extent to which the demand for the different grades of coal can be exactly matched with the production programme. Taking into account all these factors as also the current status of development of various categories of mines, it may not be prudent to expect more than 165 million tonnes of usable production in 1984-85. Even to achieve this level of production, the contribution from new projects which are yet to be approved, but on which some amount of preliminary work has

already been initiated, has to be around 21 million tonnes. The company-wise break-up of production in 1984-85 is projected as below:—

Table 15.7

(Million tonnes)

	Existing mines	Sanctioned projects	Projects to be sanctioned	Total
1 E.C.L.	17.58	9.50	4.50	31.58
2 B.C.C.L.	15.44	7.60	3.71	26.75
3 C.C.L.	11.40	24.30	7.30	43.00
4 W.C.L.	14.16	24.00	3.52	41.68
5 N.E.C.	0.03	0.97	..	1.00
Sub-total-C.I.L.	58.61	66.37	19.02	144.00
6 S.C.C.L.	8.32	6.50	2.17	17.00
7 TISCO/HISCO (Private sector)	4.00	..	..	4.00
Total :	70.93	72.87	21.20	165.00

This will leave a small gap of about 3 million tonnes between demand and availability, the entire gap being in respect of non-coking coal. As regards coking coal, indigenous production is to be supplemented by import of superior quality prime coking coal. The Plan visualises that such imports will continue throughout the Plan period touching a level of 2 million tonnes in 1984-85. These imports are intended not only to insulate the steel industry from the vagaries in coal production but to upgrade the quality of coke oven feed in the steel plants. Viewed overall, the small gap in coal availability would have to be bridged, to the extent possible, by timely adjustments in the production and consumption patterns.

15.59 The need for introducing new mining technologies in order to be able to secure rapid increases in production of the order visualised in the Plan has been recognised and provisions have been made in the Plan to bring about an appropriate change in the production mix from different categories of mines. Thus, the production strategy in the new Plan visualises the opening of a large number of open cast mines—some of them of large capacity in the range of 6 to 10 million tonnes which not only have the advantage of relatively low gestation periods but also of higher recoveries of coal. In these mines, equipment of higher capacity will be deployed to ensure speed and economy. In the underground mines, there is to be a phased mechanisation of the Bord and Pillar system of mining which currently contributes around 70 per cent of the total production, progressive expansion of long-wall methods of mining and adoption of advanced methods of extraction of thick seams by caving. A start may also be made on hydraulic mining in selected areas. Assistance is being obtained from

a number of countries for technological upgradation in selected aspects of Indian coal industry. The new technologies would also improve working conditions, raise safety standards, reduce human drudgery, enhance productivity and lead to better conservation of coal. The Plan provides for strengthening the infrastructure of the industry as a whole. Apart from installation of about 50 MW of captive power generation in order to provide short-term relief to vital installations in the Eastern coal belt, important roads in the Jharia field are to be improved and new rail lines and sidings constructed wherever needed. For the first time, a fairly large programme for the control of fires in the Jharia field is being launched. A start is also to be made on the reconstruction of Jharia coal field, which is the main source of prime coking coal in the country and for which an ambitious master plan has been drawn up.

15.60 Special importance has been attached in the Plan to various measures to improve the working conditions, ensure safety and augment the existing facilities for promoting the welfare of the workers.

Washeries

15.61 Consistent with the increased demand for coking coal for the steel industry, the washery capacity in the country is to be raised from 27.8 million tonnes to 36.5 million tonnes by 1984-85. Approval has already been given to the construction of 5 new washeries with a through-put capacity of over 8.7 million tonnes of raw coal. Besides, a start will be made during the Plan period on new washery projects which will be needed for meeting the demand arising in the post Sixth Plan period.

15.62 Proposals are also under consideration to introduce simple methods of upgradation of non-coking coals to ensure supply of uniform grade and size of coal to selected power stations.

Research and Development

15.63 The plans for the rapid growth of the coal industry will be accompanied by an intensification of the research and development programme in the coal sector. There are already 92 research projects under implementation; besides, new projects will be initiated through CFRI, CMRS, CMPDI and other research and academic institutions. Introduction of new mining techniques, methane drainage, dry deshaling of non-coking coal, use of coal fines and fluidised bed combustion will be among the major areas of study.

Plan Implementation

15.64 The principal problems facing the coal industry in the short run are inability to meet demand, cost and time over runs, deterioration in financial performance and rising capital costs. The long term issues pertain to changes in technology, self-reliance in mining equipment and retraining of manpower. The Plan therefore lays emphasis on the need to strengthen the management structure of the companies to enable effective monitoring, systematic cost analysis and close

financial control. Considering the massive investments being made in the coal industry, structural changes needed to strengthen and streamline the managerial pattern of the coal companies would also need to be carried out expeditiously.

LIGNITE

15.65 The first phase of the integrated project of the Neyveli Lignite Corporation consisted of a mine with an ultimate capacity of 6.5 million tonnes per annum and downstream units comprising a 600 MW thermal station, a fertilizer plant with a rated capacity to produce 1.52 lakh tonnes of urea per annum, a briquetting and carbonising plant to produce 3.22 lakh tonnes of carbonised briquettes per annum and a clay washing plant with 6000 tonnes of washed clay per annum. Due to constraints in the capacity of the mining equipment as well as adverse overburden ratios etc., the output of lignite did not reach the anticipated levels of production. In order to augment the production and achieve the targeted capacity of 6.5 million tonnes, Government sanctioned schemes for procurement of additional specialised mining equipment.

15.66 The actual production of lignite as compared to the targets from the year 1975-76 to 1979-80 were as indicated below:—

Table 15.8

Year	(Million tonnes)	
	Target	Actuals
1975-76	3.00	3.03
1976-77	3.60	4.02
1977-78	3.75	3.58
1978-79	3.75	3.30
1979-80	4.00	2.90

The production in 1979-80 received a serious set back due to heavy rains which had thrown the mining operations completely out of gear. Nevertheless, with the commissioning of the three systems of equipment for augmentation of production, it is now expected that the production from the first mine will reach its full capacity of 6.5 million tonnes by 1982-83.

15.67 The Plan has also provided for the development of a second lignite mine with a capacity of 4.7 million tonnes per annum to meet the requirements of a new thermal power station of 630 MW. Orders have already been placed for specialised mining equipment for the second mine cut. Similar action has been taken in the case of the new thermal power station.

15.68 In the Sixth Five Year Plan, provision is made to initiate action for stepping up the capacity of the second mine from 4.7 to 10.5 million tonnes to enable doubling of the capacity of the new power station. The Plan also provides for exploration for proving reserves for a possible third mine and preparation of feasibility reports for the opening up of a third mine and construction of a fertilizer plant.

15.69 Provision has also been made in the State Plans for Gujarat and Rajasthan for the development of lignite mines to match the requirements of linked power stations. The total production of lignite at the end of the Plan period from the Central and the State undertakings is expected to be 8 million tonnes.

15.70 For the various programmes of development in the coal and lignite sectors, a provision of Rs. 2870 crores has been made in the Plan, the details of which are set out in Annexure 15.4.

PETROLEUM

Review

15.71 The spurt in industrialisation and the general intensification of the country's economic activities which followed Independence led to a rapid growth in the consumption of petroleum products. To match the demand and yet reduce the dependence on imports, it was felt necessary to explore for oil and establish adequate indigenous resources. The Oil & Natural Gas Commission (ONGC) and the Oil India Ltd. (OIL) were formed in 1956 and 1959 respectively to accomplish this task. While OIL was given the responsibility for intensive exploration in a part of Upper Assam which held promise of high potential, ONGC was given a much wider charter, with its area of operation covering the rest of the country. Both these organisations soon met with success and a number of oil and gas accumulations were discovered in the years that followed, mainly in the Cambay area of Gujarat and in Upper Assam. By the end of the Third Plan, about 172 million tonnes of initial recoverable reserves had been established. While this went upto 195 million tonnes in the period 1969-74, the exploration in the Fourth Plan was marked by ONGC going out for offshore drilling, first at Aliabet and then in the Bombay offshore area—the latter resulting in the discovery of the large Bombay High oilfield. Encouraged by these developments and with a view to intensifying exploration of oil, outlay for it was significantly enhanced in the Fifth Plan. Further exploration in the Bombay offshore region resulted in the discovery of a number of oil and gas fields like North Bassein, South Bassein, South Tapti, B-37, B-38, etc. On land, significant additions to oil reserves were made both in the Cambay and the Assam--Arakan basins. Oil was discovered at Kharasang in Arunachal Pradesh by Oil India. By 1-1-1978, the total initial recoverable reserves had increased to about 452 million tonnes.

15.72 During the period 1978-80, oil exploration continued to receive high priority. On land, explo-

ratory activities in the prospective Assam-Arakan region were considerably stepped up until the widespread disturbances in the region towards the end of the year 1979 impeded the progress. While a brisk pace of exploration was maintained in the western region, a cautious approach was adopted in other areas on account of the high risk to reward ratio. Offshore, detailed seismic surveys were conducted over a large part of the continental shelf. Exploratory drilling was done by ONGC in the Bombay offshore area and off the Godavari basin, Kerala coast; and Managalore coast. The outstanding discoveries made during the period were of oil and gas in the Godavari basin and of oil, at Ratnagiri-9 and Ratnagiri-12 structures. Oil India also began offshore exploration in the Mahanadi delta. As a result of the efforts of the two organisations which by the end of the year 1979-80 had together drilled over 3100 wells totalling about 4.9 million meters, the inventory of geological reserves of oil reached over 2.3 billion tonnes, of which 478 million tonnes were considered recoverable. The balance of recoverable reserves of oil, as on 1-1-1980, stood at about 360 million tonnes.

15.73 The establishment of additional oil reserves enabled augmentation of indigenous production. Starting from a meagre 0.45 million tonnes in 1960, domestic crude production went up to 5.6 million tonnes by the end of the Third Plan, 7.2 million tonnes by the end of the Fourth Plan and 11.77 million tonnes by 1979-80. Upto 1975-76, the production of oil was exclusively from the on-land fields of Cambay and Assam-Arakan basins. Thereafter, an increasing contribution has been made by the Bombay High offshore field which attained a production potential of 5.0 million tonnes of oil per year after the completion of the Phase III-A of the development in December, 1978. Oil and associated gas from Bombay High are being pumped through submarine pipelines to Uran on the mainland, where facilities for crude stabilisation, gas fractionation, etc. are being established.

15.74 The consumption of petroleum products, which was 5.2 million tonnes in 1956, registered a more than four-fold increase by 1973 when it touched 23.7 million tonnes. After a brief respite—due to price increase—when it remained static around 23 million tonnes, the growth in consumption has been quite perceptible being 25.4 million tonnes in 1976-77, 27 million tonnes in 1977-78, 28.0 million tonnes in 1978-79 and 29.65 million tonnes in 1979-80.

15.75 The total refining capacity in the early fifties stood at 0.25 million tonnes per annum. During the Second Plan, three coastal refineries were set up in the private sector adding about 6.2 million tonnes per year (mtpa) to the crude throughput capacity. In the Third Plan, three inland refineries were set up at Gauhati, Barauni and Koyali in the public sector raising the crude throughput capacity to 10.2 mtpa. In the Fourth Plan, with the expansion of existing refineries and establishment of two coastal refineries at Cochin and Madras, the total refining capacity reached 24 mtpa. Under the Fifth Plan, another refinery in the public sector was set up ataldia and some marginal expansions were effected

at Barauni and Koyali taking the total refining capacity to 27.8 mtpa by 1977-78. A 3.0 mtpa expansion at Koyali was completed in October, 1978, but the Bongaigaon refinery, which was also to be completed during this Plan, got delayed. The Crude Distillation Unit of this refinery was later completed and commissioned in February, 1979. Although this has raised the nominal installed capacity to 31.8 mtpa, the refinery cannot run at full capacity unless the Delayed Coker Unit is also completed. The Mathura Refinery with 6 million tonnes of installed refinery capacity, which was to be completed by the end of 1979, has slipped due to power shortage and other problems. The effective refining capacity at end of the year 1979-80 was 27.5 million tonnes in terms of crude throughput and 25.8 million tonnes in terms of product yield. During 1979-80, due to agitation in Assam, the Bongaigaon Refinery closed down in December, 1979 and the Barauni Refinery had also to be shut down in January, 1980. Refineries at Digboi and Gauhati worked only intermittently.

15.76 With a view to meet the increasing demand of middle distillates, a number of schemes for installing secondary processing facilities with expansion in capacity at low cost have been identified. Some of these have already been approved and are in various stages of implementation. It is expected that on the completion of all these schemes, another 12 million tonnes will get added to the capacity and the yield of middle distillates will also be significantly augmented.

PLAN 1980-85

Demand

15.77 It is estimated that the demand for petroleum products may reach a level of 45.50 million tonnes by 1984-85. Projections of demand for petroleum products in the post Sixth Plan period indicate a requirement of 62 million tonnes by 1989-90 if the present trends were to continue. That a demand of this order cannot be met is obvious. It would call for import of crude oil and petroleum products of an order which would not be available in the international market and even if it were, the cost would be well beyond what the country can afford. The need to control the demand by a combination of steps to improve the efficiency of energy use, replacing of oil by other fuels where feasible and by the use of the price mechanism has been set out earlier in this chapter. But, given the stage of development of the country and the limited technological options specially in the transport sector, holding the demand for petroleum products to a manageable level will pose a formidable challenge.

Exploration

15.78 The imperative need to develop indigenous resources of oil and gas in the context of the rising domestic demand for petroleum products, the escalating price of oil in the international market and depleting global supplies, have already been referred to. In the next five years, therefore, efforts for both exploration and development will have to be greatly intensified and for this the capabilities of ONGC and Oil India will have to be stretched to the full. ONGC and Oil India have drawn up ambitious programmes for exploration both on-shore and off-shore. On-shore,

concerted effort will be made in the Assam-Arakan basin by increasing the numbers of seismic parties and drilling rigs. The exploratory drilling of 97 wells comprising 300,000 metres by ONGC and 34 wells comprising 113,500 metres by Oil India has been envisaged during the Plan period. The pace of exploration in the Cambay basin will be maintained. Some of the promising areas, like shoals and estuaries, which could not be taken up hitherto due to logistic problems, will also be explored by engaging, where necessary, specialised contracting agencies equipped with facilities to do so. Exploratory activities in the Krishna-Godavari and Cauvery basins, where the presence of hydro-carbons in significant quantities has been established, will be enhanced to assess the extent and commerciability of these deposits. Exploration in West Bengal, Ganga valley, Himalayan foot-hills, Rajasthan, Orissa coast and other areas will be suitably stepped up. The total exploratory drilling envisaged by the two organisations in the on-land basins is of the order of 300 wells comprising 882,700 metres.

15.79 Off-shore Oil India will continue with their exploratory programme in the Mahanadi delta area. Further programme in this area will depend upon the results of this drilling. ONGC will continue exploring the Bombay off-shore basin, extending the limits beyond 300 metres water depth. They will also be exploring the structures off-shore of Saurashtra and in the Gulf of Kutch, Andaman and Nicobar shelf, as well as in the east coast basins like Palk Bay and Krishna-Godavari basins. Within this Plan period, all the detailed work required in the Continental shelf and beyond upto 500 metres water depth will be completed, besides some regional surveys in still deeper waters. ONGC will increase the number of off-shore rigs deployed so as to drill about 95 wells in different off-shore areas during this period.

15.80 In order to supplement the efforts of ONGC and OIL, selected blocks are proposed to be leased out to reputed foreign oil companies in participation contracts or joint ventures.

Development and Production

15.81 On-shore, the production from Nahorkatiya and Moran oil fields of Oil India is declining. A production rate of 2.83 million tonnes per annum will, however, be maintained by further development of the Jorajan field. The balance requirement of the refineries in the eastern sector will be met by expansion of production from ONGC's fields in that region, for which additional developmental wells and other production facilities will be installed. The production from the Ankleshwar field will be reduced from 2.0 mtpa to 1.4 mtpa during this period, with a view to conserve the crude for the IPCL's detergent alkylate plant. Production from North Gujarat oil fields will, however, be maintained at 1.4 mtpa level. A number of structures/fields in the Cambay basin will be developed in this period. Suitable enhanced recovery methods will also be introduced in a few fields.

15.82 The Bombay High off-shore field is being developed in phases. Phases I, II and III-A have already been implemented creating a production potential of 5 mtpa. Phase III-B is under implementation; it comprises installation of 6 well platform and a major process platform (BHN), drilling of 24 development wells and establishment of terminal facilities for crude stabilisation, gas fractionation etc. With the completion of this Phase by December 1980, a production potential of 7 mtpa would be achieved. Phase IV envisages installation of 10 well platforms and another major process platform (BHS), drilling of 44 developmental wells and creating other matching facilities. With its completion, a production potential of 12 mtpa would be established by mid-1982 with nearly equal contributions from the northern part and the central/southern part of the field. As a part of Phase V of Bombay High Development, which is designed primarily for sustaining production, certain facilities for water injection in the central/southern part are being established. The advance action on Phase V comprises installation of one water injection platform, laying of water injection lines to well platforms, conversion of production wells to water injection wells, installation of additional well platforms and drilling of 20 developmental wells. The balance activities of Phase V would include provision for water injection in the remaining part of the field.

15.83 Besides the full development of Bombay High field, development of other structures, namely R-12, South Bassien and North Bassien fields, B-37 and B-38 structures, would also be carried out during the Plan period. ONGC have also indicated the need for acquiring certain other capital items as back-up facilities for their off-shore programmes. These include additional jack-up rigs, helicopters, supply boats, multi-purpose vessels, etc.

15.84 The targets of, production and its break-up area-wise and year-wise are given at Annexure 15.5.

Refining

15.85 By the beginning of 1982-83, with Mathura Refinery going on full stream, the crude throughput will go upto 34 million tonnes, while the indigenous availability of petroleum products will increase to about 32 million tonnes. The demand is, however, expected to reach a level of 39 million tonnes by then. Given the scenario of an inevitable growth in the requirement, additional refining capacity will need to be established especially if the dependence on import of products is to be reduced effectively. Having regard to this and the need to maximise the yield of middle distillates, a number of schemes for expanding the capacity of existing refineries and providing them with secondary processing facilities have already been taken up. These would start materialising towards the end of 1983-84 taking the crude throughput to 38 million tonnes by the end of the Sixth Plan. Nevertheless, even after the completion of these schemes by 1985-86, the availability of petroleum products will increase to only about 40 million tonnes against a demand of 49 million tonnes. It will be necessary to instal additional refining capacity.

city of 9 million tonnes by 1985-86 to keep the need for import of products at a manageable level.

Lube Oils

15.86 Presently, Lube base-stocks are manufactured in three refineries namely, Haldia, Madras and Bombay (HPCL), and the total capacity is about 0.5 million tonnes per annum. It is estimated that the demand for these would reach 0.57 million tonnes by 1981-82 and would rise to 0.7 million tonnes by 1984-85. To meet this growing requirement, the capacity of these lube refineries will be suitably expanded during the Plan period.

Optimal Utilisation of Gas

15.87 With the availability of fairly large quantities of 'associated gas' and much larger quantities of 'free gas' from the Bombay and South Bassien fields respectively, the manner of their optimal utilisation has been studied in detail. A similar study has also been carried out in respect of gas available in the Assam area. These studies indicate that the most economic use of gas would be as feed-stock for manufacture of nitrogenous fertilizers, after extracting the propane and butane fractions for manufacture of LPG and ethane and propane fractions for feed-stock for petrochemicals. Keeping this in view, programmes have been drawn for setting up large size gas based fertilizer plants on the west coast at Thal-Vaishet and Hazira. A scheme for transporting gas through pipeline further north with a view to set up similar fertilizer plants in Rajasthan, Madhya Pradesh and Uttar Pradesh is under consideration. An examination is also being made for setting up LPG extraction facilities and gas crackers. The expansion of the fertilizer plant at Namrup, based on gas available in Assam, has also been accepted and Oil India is setting up an LPG extraction plant at Duliajan.

Tankage

15.88 The need to augment the inventory capacity both for crude oil and petroleum products has been felt for long. The refineries using imported oil have, in the past, faced considerable difficulties due to irregularities and uncertainties in the supply of crude oil. Recently developments in the Middle East have imparted an added urgency to the need for establishing adequate tankage for storing crude oil and petroleum products. The storage capacity would therefore be increased with a view to reduce the vulnerability to fluctuations in the international supplies.

Product Pipelines

15.89 With the growth in the requirements, progressively larger quantities of petroleum products will have to be moved to various areas. However, difficulties are already being faced in certain areas in meeting the requirements due to transport bottlenecks. When the quantities involved are sufficiently

large, pipelines are known to be the best mode for transporting liquid petroleum products as these not only ensure regular supply but also prevent loss of products and are most economic from the point of view of cost as well as the total energy consumption. With this in view, four product pipelines viz., Bombay-Pune, Bombay-Manmad, Cochin-Coimbatore-Erode and Madras-Bangalore are being considered for installation during the Plan period.

LPG

15.90 With the installation of additional refining capacity and new cracking units, the production of liquified petroleum gas (LPG) will go up significantly by 1985-86. Apart from refineries, fairly large quantities of 'LPG' will also be extracted from natural gas. 'LPG' is largely consumed as cooking gas and replaces kerosene. Schemes for marketing this added quantity of 'LPG' have already been introduced, but will need to be expanded during the Plan period.

Other Marketing Schemes

15.91 The marketing companies will have to create necessary infrastructural facilities to handle future marketing volumes. The more important of these are developing additional facilities at major installations and bulk depots and opening of retail outlets, consumer depots, consumer pumps and kerosene depots in hilly and far-flung areas.

Research and Development Programmes

15.92 Oil and Natural Gas Commission have set up Institute of Petroleum Exploration (IPE) and Institute of Reservoir Studies (IRS), the former for carrying out research in the field of exploration and production while the latter is for studies connected with production and reservoir development. They are also setting up another institute, the Institute of Drilling Technology (IDT) where research and development work connected with drilling technology is being taken up. IPE propose to conduct a large number of studies which aim at adopting an integrated, multi-disciplinary approach to study basic issues connected with petroleum genesis and accumulation. IRS, while handling problems connected with reservoir development, will concentrate on their programmes of developing enhanced recovery techniques for different oil fields. The main feature of the programme of the IDT will be to study the problems of drilling deep wells. Developmental activities envisaged in the three institutes also include import substitution and development of indigenous equipment. In the field of oil refining, the Indian Institute of Petroleum (IIP) will be the prime organisation to conduct research and development activities though some work will also be carried out by IOC (R&D Centre), Engineers India Ltd. and other organisations. The main areas of research would be thermal and fluid catalytic cracking catalytic reforming, solvent de-waxing/de-oiling,

hydro treating and sweetening of various petroleum products. To carry out the above studies IIP will set up semi-commercial pilot plants next to Koyali Refinery. Concerted effort will also be made to develop catalysts required for various processes. It is suggested to set up a special cell in the Ministry of Petroleum to coordinate and oversee the R&D programmes being carried out by the various agencies, both in the field of exploration and production and in oil refining.

15.93 There is a total provision of Rs. 4300 crores for the petroleum sector in the Sixth Plan. Details are at Annexure 15.6.

NEW AND RENEWABLE SOURCES OF ENERGY

15.94 The broad approach for the development of new and renewable sources of energy in the Plan will be:—

- (a) to implement on a large scale programmes such as those of energy forestry and biogas where technology development has already reached a stage which permits field application;
- (b) to carry out field testing and demonstration on a country-wide basis of technologies, which have the potential to become commercially viable in the next five to seven years; and
- (c) to intensify research and development of other technologies where the potential is likely to be available over a longer time horizon.

The programme will cover all important new and renewable sources of energy such as solar, wind, biomass, chemical and geothermal energy and their application in agriculture, transportation and other sectors. In order to give an impetus to the development of renewable sources of energy, an Alternative Energies Commission is being set up.

Energy Forestry

15.95 In the emerging energy situation, as stated earlier, the role of non-commercial fuels acquires a new significance. Rather than proceed on the assumption that substitution of non-commercial by commercial fuels is inescapable, a systematic effort has now to be made to sustain the supplies of such fuels and to improve the efficiency with which they are utilised. Fire wood, it is well-known, is the most important among the traditional fuels, accounting for almost two-thirds of the total energy contribution from non-commercial sources. It is becoming increasingly scarce and in many parts of the country, it has already ceased to be non-commercial in the strict sense. The ecological damage caused by extensive denudation of forests for fuel and other requirements is too well known to need any elaboration here. There is, no doubt, the problem of pressure on land and the competition for land use for agriculture, industrial and

housing activity. Recent experience, however, shows that even in the thickly populated areas of the country, sufficient land is available along roads, railway lines and canals and in the degraded forests and community lands for developing wood lots to provide fuel to the local communities. Energy forestry would have to be regarded as an important component of our energy strategy, as the rural communities will continue to depend heavily on firewood for several decades to come. A large programme of fuel and farm forestry is therefore being taken up in the Sixth Plan, the target being set at 13 lakh hectares of plantation. The details have been set out in the section on 'Forestry' in the chapter on Agriculture.

Biogas

15.96 The technology for conversion of animal wastes into biogas is well-established and a fairly large number of bio-gas plants are already in operation. While the pioneering work in this field has already been carried out by the Khadi and Village Industries Commission, a number of agencies are currently involved in a national coordinated programme with the research effort aimed at raising the efficiency of gas generation and bringing down the capital cost of the biogas units. Some new designs have already become available; for instance, 'Janata' biogas plants, which do not require steel for construction and are built of bricks, are proving popular in Uttar Pradesh. Ferro-concrete is another material which holds out possibilities of displacing steel and reducing cost in the construction of biogas plants. Some innovative solutions to the problem of poor gas generation under conditions of low ambient temperature also appear to be in sight. Further research efforts will be directed at cost reduction through improvement in design and use of materials, as also fermentation and the use of crop residues and water hyacinth in biogas production. Problems relating to the use of biogas for providing motive power and electricity will also be taken up.

15.97 The biogas programme, as is well known, not only provides much needed energy to the rural families reducing the pressure on fire wood supplies, but yields valuable organic manure, improves the environmental health in the rural areas and reduces the drudgery of women. Having regard to the large potential which this programme offers of developing local sources of energy supply, an ambitious programme of installation of biogas plants is being launched. About one million family size plants and 100 community plants are proposed to be set up during the Sixth Plan. While financial provision will be made in the Plan for paying appropriate subsidies to those who install the biogas units, institutional funds will have to be harnessed for the prospective owners to meet the initial capital cost. It will also be necessary to strengthen the machinery for providing technical guidance, assistance in installation and post-commissioning services in the rural areas and to initiate a programme for dissemination of information relating to biogas and its applications.

Solar Energy

15.98 For a tropical country like India, solar energy could be an abundant source of renewable energy. The major problem in harnessing solar energy is the fact that it is diffuse and variable. While solar energy can be utilised successfully for low heat applications in which large variations in energy output are not critical, the technologies for concentrating solar energy for high heat applications or where energy storage is needed in order to provide a steady output, are still rather expensive. During the last few years, a broad-based coordinated solar energy research programme has emerged with an integrated approach of research, design and development. The R&D has concentrated on solar radiation and photo voltaic devices and systems for direct conversion of solar energy into electricity. In the solar thermal area, considerable progress has been made in the development of collectors aimed at improving efficiency and cost effectiveness for different specific applications. Work on selective coatings, concentrator collectors and tracking systems is in progress at various research centres. Among the devices which are in an advanced stage of development are solar water heaters for both residential and industrial applications, solar grain drying systems and space heating systems. Research programmes on solar pumps, cold storages and small sized thermal power plants are in progress. The main effort in the development of photo voltaic cells is to bring down the cost per peak watt of electricity to a reasonable level. This is sought to be achieved by developing low cost solar grade silicon material and by improving the efficiency of solar cells and panels.

15.99 A wide ranging programme encompassing both technology development and technology application is contemplated in the Sixth Plan. The development of both non-tracking and tracking collectors will continue. So also, materials development such as those relating to sealants, glazing, selective surfaces etc., will receive attention. Among solar applications, heating and cooling systems, power plants and desalination will receive priority. A product development and analysis centre is to be set up to take up design, development and precommercial testing of solar thermal devices and systems, with a view to expanding their commercial utilisation. The future programme in the area of photo voltaic technology envisages a scaling up of the facilities for fabrication of solar panels, use of materials like cadmium sulphide and amorphous silicon in solar cells and development of modules for applications such as pumping of drinking water, minor irrigation, community lighting, educational radio and T.V. sets and communication equipment in remote areas.

15.100 As mentioned above, some applications of solar energy are ready for field application while certain others are in an advanced stage of development. Therefore, in the Sixth Plan, a national demonstration programme will be mounted on low and medium temperature heating systems, cooling and refrigeration systems and photo-voltaic pumps and other devices. These systems will be introduced for

large scale utilisation as and when they become commercially viable.

Biomass Conversion Technologies

15.101 The R&D effort in the biomass area, covering all its facets is being intensified. It will cover identification of fast growing species and methods of increasing the efficiency of photo-synthesis. Two centres for research in biomass are to be established in the Plan period. Having regard to the possibility of producing a variety of liquid fuels and feed stocks by conversion of biodegradable materials, the R&D effort in this area is to be expanded in the coming years. Work will also be carried out on the study and cultivation of plants whose liquid sap contains hydro-carbons, which might eventually produce substitutes for petroleum based liquid fuels.

Wind Energy

15.102 Following a better understanding of the aerodynamics of rotating aerofoils and development of cheaper and stronger materials, there is a revival of interest the world over in the harnessing of wind energy. Some recent investigations have disclosed that in several parts of India, even though the average wind speeds over an year may be too low to permit running of wind operated devices, wind speeds are relatively high in those months of the year when supplementary irrigation is needed. This opens up considerable potential for utilisation of wind energy in our country. Some headway has been made in the development of different types of wind mills, a few of them based on locally available materials. The development of economic designs suitable specially for pumping applications under different conditions, will be given attention in the coming years. Studies are also planned for a better assessment of the available wind data and the country's wind energy potential. Demonstration projects for wind energy applications under various field conditions will be launched in the Sixth Plan. Two centres for conducting R & D in problems relating to wind energy utilisation are to be set up in the Sixth Plan.

Other New Technologies

15.103 While for an agricultural country like India located in the tropical belt, solar energy and biomass would hold out maximum potential as energy sources, other possible sources would also have to be tapped. The potential of geo-thermal energy in India, however, appears to be very limited and only two locations with some potential have been established. While exploratory work is being carried out in Puga valley in Ladakh, the feasibility of tapping geo-thermal energy in the Manikaran area of Himachal Pradesh for running a cold storage is being examined. Plans are on hand to assess the possibility of harnessing tidal energy at one or two locations on the west coast of India. Though the basic technology for hydro power generation is well established, micro hydro stations which take advantage of the head available in mountain streams, canal drops etc., have yet to become

popular; their high construction and equipment cost has been a major inhibiting factor. Attention will be paid to methods of simplifying the designs and using local materials, so that water power could be tapped for providing motive power as well as for small scale electricity generation.

15.104 It is also necessary to make serious efforts to develop new technologies for energy storage. Projects for the development of battery powered vehicles will be expanded so that vehicles suited to our conditions and requirements can be produced. This has the potential of reducing the demand for petroleum products in the transportation sector. Research projects relating to the production, storage and use of hydrogen as well as the development of fuel cells will also be intensified.

Integrated Rural Energy Systems

15.105 The possibility of decentralised energy production and distribution deserves serious consideration particularly for meeting the energy needs of the dispersed rural population. Such energy systems would have to be based on a systems approach, which takes

into account all available energy resources in a given location, with particular emphasis on new and renewable energy technologies. The optimal mix of energy supply technologies for each location would be to be individually evaluated. One of the schemes in the Sixth Plan is to set up a number of such integrated energy systems on a pilot basis so as to get a feedback not only on the technological aspects, but on the institutional arrangements for operating such systems and the associated socio-administrative problems.

Outlay

15.106 For the schemes of fuel and farm forestry, Rs. 50 crores have been provided in the Agriculture Sector of the Central Plan. Under the Energy sector, Rs. 50 crores have been earmarked for the biogas programme for payment of subsidies and some supporting facilities; the bulk of the investment will be in the private sector, the funds being drawn mostly from institutional sources. For the S&T programme relating to new energy sources, the Plan makes a provision of Rs. 50 crores.

Annexure 15.1

Benefits from Generation Schemes during Sixth Five Year Plan: 1980-85

Sl. No.	Region /Scheme	Benefits (MW)
(0)	(1)	(2)
NORTHERN REGION		5172
1	Beas H.E. Scheme extension Unit I (Dehar) (Punjab, Haryana, Rajasthan)	330
2	Beas H.E. Scheme Extension Unit II (Pong) (Punjab, Haryana, Rajasthan)	120
3	Panipat Thermal Station Extn. I (Haryana)	220
4	Faridabad Thermal Station Extension Unit III (Haryana)	60
5	Western Yamuna Canal H.E. Scheme (Haryana)	48
6	Shanon H.E. Scheme Extn. (Punjab)	50
7	Ropar Thermal Station (Punjab)	210
8	New H.E. Schemes (Punjab)	224
9	Bassi H.E. Scheme Augmentation (Himachal Pradesh)	15
10	Binwa H.E. Scheme (Himachal Pradesh)	6
11	Andhra H.E. Scheme (Himachal Pradesh)	15
12	Rontong H.E. Scheme (Himachal Pradesh)	2
13	Kota Thermal Station (Rajasthan)	220
14	Mahi Bajajsagar H.E. Scheme (Rajasthan)	140
15	Obra Thermal Station Extension II and III (Uttar Pradesh)	400
16	Paricha Thermal Station (Uttar Pradesh)	220
17	Garhwal-Rishikesh H.E. Scheme (Uttar Pradesh)	72
18	Khodri H.E. Scheme (Uttar Pradesh)	120
19	Maneri Bhal: H.E. Scheme (Uttar Pradesh)	90
20	Tanda Thermal Station (Uttar Pradesh)	440
21	Anpara Thermal Station (Uttar Pradesh)	630
22	Badarpur Thermal Station Unit V (Central)	210
23	Baira Siul H.E. Scheme (Central)	60
24	Singrauli Super Thermal Station Phase I (Central)	630
25	Singrauli Super Thermal Station Phase II (Central)	420
26	Rajasthan Atomic Power Project Unit II (Central)	220
WESTERN REGION		5937
27	Wanakbori Thermal Station (Gujarat)	630
28	Ukai Left Bank Canal H.E. Power House (Gujarat)	6

Annexure 15.1—Contd.

Sl. No.	Region/Scheme	Benefits (MW)
(0)	(1)	(2)
29	Ukai Thermal Station Extension Unit V (Gujarat)	210
30	Kadana H.E. Scheme (Gujarat)	120
31	Wanakbori Thermal Station Extension (Gujarat)	210
32	Korba East Thermal Station Extension (Madhya Pradesh)	420
33	Korba West Thermal Station (Madhya Pradesh)	420
34	Korba West Thermal Station Extension (Madhya Pradesh)	420
35	Satpura Thermal Station Extension II (Madhya Pradesh)	420
36	Pench H.E. Scheme (Madhya Pradesh and Maharashtra)	160
37	Koradi Thermal Station Stage III (Maharashtra)	420
38	Bhusawal Thermal Station Extension (Maharashtra)	210
39	Nasik Thermal Station Extension (Maharashtra)	210
40	Parli Thermal Station Extension (Maharashtra)	210
41	Chandrapur Thermal Station (Maharashtra)	420
42	Trombay Thermal Station (Maharashtra)	500
43	Gas Turbine Plant (Maharashtra)	240
44	Koyna Dam H.E. Power House (Maharashtra)	20
45	Tillari H.E. Scheme (Maharashtra)	60
46	Paithon H.E. Scheme (Maharashtra)	12
47	Bhira Tail Race H.E. Scheme (Maharashtra)	80
48	Chandrapur Thermal Station Extension (Maharashtra)	210
49	Korba Super Thermal Station (Central)	530
	SOUTHERN REGION	4565
50	Vijayawada Thermal Station (Andhra Pradesh)	210
51	Nagarjunasagar Pumped Storage Scheme (Andhra Pradesh)	300
52	Nagarjunasagar Right Canal H.E. Scheme (Andhra Pradesh)	60
53	Donkarayi Canal H.E. Scheme (Andhra Pradesh)	25
54	Balimela Dam H.E. Power House (Andhra Pradesh)	60
55	Srisaillam H.E. Project (Andhra Pradesh)	440
56	Kalinadi H.E. Scheme (Karnataka)	775
57	Raichur Thermal Station (Karnataka)	400
58	Idamalayar H.E. Scheme (Kerala)	75

Annexure 15.1—Contd.

Sl. No.	Region/Scheme	Benefits (MW)
(0)	(1)	(2)
59	Kakkad H.E. Scheme (Kerala)	50
60	Tuticorin Thermal Station (Tamilnadu)	210
61	Sarvalar H.E. Scheme (Tamilnadu)	20
62	Kadamparai Pumped Storage Scheme (Tamilnadu)	400
63	Ramagundam Super Thermal Station (Central)	630
64	Neyveli Thermal Station (Central)	420
65	Madras Atomic Power Project (Central)	470
EASTERN REGION		3323
66	Subernarekha H.E. Scheme (Bihar)	65
67	Patratu Thermal Station Extn. IV (Bihar)	220
68	Barauni Thermal Station Extension Units VI and VII (Bihar)	220
69	Muzaffarpur Thermal Station (Bihar)	220
70	Talcher Thermal Station Extension (Orissa)	220
71	Rengali H.E. Scheme (Orissa)	100
72	Upper Kolab H.E. Scheme (Orissa)	240
73	Santalidih Thermal Station Unit IV (West Bengal)	120
74	Jaldhaka H.E. Scheme Stage II (West Bengal)	8
75	Bandel Thermal Station Extension (West Bengal)	210
76	Kolaghat Thermal Station (West Bengal)	630
77	Ramman H.E. Scheme (West Bengal)	50
78	Durgapur Projects Ltd. Thermal Station Extension (West Bengal)	110
79	C.E.S.C. Thermal Station (West Bengal)	240
80	Durgapur Thermal Station Unit IV (D.V.C.)	210
81	Bokaro 'B' Thermal Station (D.V.C.)	210
82	Panchet Hill H.E. Scheme (D.V.C.)	40
83	Farakka Super Thermal Station (Central)	210
NORTH EASTERN REGION		669
84	Bongaigaon Thermal Station (Assam)	120
85	Lakwa Gas Turbine Project (Assam)	45
86	Waste Heat Recovery Plant at Namrup (Assam)	22
87	Lower Borpani H.E. Scheme (Assam)	50
88	Bongaigaon Thermal Station Extension (Assam)	120
89	Chandrapura Thermal Station Extn. (Assam)	30
90	Mobile Gas Turbine Units (Assam)	21
91	Dikhu H.E. Scheme (Nagaland)	1
92	Gumti H.E. Scheme Unit III (Tripura)	5
93	Loktak H.E. Scheme (Central)	105
94	Kopili H.E. Scheme (North Eastern Council)	150
Total (Utilities)		19666

Annexure 15.2

Cumulative Installed Capacity by the End of Sixth Five Year Plan 1980-85

As on 31-3-1985

Sl.No.	States	Installed Capacity(MW)
(0)	(1)	(2)
I—Utilities		
1	Andhra Pradesh	3025.43
2	Assam	569.78
3	Bihar	1615.27
4	Gujarat	3396.02
5	Haryana	1541.21
6	Himachal Pradesh	270.83
7	Jammu & Kashmir	206.18
8	Karnataka	2529.80
9	Kerala	1136.50
10	Madhya Pradesh	3033.02
11	Maharashtra	6196.30
12	Manipur	10.41
13	Meghalaya	131.11
14	Nagaland	4.68
15	Orissa	1483.12
	Punjab	2216.84
17	Rajasthan	1315.60
18	Sikkim	15.04
19	Tamil Nadu	2959.00
20	Tripura	19.06
21	Uttar Pradesh	5311.76
22	West Bengal	2978.54
	Sub-Total (States)	39965.50
23	North Eastern Council	150.00
24	Delhi	275.80
25	Other Union Territories	22.91
26	Central Plan including DVC	7742.50
	Total (Utilities)	48156.71
	Say	48157
II Non-Utilities		
	All India	51192

Annexure 15.3
Sixth Plan Outlay-Power Sector

Sl.No.	States/ U.T.'s/Centre	Outlays (Rs.lakhs)
(0)	(1)	(2)
I—States		
1	Andhra Pradesh	78970
2	Assam	37030
3	Bihar	80000
4	Gujarat	94150
5	Haryana	54500
6	Himachal Pradesh	13973
7	Jammu & Kashmir	17000
8	Karnataka	60140
9	Kerala	31273
10	Madhya Pradesh	150000
11	Maharashtra	215700
12	Manipur	1865
13	Meghalaya	4500
14	Nagaland	1525
15	Orissa	41000
16	Punjab	73294
17	Rajasthan	67500
18	Sikkim	1290
19	Tamil Nadu	102280
20	Tripura	2211
21	Uttar Pradesh	212590*
22	West Bengal	88655*
	Sub-Total --States	1429356
II—Union Territories		
1	A & N Islands	1200
2	Arunachal Pradesh	2418
3	Chandigarh	1150
4	Dadra & Nagar Haveli	150
5	Delhi	15294
6	Goa, Daman & Diu	1800
7	Lakshadweep	150
8	Mizoram	1800
9	Pondicherry	726
	Sub-Total—(U.Ts.)	24688
III—Central Plan		
1	Deptt. of Power (including Centrally Sponsored Programmes)	360000
2	Deptt. of Atomic Energy	45000
3	D.V.C.	30000
4	Neyveli	37500
	Sub-Total—Central Plan (I—4)	472500
	(including Centrally Sponsored Programmes)	
	Total (All India)	1926544

*Outlays are tentative.

†Exclusive of the outlays included in Rs. 285 crores for Special Projects Agriculture (SPA) Programme (REC's share), Rural Cooperatives, System Improvement Schemes and Harijan Bastis.

Annexure 15.4

Sixth Plan Outlay : Coal and Lignite

Sl. No.	Schemes	Plan Outlay 1980-85 (Rs. crores)
(2)	(1)	(2)
A. Coal India Ltd.		
1	Continuing Schemes and existing mines	456.32
2	Sanctioned reconstruction/new mines	859.20
3	Mines yet to be sanctioned	550.00
4	New Mines to be formulated/sanctioned	147.18
5	Total Investment on Mines	2012.70
6	Washeries	78.04
7	Exploration and CMPDI	69.33
8	Coal utilisation	47.88
9	Others (Development of new methods, mining education and training, Damodar river diversion, safety, Jharia fires, Railways sidings, Power plants etc.)	145.00
	Total--Coal India Ltd.	2352.95
B. Singareni Colliery Co. Ltd.		
10	Investment on mines	212.82
11	Exploration and Coal utilisation	7.02
	Total--Singareni Collieries Co. Ltd.	219.84
	Total Coal (A +B)	2572.79
C. Lignite		
12	Neyveli Lignite Corporation	272.21
13	Science & Technology	25.00
	GRAND TOTAL	2870.00

Annexure 15.5

Target of Domestic Crude Production

(In million tonnes)

	1980-81	1981-82	1982-83	1983-84	1984-85
<i>Western Region</i>					
Ankleshwar	2.0	1.8	1.7	1.6	1.4
North Gujarat	1.4	1.4	1.4	1.4	1.4
	3.4	3.2	3.1	3.0	2.8
<i>Eastern Region</i>					
O N G C	1.7	2.1	2.6	2.8	3.0
O I L	2.8	3.2	3.0	2.8	2.6
	4.5	5.3	5.6	5.6	5.6
ONLAND	7.9	8.5	8.7	8.6	8.4
OFFSHORE	5.2	8.4	11.8	12.7	13.2
TOTAL	13.1	16.9	20.5	21.3	21.6

Annexure 15 6
Sixth Plan Outlay : Petroleum Sector

Organisation Programmes/Projects	(Rs. crores)
(1)	(2)
EXPLORATION AND PRODUCTION	2873.58
I. Oil & Natural Gas Commission & Oil India Ltd. Operations	2853.56
II. Oil & Natural Gas Commission—R & D	20.00
REFINING & MARKETING	1426.42
(i) Operations	1408.89
(ii) R & D	17.53
III. Indain Oil Corporation (IOC) :	
(a) Refineries & Pipelines Division	
A. Continuing Schemes	
1 Mathura Refinery Project	63.19
2 Gujarat Refinery Expansion Project	0.40
3 Gujarat Refinery Secondary Processing Project	36.95
4 Saraya-Virangam-Koyali-Mathura Pipeline (SVKM)	46.00
5 U.H.F. Telecommunication System	0.27
6 Mathura-Delhi-Ambala-Jullundur Pipeline	49.80
7 Additional Coker at Barauni Refinery	38.38
8 Gauhati-Siliguri Pipeline Expansion	2.63
9 Effluent disposal line and Cooling Towers at Gauhati Refinery	3.35
10 Office Accommodation at New Delhi	2.56
11 Haldia Refinery Project	0.21
12 Lube-expansion at Haldia Refinery	2.90
13 Additional Radial well at Gujarat Refinery	1.70
14 Naphtha-Splitter facility at Gauhati Refinery	3.15
15 Additional 8 MW T-G set at Gauhati Refinery	3.32
16 Additional facilities	27.00
Sub-Total (A)	281.81

Annexure 15.6—Contd.

(1)	(Rs. crores)
(1)	(2)
B. New Schemes	
1 Haldia Refinery Expansion with lube-unit & F.C.C.	80.10
2 L.P.G. Bottling and bulk-loading facilities at Gujarat Refinery	4.67
3 Additional 12.5 MW T-G set with boiler at Barauni Refinery	15.00
4 Micro-crystalline wax production facilities at Haldia Refinery	1.00
5 Replacement of 3 furnaces in distillation units of Gujarat Refinery	7.25
6 Replacement of 3 furnaces in distillation units of Barauni Refinery	7.25
7 Mandatory Crude Tanks	
(i) Phase-I	13.83
(ii) Phase-II	12.00
8 Rajkot Pump Station (SVK expansion)	4.55
9 Additional tanks at Viramgam	4.90
10 Barauni-Kanpur Pipeline Modernization	1.50
11 Spare SBM at Salaya	25.00
Sub-Total (B)	177.05
Total (A + B)—R & P Division	458.86

*Marketing Division***A. Continuing Schemes :**

1 Fuel Hydrant facilities at Bombay : Phase I	5.79
2 L.P.G. Marketing facilities : Phase I	32.42
3 Installations at Delhi, Ambala and Jullundur	15.86
4 Office accommodation at Madras, Bombay and Calcutta	8.39
5 Residential accommodation	3.74
6 Other Minor schemes such as provision of retail-outlets, consumer depots, consumer pumps and kerosene depots in hilly and far-flung areas, development of infrastructures, residential accommodation (other than at Bombay) and office accommodation (other than at Bombay, Madras and Calcutta) etc.	80.00
Sub-Total (A)	146.20

B. New Schemes

1 L.P.G. Marketing facilities—Phase II	8.50
2 Facilities for marketing OIL's LPG	22.90
3 Fuel hydrant at Bombay—Phase II & III	3.15

Annexure 15.6—Contd.

(1)	(Rs. crores)
(1)	(2)
4 Pipeline connecting Bijwasan and AFS Delhi	1.58
5 Marketing facilities for L.P.G. from additional B.H. gas	32.25
6 Mandatory tankages at (i) Installations	13.02
(ii) Depots	8.16
SUB TOTAL (B)	89.56
TOTAL (A+B): Marketing Division	235.76
(c) R&D Centre	
A. Continuing Schemes	
1 R&D Centre Project	1.04
B. New Schemes	
1 Additional facilities	5.85
TOTAL (A+B)—R&D Centre	6.89
(d) Indian Oil Blending Limited (IOBL)	
1 Expansion of blending facilities	4.20
2 Additional Facilities	1.23
TOTAL (d)—IOBL	5.43
GRAND TOTAL (a+b+c+d): IOC	706.94
IV. Bharat Petroleum Corporation Ltd. (BPCL)	
A. Continuing Schemes	
1 Installaion of facilities for processing neat BH crude at a level of 4.6 mtpa.	0.86
2 Installation of facilities between HPCL and BPCL for Inter-Refinery Optimisation of yields and usage of capacity (BPCL's share only)	0.08
3 Debottlenecking of Distiller and Installation of Additional Secondary Processing facilities	35.44
4 Marketing of Incremental LPG—Phase I	8.57
5 R&D Project for Lubricants, Greases & Specialities	0.40
6 Construction of Staff Quarters (Marketing Division) at Bombay	0.59
7 Construction of Staff Quarters at Upcountry locations and Bombay	0.83
8 Installation of Sulphur Recovery Plant at BPCL	3.19
9 Other Renewals, Replacements and Minor Additions	47.30
SUB-TOTAL (A)	97.26
B. New Schemes	
1 Marketing of Incremental LPG—Phase II	22.20
2 Construction of Staff Quarters	3.00

(1)	(2)
3 Crude Tankage—Three Tanks of 75000 tonnes capacity each	7.10
4 Product Tankage for a total storage capacity of 662000 tonnes	17.00
5 New computer system & auxiliaries	1.30
Sub-TOTAL (B)	<u>50.60</u>
TOTAL (A+B): BPCL	<u>147.86</u>
V. Hindustan Petroleum Corporation Ltd. (HPCL)	
A. Continuing Schemes	
1 Marketing of LPG from BH Gas—Phase I	12.25
2 Lube Refinery Expansion	12.07
3 Computer	0.85
4 Lube Oil Pipeline	1.80
5 ATF Pipeline	1.04
6 Visakh Refinery Expansion	65.85
7 Crude Oil Discharge Pipeline	6.85
8 Residential Units	0.73
9 Crude Desalting facilities, Bombay	0.85
10 Waste Heat Boiler, Visakh	0.65
11 Additional Tank-Trucks	0.54
12 Bulk Asphalt	0.99
13 Crude Furnace, Bombay	2.20
14 Hexane Maximisation	1.80
15 Replacements & Minor Additions	7.00
Sub-TOTAL (A)	<u>115.47</u>
B. New Schemes	
1 Sulphur Recovery Project	2.70
2 Bombay-Pune Product Pipeline	21.17
3 Marketing of LPG from BH Gas—Phase II	13.61
4 Tank Trucks	0.60
5 R&D facilities	0.50
6 Residential Units	2.00
7 Aviation facilities	1.00
8 Product Tankage & Associated facilities	7.00
9 Mandatory Crude Tankage, Bombay	3.00
10 Second Mandatory Crude Tankage—Visakh	2.50
11 Tap-off Terminal at Vashi	3.25

(1)	(2)
12 Black Oil Pipeline from Refinery to Vashi and Terminal at Vashi	1.00
13 Manufacture of Bright Stock/Cylinder Oils	5.10
14 Replacement of Boiler at Visakh	3.00
15 Lube Refinery Expansion	10.00
16 Replacement/Minor Additions	16.90
SUB-TOTAL (B)	93.33
TOTAL (A + B): HPCL	208.80
VI. Madras Refineries Ltd. (MRL)	
A. Continuing Schemes	
1 Paraffin Wax Project	13.48
2 Additional Crude Tanks (105)	0.96
3 Expansion of the Refinery from 2.8 to 5.6 mtpa	54.78
4 LPG Sphere	0.60
SUB-TOTAL (A)	69.82
B. New Schemes	
1 Additional Mandatory Crude Tanks (106 and 107)	6.00
2 Lube Plant (50000 tonnes HVI)	10.00
SUB-TOTAL (B)	16.00
TOTAL (A + B): MRL	85.82
VII. Cochin Refineries Ltd. (CRL)	
A. Continuing Schemes	
1 RC-1 Compressor	0.20
2 Stripper	0.24
3 Secondary Processing facilities	48.70
4 Replacements & Additions	2.50
SUB-TOTAL (A)	51.64
B. New Schemes	
1 Strategic Crude Tanks	5.60
2 Expansion of Refining Capacity to 4.5 mtpa	4.90
SUB-TOTAL (B)	10.50
TOTAL (A + B): CRL	62.14
VIII. Bongaigaon Refinery & Petrochemicals Ltd. (BRPL)	
A. Continuing Schemes	
1 Crude Distillation Unit (CDU)	0.29
2 Kerosene Treating Unit (KTU)	0.37
3 Delayed Coker Unit (DCU)	2.39

(1)	(2)
4 Coke Calcination Unit (CCU)	1.64
5 Captive Power Plant (CPP)	7.88
6 Offsites—Phase I	2.02
TOTAL : BRPL	14.59
IX. Lubrizol India Ltd. (LIL)	
A. Continuing Schemes	
1 Continuing Schemes	1.25
2 R&D Schemes	1.55
SUB-TOTAL (A)	2.80
B. New Schemes	
1 Sulphonic Acid Manufacture	1.10
2 Calcium Phenate Unit.	0.30
3 Cold flow and Viscosity Index Improver	3.32
SUB-TOTAL (B)	4.72
TOTAL (A+B): LIL	7.52
X. Engineers India Ltd. (EIL)	
A. Continuing Schemes	
1 EIL'S own office Building	3.56
B. R&D Schemes	3.64
TOTAL (A+B): EIL	7.20
XI. Indian Institute of Petroleum (IIP)	
A. Continuing Schemes	
B. New Schemes	
1 Modernisation of Equipment	0.50
2 Establishment of Pilot Plant Centre for Refinery Processes and Catalyst Development (to be set up at Baroda)	4.00
SUB-TOTAL (B)	4.50
TOTAL (A+B): IIP	7.00
Department of Petroleum	
1 Fuel Hydrant System at Palam	17.85
2 Lube Blending facilities at Shakurbasti	0.70
3 New Refineries	150.00
4 Manufacturing facilities for Aviation Gas	10.00
TOTAL: Department of Petroleum	178.55
GRAND TOTAL: (I to XII): Petroleum Sector	4300.00

INDUSTRY AND MINERALS

Industrial development plays a crucial role in our development strategy particularly with regard to the objectives of structural diversification, modernisation and self-reliance. The overall pace and the pattern of industrial investment and growth in the Sixth Plan have to reflect this orientation of development policy and take into account the lessons from past experience.

REVIEW

16.2 The progress of industrialisation over the last thirty years has been a striking feature of Indian economic development. The process of industrialisation was launched as a conscious and deliberate policy in the early fifties. In pursuance of this policy, large investments have been made in building up capacity over a wide spectrum of industries. Industrial production has gone up by about five times during this period. Apart from the quantitative increase in output, the industrial structure has been widely diversified covering broadly the entire range of consumer, intermediate and capital goods. In most of the manufactured products, the country has achieved a large measure of self-sufficiency, providing the capability to sustain the future growth of vital sectors of the economy primarily through domestic effort. This is reflected in the commodity composition of our international trade in which the share of imports of manufactured products has steadily declined; on the other hand, industrial products, particularly engineering goods, have become a growing component of our exports. The rapid stride in industrialisation has been accompanied by a corresponding growth in technological and managerial skills, not only for efficient operation of highly complex and sophisticated industrial enterprises but also for their planning, design and construction. Considerable advance has also been made in industrial research and in absorbing, adapting and developing industrial technology.

16.3 Impressive as these achievements are, the rate of industrial growth has not been uniform during this period. After a steady growth of about 8 per cent during the initial period of 14 years, there was a fluctuating trend in the industrial growth rate, approaching near stagnancy in 1966-68 climbing to a level of 9.5 per cent in 1976-77 and dipping to -1.4 per cent in 1979-80. There are many reasons for these fluctuations in the rate of industrial growth. In the initial years of planning, industrial development was largely based on import substitution and had the

advantage of a captive market. A steady growth could thus be maintained. Thereafter, the growth in industrial production was conditioned by the general pace of economic development in the country. With the changing international and national environment, it has been difficult to match the sustained growth of earlier years. During the last decade (1970-71 to 1979-80) the average growth rate has been about 4 per cent per annum. While no single factor can be identified as having a significant bearing on the rate of industrial growth, a close relationship could be identified between the trends in total investment (particularly public investment) and industrial production. Other factors which have affected the growth rate from time to time are the shortage of infrastructural and other vital inputs (such as power, transport, coal, cement), unremunerative administered prices, disturbed industrial relations and to an extent inefficient management.

16.4 A significant aspect of industrial development during this period has been the predominant role assigned to the public sector in the establishment of basic industries. The public sector has taken the initiative for the development of such industries as steel, non-ferrous metals, petroleum, coal, fertilisers and heavy engineering. It has also made investments in consumer industries like textiles, drugs and pharmaceuticals, cement and sugar, partly as a result of the need for it to assume the responsibility for nursing back sick units which were taken over by the Government. While the investments in the public sector in the States are largely confined to medium scale industries appropriate from the point of view of accelerated exploitation of local resources, the major thrust for the development of capital intensive industries has been provided by the Central Government. The total investment in the Central public sector undertakings as on March 1979, amounted to Rs. 15,600 crores of which approximately Rs. 12,800 crores were invested in industrial and mining undertakings. Arising from these large investments in the public sector, the share of public sector in the net domestic product in organised industry and mining has also moved up from 8 per cent in 1960-61 to 28.9 per cent in 1977-78.

16.5 The performance of the public sector cannot be judged on the basis of the yard-stick normally applied to the private sector. The justification of the public sector lies in its contribution to fulfilling certain broader socio-economic objectives. Views in this

light, the public sector as a whole has acquitted itself reasonably well. But for the entry of the public sector in a major way in the development of these basic industries, the structural changes witnessed in the Indian economy could not have been achieved. It has also provided the necessary counter-poise to the private sector for supply management as needed from time to time in periods of crisis in vital sectors of the economy. The public sector has also devoted comparatively greater attention to research and development, so essential for achieving the goals of technological self-reliance.

16.6 In aggregate financial terms the internal resources generated by the public sector undertakings for financing the Plan have been comparatively meagre. The major factors responsible for these are—

- (a) low return on investment on account of price constraints imposed on some public sector undertakings;
- (b) considerable number of private sector sick units (particularly in the textile and engineering industries) which the Central Government had to take over in the interest of maintaining employment and production; and
- (c) the technological complexity of the industries which had to be promoted in the public sector where a longer gestation period and slower learning curve are inevitable.

16.7 Notwithstanding these considerations, there is need for substantial improvement in the working of the public sector undertakings. The continued growth prospects of the public sector, and indeed of the economy, are critically dependent on its ability to generate resources for its future growth. A substantial improvement in the efficiency of these undertakings, so as to provide a reasonable rate of return on large investments made on them is, therefore, of crucial importance. To the extent pricing policy has inhibited the resource raising capacity of certain undertakings, it would be necessary to review it to bring it in line with prudent commercial norms. There is also the need to improve management practices within the undertakings so as to impart a greater concern for optimal utilisation of capacity and higher levels of technical efficiency. Inordinate delays have been a common feature in the implementation of public sector undertakings: these not only lead to loss of production but also significantly contribute to higher investment costs. Modern techniques of project monitoring and construction management will need to be introduced to avoid the excessive costs inherent in the serious slippages in the construction of projects. At the same time it is necessary that there should be adequate delegation of authority to the public sector undertakings and also within the public sector undertakings at various levels. As far as possible, the authority and discretion of the public sector management, within the delegated functions, should not be brought into question; the performance of the management should be

judged on the basis of overall results achieved as distinct from the soundness of individual decisions taken by it. The induction of professional management and industrial culture in the public sector enterprises should be steadily promoted. An intensive institutionalised programme of induction and short term training for senior public sector managers should be introduced to ensure continuous availability of a body of properly trained and motivated personnel for top level positions in the public sector.

16.8 Certain other deficiencies in the nature and pattern of industrial development have also emerged. Regional imbalances in industrial development have not been corrected to the extent required. The expectation that massive investments in Central sector projects would have a wide ranging 'trickle down effect' in stimulating small and ancillary industries has not been realised in many States. Even within States, industries have tended to gravitate towards existing centres, the backward areas remaining substantially untouched. The incentive schemes for attracting industries to backward areas have not been able to prevent this tendency to an adequate extent. Schemes for giving capital subsidies to the backward districts appear, in retrospect, to have been used to a large extent, in fact, by the developed States.

16.9 The pattern of industrial development has not been sufficiently guided by cost considerations. In a regime of protection from international competition, industries have tended to get established at sub-optimal capacities, leading to a high cost industrial structure. Adequate attention has also not been given to improvements in technology and quality of products. Some of these factors have led to the emergence of sickness in certain industries particularly when market conditions tend to generate a measure of competition within the economy.

STRATEGY FOR THE SIXTH PLAN

16.10 In the above context, the perspectives for the coming years have been identified. Such projections must take as their starting point the economic situation in the base year of the Plan i.e. 1979-80. During this year, the weakness of the infrastructure particularly coal, power and transport, has been an overriding constraint to industrial production, and virtually for the first time since the beginning of planned development, a fall in industrial output (of—1.4 per cent) was recorded. The capacity in a number of industries remained substantially unutilised, leading to shortages of various industrial products. A further consequence of this has been a sharp worsening in our balance of trade, since large imports of cement, sugar, steel fertilisers etc. had to be resorted to so as to augment domestic supplies, accentuating an already difficult situation that arose from the increase in the prices of crude oil in the international market.

16.11 In addition to the conventional strategies of aiming at optimum utilisation of existing capacities and improvement of productivity, certain other elements of policy would be necessary in the medium

term perspective. These would encompass the following:—

- (a) Substantial enhancement of manufacturing capacities in public/private sector covering a wide range of industries for providing not only consumer goods and consumer durables but also for supporting agricultural and industrial growth through supply of intermediate and capital goods. The pace of industrial investment will need to be speeded up so that manufacturing capacities are in position well ahead of demand to permit competitive market forces to operate and to avoid possibilities of shortages with attendant adverse effects on the economy.
- (b) The capital goods industry in general and the electronics industry in particular will need special attention as these support the growth of a wide range of economic activity. The proper development of these industries in terms of competitive costs and high quality would be essential to ensure that the projects based on domestic capital goods do not become very costly. Similarly other selected industries would need to be identified (such as machine tools and commercial vehicles) for accelerated development for supporting not only the domestic requirements but also for exploiting the export potential in a larger measure than hitherto.
- (c) In the context of the substantial foreign exchange resources required to support the Plan, export of engineering goods and industrial products, as also project exports will need to be stepped up. Manufacturing capacities would have to be substantially augmented on a selective basis, to generate adequate domestic supplies to support the export effort. Suitable strategies will need to be identified.
- (d) Industrial progress will necessarily depend upon continued technological excellence; this would call for a judicious blend of permitting import of contemporary technology, and promoting the development of indigenous know-how through domestic research and development. A re-orientation and review of the existing procedures and parameters for transfer of technology for this purpose appears necessary. Further, instead of responding to initiatives from foreign parties, suitable perspectives and strategies will have to be developed for seeking out and arranging for appropriate and advanced technologies of relevance to the specific areas of our interest. This may require the strengthening of appropriate institutional arrangements.
- (e) Although industrial development would increase the demand for energy, measures

will need to be taken in the context of the emerging energy situation to improve energy efficiency, not only of manufacturing industry, but also of their end-products. Further, efforts will need to be made to adjust the energy consumption pattern in the industrial sector to domestic energy endowments. This will have particular relevance in sectors such as road transport for which alternative solutions (for example in terms of alternative fuels for commercial vehicles) will need to be developed on an urgent basis.

- (f) New strategies for development of backward regions will need to be devised. The thrust would be to implement a new model of development which would prevent concentration of industry in existing metropolitan areas. The recommendations of the National Committee on Development of Backward Areas will be examined so as to evolve a viable strategy in this direction.

INDUSTRIAL POLICY INITIATIVES FOR THE SIXTH PLAN

16.12 Industrial policy cannot be static and will have to respond to the changes in the economic scene as set out in the preceding paragraphs. The framework of rules and regulations relevant to the nascent stage of development are not necessarily appropriate to the complex industrial structure which has since been built up. Without sacrificing the basic principles of a planned economy, sufficient flexibility would need to be built into the system to impart a sense of dynamism to take advantage of the considerable technological and managerial capabilities that have been developed over the years. In order to make efficient use of scarce capital, much greater attention will have to be paid to securing greater efficiency and competitiveness in the functioning of our industry. In order to protect employment, all encouragement will have to be given to the growth of cottage, village and small industries. Sectors where efficient production can be secured on a small scale would continue to be reserved for future expansion only by the small scale units. However, if social costs of protection of the decentralised sector are to be contained within reasonable limits, there must be a greater play of competition in the remaining sectors which are not reserved exclusively for small scale industry. In industries where the economies of scales are not important dispersal of industries to secure greater regional balance is both economically efficient as well as socially desirable. However, where economies of scale exercise an important influence on the cost of production, expansion of existing enterprises is to be preferred to setting up new plants of uneconomic size. This applies particularly to the expansion of capacities which depend on export markets. Moreover, consistent with the emphasis on technological self-reliance, adequate stress must also be laid on keeping the technology in use upto-date. To that end, import of technology particularly for export oriented and key industries may need to be liberalised.

16.13 The directional changes in the Industrial Policy are reflected in the Industrial Policy Statement of July, 1980. This accords particular emphasis on improving efficiency and productivity in the industrial sector through optimum utilisation of existing capacity. To this end, it is proposed to grant recognition to increased capacities arising from technological improvements and labour productivity by endorsing industrial licences selectively on the basis of such capacities and to permit automatic growth in industries in the core sectors or those which have a direct linkage with the core sectors or with long term exports. The Industrial Policy Statement of 1980 also provides for the induction of advanced technology, introduction of processes which would aim at optimum utilisation of energy as also for the establishment of appropriate capacities to achieve economies of scale. A special thrust is to be given to the establishment of export-oriented units. The operational elements of the industrial policy will have to be kept constantly under review in order to meet the challenges arising from the shifts in the international and national economic situation.

INVESTMENT PROGRAMMES AND TARGETS

16.14 The Plan envisages an average annual rate of growth of 8 per cent of industrial production during the five year period. Against the background of the actual rate of growth in the last decade, this may appear to be a formidable task and determined efforts will be required in order to achieve the substantially higher industrial growth postulated in the Plan. A significant improvement in the functioning of the infrastructure, particularly coal, power and railways is an essential pre-condition for the realisation of the industrial growth target. It is expected that with the concentrated attention being given to improving the operational efficiency of the infrastructural system, the trend of improvement seen in the second half of 1980-81 and the large investments provided in the Plan for these sectors, these constraints would be eliminated to a considerable extent in the near future. Assuming such an improvement, a detailed analysis suggests that capacity is not likely to be a constraint in achieving the production targets envisaged in the Plan. Based on levels of capacity utilisation actually achieved in the past, the existing capacity and the capacity currently under implementation are adequate to achieve the production targets envisaged. With the substantial step up in public sector investment and the more hopeful prospects for agricultural growth, demand is also unlikely to be a constraint in achieving the postulated growth in industrial production. The suggested order of increase is in any case necessary to secure an increase of 9 per cent per annum in exports.

16.15 The capacity and production targets for selected industries for 1984-85 are indicated in Annexure 16.1.

16.16 The objectives of self-reliance would require that the pattern of investment in the industrial sector should continue to give high priority to the creation of adequate capacity in basic industries such as steel,

non-ferrous metals, capital goods, fertilizers and petrochemicals. The public sector will have to assume a major role in the expansion of these industries. There will, however, be a substantial scope for the expansion of the private, joint and cooperative sectors within the framework of the broad policy. The fields in which these sectors are expected to contribute significantly are fertilizers, cement, paper, textiles, chemicals, pesticides, drugs and pharmaceuticals.

16.17 Arising from the investment envisaged in the Plan, structural shifts in the pattern of industrial production are expected to emerge in the eighties. Production of natural gas, petroleum and coal, and industries based on these resources, and more particularly fertilizers, plastics, synthetic fibres, synthetic rubber and other petro-chemicals are expected to grow rapidly during this period. A major expansion in the electronic industry in which the country has a competitive advantage due to the availability of a large pool of technically qualified personnel is also visualised. While the expansion in metal and engineering industries would continue, chemical and electronic industries are expected to assume the leading role in industrial investment and production.

16.18 The salient features of the industrial programmes envisaged for the Plan are briefly indicated in the following paragraphs.

Iron and Steel

16.19. *Demand and supply:* The capacity utilisation of the integrated steel plants was 90 per cent in 1977-78 but due to a setback in production, the capacity utilisation dropped to 81.5 per cent in 1978-79 and to 69 per cent during 1979-80. The shortfall in the production of saleable steel particularly in integrated steel plants has been primarily on account of infrastructural constraints in terms of availability of coal, power and rail transport. However, the loss of production of saleable steel from the integrated steel plants during 1979-80 was more than off-set by the increased contribution from the mini steel plants and a substantial increase in imports (and curtailing of exports) so that the total availability of steel to the economy was about 5 per cent higher than in the previous year. The shortages of power proved to be a major constraint, such that even the molten steel that was produced with the restricted supplies of coal, etc. could not be converted into saleable steel and resulted in accumulation of 0.75 million tonnes of ingot steel. In the preceding years also the production of saleable steel from the integrated steel plants has shown a declining trend:

	(Million tonne.)
1976-77	6.92
1977-78	6.89
1978-79	6.59
1979-80	6.04

The outlook for 1980-81 is not better than the previous year. Already from being a net exporter of steel during 1976-77 and 1977-78, we have become net

importers of steel, despite the slow growth in industrial output. Since demand would grow in the region of 8.8 per cent per year, this declining trend in production will need to be reversed sharply if major constraints to the growth of the economy due to shortages of steel are to be averted.

16.20 *Strategy:* In the above context, the short-term and long-term strategy in the Iron and Steel sector encompasses the following:

- (a) Removal of infrastructural constraints, including import of coking coal. Coking coal needs to be imported partly on account of supply constraints, and partly to off-set the high ash content of indigenous coal. Approximately, 1 to 2 million tonnes of coal may need to be imported per year for some time;
- (b) Provision of captive power plants to cater to the essential operating needs of steel plants particularly at Bokaro, Durgapur and Rourkela;
- (c) Acceleration of R&D activities relating to utilisation of inferior grades of coal in blast furnaces, improving steel making practices to get higher productivity and yields, etc.;
- (d) Speedy implementation of modernisation and replacement programmes to quickly enhance productive capacities and productivity;
- (e) Speedy implementation of expansion schemes;
- (f) Implementation of the Vizag steel project so as to make it operational by the first year of the next Plan and, if possible, to take up a second project.

Targets: The above strategies would be aimed at meeting the demand projections of 12.9 million tonnes by 1984-85 and of 18.4 million tonnes by 1989-90, starting from a consumption level of 8 million tonnes in 1979-80. The production of steel including the output of mini steel plants has been planned to be increased from 7.4 million tonnes in 1979-80 to 11.5 million tonnes in 1984-85, and 17.4 million tonnes in 1989-90 provided the infrastructural constraints are adequately eradicated. Even under this condition, there will be need for marginal import of steel, as there will be imbalances between various categories of steel *i.e.*, shortage of shaped products and a surplus in flat products in 1984-85.

16.21 *Capacity expansion:* The programme calls for a major step up in capacities although much of it would fructify only towards the later part of the Plan period and mostly in the Seventh Plan. This situation is inherent in a long gestation investment sector such as steel.

The additional capacities envisaged are:

Plant	Scheme	Years	
		Completion	Start of production
Bhilai Steel Plant	4.0 MT expansion	1982-83	1983-84
Bokaro Steel Plant (a)	4.0 MT expansion	1982-83	1982-83
	(b) 4.75 MT stage	1986-87	1987-88
Vizag Steel Plant	(a) Ph. I (1.15 MT)	1984-85	1985-86
	(b) Ph. II (2.25 MT)	1987-88	1987-88

In arriving at the relative investment priorities, greatest stress has been laid on completion of continuing schemes as also for modernisation and rationalisation programmes. Some of the new schemes which have been included in the Plan and which may require investment to effectively take place during the later part of the Plan period, will be funded only after a mid-term appraisal of the Plan, and if availability of resources so permits. The construction of a second steel plant in Orissa is also contemplated, if funding arrangements can be satisfactorily settled.

In the past, the construction of steel plants has been seriously affected due to delay in the supply of equipment, both indigenous and imported, slippages in the schedule of civil work, erection of equipment etc. Besides other adverse impacts, these delays have resulted in considerable cost over-runs. Steps for speedier implementation of projects and for closer monitoring of the progress of supplies of critical inputs, of construction and erection will need to be taken.

16.22 *Mini steel plants and sponge iron:* Taking note of the fact that the mini steel plants are capital intensive and power intensive, and also have to depend largely on availability of steel scrap, additions to capacity of mini steel plants are not envisaged during the plan period. However, there is scope for existing licensed units to increase their output during the plan period. Further, it is recognised that for meeting the special requirements of small volume off-take of various users, the mini steel plants have a greater flexibility than the integrated steel plants. The availability of sponge iron could help in reducing the dependence on melting scrap. Necessary research and trial production programmes in this direction have been initiated in a pilot plant of 30000 tonnes p.a. capacity based on solid reduction at Kothagudem in Andhra Pradesh. Some more plants based on solid reduction with a capacity of about 100,000 tonnes per annum each are likely to be set up by 1984-85. Depending on the availability of natural gas and the economics of production, the possibility of setting up sponge iron plants based on gaseous reduction will be examined. If these new technologies find large scale practical application there could be substantial savings in the form of reduced requirements of scarce coking coal.

Iron ore

16.23 The investment programme for production of iron ore takes into account the possibilities of increased exports as well as the growing needs for domestic consumption for production of steel. On this basis, a production target of 60 million tonnes is envisaged for 1984-85, consisting of 25 million tonnes for domestic consumption and 35 million tonnes for exports. In order to maintain the export of iron ore through Vizag port at the level of about 6 million tonnes and at the same time to meet the requirements of the Vizag steel project, it is proposed to take up the development of new mines in the Bailadilla zone. Further, in view of the reduced demand for Kudremukh iron ore from Iran, the establishment of pelletisation facilities for the conversion of a part of the iron ore from Kudremukh is also envisaged. The possibility of setting up a pellet plant at Bailadilla will also be explored.

Non-ferrous metals

16.24 While India is well endowed with ferrous minerals, the resources of non-ferrous minerals are limited. The development strategy has, therefore, to provide for a judicious balance between imports and local production, coupled with emphasis on prospecting and increasing the known inventory of resources. Further, it should aim to accelerate the pace of assimilation of imported process technology and development of new technologies appropriate to local conditions with specific regard to the constraint of power and of capital resources. In the recent past, it has been possible to discover large reserves of bauxite and also small amounts of additional reserves of copper, lead and zinc ores. The Plan envisages expansion of capacity to utilise optimally these potential resources, consistent with the principles of conservation.

16.25 The production of aluminium, copper and zinc has been considerably affected in the recent past on account of shortage of power. With the contemplated addition to power capacity, it is expected that this constraint would be substantially eliminated during the course of the Plan period. At the same time, in planning for major increase in the production of non-ferrous metals, the possibility of providing captive power generation would have to be kept in view. This has been taken into account in planning additional capacity in a new project for production of aluminium.

16.26 The programmes envisaged in the Plan provide for:—

- (a) completion of existing schemes;
- (b) investment in mining and smelter capacity to correct imbalances and to substantially increase outputs with minimum outlay;
- (c) establishment of a large alumina/aluminium complex at Orissa, geared to meeting domestic and export needs; and

- (d) exploitation of the zinc lead deposits recently discovered at Agucha in Rajasthan. Additionally, the possibility of taking another alumina-aluminium complex based on bauxite deposits in Andhra Pradesh will also be explored.

16.27 As a result of the investments proposed, a substantial increase in the output of non-ferrous metals is envisaged by 1984-85. Even so imports would have to continue.

Engineering industries

16.28 Over the years engineering industries in the country have registered a phenomenal growth to generate a strong base in a wide range of heavy and light engineering industries covering a broad spectrum of capital goods and consumer durable products. The bulk of the capital goods required for power projects, fertilizer plants, cement plants, steel plants, mining equipment, petro-chemical plants are being met from indigenous production. Construction machinery and equipment for irrigation projects, diesel engines, pumps and tractors for agriculture, transport vehicles, etc. are also being met from within the country. Exports of engineering goods are a major element in non-traditional exports and it is envisaged that a substantial step up in the engineering exports during the Plan period would help to buttress the foreign exchange reserves, as also provide a means (through the impact of international competitiveness) to further improve the quality of such goods.

16.29 Rural development will require essential infrastructural and other inputs like transport, power, cement and fertilizers which in turn will make substantial demands on the output of the engineering sector. The strategy for development in this sector will call for creating adequate capacities slightly in advance of emerging requirements. Also, the approach for maximisation of output and export earnings will call for a selective thrust in the development of engineering industries in which the country has comparative advantage in the international context. In addition, to support the growth of many other user sectors, substantial additions to capacity may be required in many engineering industries. This is notwithstanding the fact that there are areas in which capacities which have been created, have been inadequately utilised during the recent past on account of various constraints. Some examples of these are metallurgical machinery, mining machinery, cranes, cement and sugar machinery and diesel engines. Taking into account the need for better utilisation of such past investments made in the economy, a more selective approach for import of equipments is to be adopted. At the same time, with a view to improving the international competitiveness and technology of indigenous engineering industries, it will be selectively exposed to international competition. A more liberal policy for the import of technology in selected areas would be allowed in order to meet the above objectives. Again, recognising the problems arising from possible stagnation, the scope and content of the present scheme for automatic

growth/diversification would be suitably enlarged/modified. This would have the advantage of creating increased production at minimum cost and in the shortest possible time, apart from providing an incentive to the efficient units to grow.

16.30 The investment programmes in the public sector are mainly related to expansion of capacities for power equipment and allied products, diversification and modernisation of existing units to improve their economic viability, as also for improving the performance of sick units which were taken over in the Eastern region.

16.31 Provision has been made for completion of all on-going schemes in the ship building sector such as in Cochin and Hindustan Shipyards. Further, work on expansion of ship repair facilities is to be initiated. The Cochin Shipyard which is nearing completion is expected to reach 60 per cent utilisation of its capacity by the end of the Plan, and expansion of Hindustan Shipyard is expected to be taken up. The need and possibility of financing the expansion of the Cochin Shipyard would be examined after a mid-term appraisal of the plan. Similarly, the need for setting up new shipyards would also be examined at that stage. However, construction of additional shipyards would need to be viewed in the context of the general outlook for the shipping industry, the proportion of the total Indian ships to be acquired from indigenous shipyards and the relevant economics of domestic production versus imports of ships from abroad.

Electronics

16.32 The electronic industry is particularly well suited to rapid growth in India because it is relatively labour intensive, requires high levels of engineering and scientific back-up and has a large and growing domestic as well as export market. A High Level Committee on the Electronics Industries submitted its report some time ago and its recommendations for accelerating the growth of this industry are being examined.

16.33 The programmes in the electronics industry are being coordinated by the Department of Electronics but implemented also by the concerned Departments which are responsible for the manufacture and end use of a wide range of specialised electronic products. The main thrust of the investment programmes is to complete existing schemes and to selectively expand capacities to meet emerging specialised requirements within the country. It is proposed to develop capacities both in the private sector and the public sector, for manufacture of electronic components and materials, which require capital intensive and technology intensive inputs. This is an area in which the availability in the past has lagged behind demand. Another area of emphasis is technological upgradation and standardisation of components and equipment. The cost of electronic goods will be reduced through appropriate rationalisation of production process and revisions in the excise and duty structures.

16.34 In addition to the completion of a major facility for the manufacture of large scale integrated circuits, which would provide the vital "chips" for use in a wide range of electronic products a number of new programmes have been identified for implementation. Some of these relate specifically to generation of appropriate manpower expertise, others are related to export promotion programmes and to manufacture of specialised and strategic products such as high power micro wave equipment and radar systems. Emphasis has also been placed on technology development and research.

Fertilizers

16.35 The strategy for supporting the rapidly expanding agriculture programmes requires that much greater attention be devoted to creation of indigenous production capacities for both nitrogenous and phosphatic fertilizers, maximising to the extent possible, the utilisation of indigenous raw material resources like gas, pyrites, rock phosphate, etc.

16.36 The amount of chemical fertilizers being applied per hectare is currently so small that in many places diminishing returns are not expected to start for a long time to come. The agronomic practices in many parts of the country are such that over 50 per cent of the nutrients applied tend to get lost during the south-west monsoon season. This aspect will be critically reviewed and necessary follow up measures taken to minimise leaching and other kinds of losses.

16.37 Over the years, the development of the fertilizer industry has taken place in the public, private and cooperative sectors. The growth of the chemical fertilizer industry has been impressive, particularly during the last decade. In the case of nitrogenous fertilizers starting with a capacity* of 85 thousand tonnes in 1955-56, the industry grew to a capacity of 5.48 lakh tonnes in 1965-66 and 38.9 lakh tonnes in 1979-80. The capacity for phosphatic fertilizers grew from 64 thousand tonnes in 1955-56 to 2.28 lakh tonnes in 1965-66 and 12.30 lakh tonnes in 1979-80.

16.38 The demand for nitrogenous and phosphatic fertilizers is estimated at 60 lakh tonnes and 23 lakh tonnes respectively in 1984-85 and at 86.0 lakh tonnes and 33 lakh tonnes in 1989-90. Considering the time-lag inherent in the establishment of new capacity, the attainable levels of production in 1984-85 are estimated at 42 lakh tonnes of nitrogen and 14.0 lakh tonnes of P₂O₅. Substantial imports would, therefore, be necessary even at the end of the Plan period.

16.39 The nitrogenous fertilizer plants in the country, are based on a variety of feed stocks such as natural gas, naphtha, fuel oil, coal, electricity and coke oven gas. In the light of the discovery of natural gas in the Bombay High and Bassein Off-shore

* Fertilizer capacity and production figures are in terms of nutrient content.

areas the feed stock policy has been reviewed. It has been decided that gas would be the preferred feed stock for fertilizer production and consideration should be given to the further use of coal as fertilizer feed stock as soon as coal gasification technology in Talcher and Ramagundam plants is established as viable. These two coal based plants have now achieved commercial production and it is hoped that sufficient plant operating experience would be gained during the initial years of the Plan period to enable a decision to be taken, on use of coal as feed stock for future nitrogenous fertilizer plants, based on techno-economic considerations. The use of naphtha is to be limited to the extent that there is a long-term disposal problem at an inland location. For the present, other feed stocks are not being encouraged.

16.40 Advance action will need to be taken for setting up additional nitrogenous and phosphatic fertilizer capacity during the Plan period to meet the anticipated requirements during the period beyond under implementation including Thal and Hazira, under implementation including Thal and Hazira, action will have to be initiated in a phased manner to take up the construction of 8 new nitrogenous fertilizer projects, 6 of them based on the gas from the Bombay High/South Bassein Region. These plants are expected to be each of 1350 tonnes per day ammonia capacity with matching urea capacities. Four of the new nitrogenous fertilizer projects are to be set up in the public sector; out of the remaining four plants, two are to be taken up in the cooperative sector.

16.41 Considering the substantial deficits in phosphatic fertilizers during the Sixth and Seventh Plan periods, action would be initiated on several new Phosphatic Fertilizer Projects in addition to the expansion of some of the existing facilities. The New Phosphatic Fertilizer Projects would be based on a judicious combination of indigenous rock phosphate and pyrites from Rajasthan and also imported rock, sulphur and phosphoric acid. It is envisaged that action will be initiated in a phased manner on seven new fertilizer projects in the public sector including the marginal expansion of one of the public sector units at Cochin, and 4 new projects in the private sector, in addition to several single super phosphate schemes which are expected to be taken up in the private sector.

16.42 In order to maximise the output from existing units, there is a constant need to improve efficiency of operations; this is receiving attention. Captive power facilities are being created to meet the critical power requirements in units where the power supply is erratic. Steps have also been initiated to modernise and renovate the old plants and to remove the technological shortcomings in other units through suitable modifications.

Pesticides

16.43 Pesticides have assumed a vital role both for crop protection and health programmes. The installed

capacity in 1979-80 for technical grade pesticides was 70,425 tonnes with a production level of 50,041 tonnes. In the Central public sector, Hindustan Insecticides Limited (HIL) is engaged in the manufacture of a number of pesticides. Another public sector company, Hindustan Organic Chemicals (HOC) also manufactures BHC. Suitable provisions have been made for the setting up of new pesticides projects based both on indigenous and imported technologies. It is proposed to set up joint sector ventures for pesticides formulations and/or basic materials, with participation by the Central and the State Sectors. After taking these public sector capacities into account the overall demand for pesticides leaves a gap which is expected to be filled by the private sector.

Petrochemicals

16.44 The major development in the petrochemical industry during the Fifth Plan has been the setting up of the petrochemicals complex of the Indian Petrochemicals Corporation Limited (IPCL) a public sector undertaking, at Baroda. The naphtha cracker and most of the down stream units were commissioned during 1978-79. A beginning has also been made for setting up a petro-chemicals complex in Bongaigaon, Assam through another public sector company, the Bongaigaon Refinery and Petrochemicals Limited (BRPL).

16.45 The discovery of crude oil and natural gas in the off-shore region on the Western Coast provides a new dimension to the possibility of petro-chemicals expansion during the Sixth Plan period. Considering the capital-intensive nature of petro-chemical projects, the pattern of production is being carefully chosen to meet priority uses. Based on cost benefit analysis, a detailed study was carried out, identifying the advantages to the economy in the use of petro-chemical products in place of conventional materials, without adversely affecting the established industries. Many such areas have been identified such as the use of plastic products in agriculture, irrigation, health, communication and other priority areas. Synthetic fibres can supplement cotton to meet the growing textile requirements of the population. The conversion of plastics into consumer and some industrial products can be done economically in the small scale sector, an activity which has a significant employment potential.

16.46 Taking into account the gestation period for setting up new units in the petro-chemical industry, production from new starts is not likely to contribute to availability in any significant manner during the Plan period. Production targets envisaged for petro-chemicals are, therefore, primarily on the basis of schemes already under implementation. New starts have been viewed essentially in the context of meeting the requirements in the subsequent plan period.

16.47 An important consideration taken into account in postulating further expansion of the industry is the adoption of technologies and unit sizes that are eco-

domestic and will, therefore, produce products at costs which compare favourably with international prices. Consequently, the time phasing for the setting up of new capacities will take into account the possibilities of imports till there is sufficient gap between domestic demand and supply to ensure that economically viable units are established. The possibility of exports will be taken into account whenever the internal market is not able to absorb the total indigenous production.

16.48 Integrated operations can minimise investment costs and effectively utilise existing facilities. The possibilities in existing refineries and petrochemical units in the public/private sector, have been taken into account in formulating the programme.

16.49 It is tentatively proposed to initiate steps to establish in the Central public sector (a) one olefins complex using natural gas as feed-stock, (b) aromatics recovery facilities for the recovery of benzene and xylenes, (c) a caprolactam plant; and (d) a DMT/PIA Plant. Furthermore, expansion of some of the activities in IPCL and Petrofils is contemplated.

16.50 The overall programme for petrochemicals leaves substantial scope for the expansion of activities in the private/joint sector also. Some of the important areas in which necessary action is being initiated are synthetic fibres, polystyrene and detergent alkylates.

Drugs and Pharmaceuticals

16.51 The drugs and pharmaceuticals industry has made considerable progress in the last two decades. The production of basic drugs and pharmaceutical formulations was estimated to be Rs. 226 crores and Rs. 1150 crores respectively in 1979-80. The contribution of the public sector amounted to 26 per cent in the case of bulk drugs and 6.3 per cent in the case of formulations, the organised private sector accounting for 63.4 per cent and 67 per cent respectively with the balance being the output of the small industry sector. To meet the supply gap, bulk drugs worth Rs. 150 crores (landed cost) were imported.

16.52 Requirements of bulk drugs and formulations by 1984-85 have been estimated at Rs. 815 crores and Rs. 2450 crores respectively. The production of basic drugs is expected to increase to Rs. 665 crores and the balance of Rs. 150 crores would continue to be met by imports. The production of basic drugs in public sector is expected to increase from Rs. 59 crores to Rs. 215 crores and formulations from Rs. 72 crores to Rs. 330 crores.

6.53 The policy on drugs aims at:

- (a) development of self-reliance in drug technology;
- (b) providing a leadership role to the public sector;

(c) making drugs available at reasonable prices and in abundance to meet the health needs of the people; and

(d) fostering and encouraging the growth of the Indian sector.

16.54 Keeping in view the important role assigned to the public sector, a provision of Rs. 145 crores has been made for Hindustan Antibiotics Ltd., Indian Drugs and Pharmaceuticals Ltd. and the three drug units in the Eastern region: Smith Stanstreet Pharmaceuticals Ltd., Bengal Chemical & Pharmaceutical Works Ltd., and Bengal Immunity Co. Ltd.

16.55 The major on-going schemes which would be completed are: the second phase expansion of the synthetic drugs plant; the nicotinamide project and expansion of the antibiotics plant of IDPL and the expansion of the streptomycin and penicillin plant of HAL. A number of joint sector units are proposed to be established with the participation of State Governments to serve local needs. Provision has also been made for new starts in the Plan on a selective basis.

Other Organic and Inorganic Chemicals

16.56 The only public sector undertaking that is involved in the manufacture of basic chemicals, which are important intermediates in the manufacture of drugs and pharmaceuticals, dyes, rubber chemicals, pesticides and laminates is Hindustan Organic Chemicals (HOC). One of the major projects currently under implementation by HOC at Cochin is a 40,000 TPA phenol plant alongwith 24,000 TPA of acetone. HOC is also expected to initiate action on a polytetrafluoroethylene project and a caustic soda/chlorine project during the Sixth Plan.

16.57 The overall programme for organic and inorganic chemicals will leave substantial scope for the expansion of activities in the private/joint sector also. Several new caustic soda and soda ash projects are expected to be implemented during the Sixth Plan mainly to cater to the projected demands in the Seventh Plan period.

Textiles

16.58 The overall requirements of textiles covering cotton, blends and man-made fabrics are estimated at 13,300 million metres including exports of 1,400 million metres in 1984-85. The basic objective of the textile programme is to make available textiles in adequate measure and at reasonable prices for the population and at the same time to encourage and support the production of cloth in the handloom sector to the maximum extent possible. It is envisaged that an addition to capacity should be permitted in the powerloom sector and a series of measures by way of disincentives will be devised to prevent powerloom from competing with the handlooms.

16.59 The level of production in the decentralised sector in 1979-80 was 6350 million metres (handlooms 2900, and powerlooms 3450 million metres) which is expected to go up-to 8400 million metres in 1984-85. The share of the handloom will be 4100 million metres and the powerlooms 4300 million metres. While targeting the production for handloom the maximum level of production that could be achieved in the handloom sector has been taken into account in the context of the organisational and technological problems involved in reaching the millions of handloom weavers spread in different parts of the country. It is envisaged that the production in the mill sector would reach 4900 million metres. The pattern of production in the three sectors projected for 1984-85 is as follows:—

(in million metres)				
Sector	Cotton	Non-cotton	Blends	Total
Mill	3500	400	1000	4900
Powerloom	2600	1200	500	4300
Handloom	3150	200	750	4100
TOTAL	9250	1800	2250	13300

To achieve the envisaged production target, considerable addition to capacity in terms of spindles (2.1 million) is needed. While creating additional spindle, preference would be given to the existing units to bring them to an economic size. Arrangements will also be made to meet the requirements of hank yarn for the handloom sector.

16.60 A provision of Rs. 90 crores has been made in the Plan for rehabilitation and modernisation, as well as for installation of additional spindles under the National Textile Corporation (NTC). NTC will increasingly utilise institutional funds for its programme and the total investment envisaged is Rs. 220 crores.

Jute Textiles

16.61 A production target of 1.5 million tonnes of jute manufacture is projected for 1984-85 including requirements for export estimated at 0.55 million tonnes. For achieving the export target, efforts will need to be made for improving the quality of secondary backing, production of specialised sacking constructions and the greater use of lighter hessian. The present capacity of the jute industry is estimated at around 1.32 million tonnes per annum. In order to achieve the production target additional capacity of 0.2 million tonnes would need to be created. It is envisaged that the two new jute mills in Tripura and Orissa would result in creating additional capacity of 0.25 lakh tonnes. With the implementation of scheme of modernisation/renovation of the existing units, and marginal expansion of spinning capacity, the addition to capacity by existing units is envisaged at 1.25 lakh tonnes. There would

be need, therefore, for creation of additional new capacity of 50 thousand tonnes per annum. It is proposed to give preference to units coming up in cooperative/public sector and the units to be located in North-Eastern region.

16.62 The Government has set up a National Jute Manufacturers Corporation which has under its control six jute mills. A scheme for modernisation and rehabilitation of these mills is under way. A Plan provision of Rs. 5.60 crores is envisaged for this purpose.

Paper and newsprint

16.63 Demand for paper and paper board is estimated to increase from 1.1 million tonnes in 1979-80 to 1.54 million tonnes by 1984-85. The capacity and production targets envisaged for 1984-85 are 2.05 million tonnes and 1.5 million tonnes respectively. The additional capacity is expected to come up largely through establishment of small sized paper mills based on secondary raw materials and three large units being set up in the public sector.

16.64 The present consumption of newsprint which is of the order of 0.35 million tonnes is largely met through imports. Taking into account the present trend in consumption of newsprint, it is estimated that the demand for newsprint would increase to 0.5 million tonnes by 1984-85. Capacity for newsprint is expected to increase to 0.23 million tonnes and production to 0.18 million tonnes in 1984-85; imports of newsprint will have to continue during the plan period.

16.65 It is expected that the Nagaland paper project and Nowgong and Cachar paper projects in Assam, in the public sector, with a total capacity of 0.233 million tonnes of paper and paper board would be commissioned by 1984-85. Similarly, the Kerala Newsprint project with an annual installed capacity of 80 thousand tonnes per annum of newsprint and the newsprint project of Mysore Paper Mills with a capacity of 75 thousand tonnes per annum are expected to go into production during the Plan period.

16.66 The raw materials for the paper and newsprint industry require to be planned on a more systematic and long term basis in view of the limited forest resources of the country and the long gestation period for their regeneration. Maximum use of non-conventional raw materials has assumed importance in the context of emerging shortage of conventional raw materials to support the expanding paper industry. Steps for encouraging their use have already been initiated and policy measures of greater use of bagasse for the manufacture of paper and newsprint have been announced.

16.67 The Outlay provided in the Plan fully takes care of the ongoing programmes for the paper and newsprint industry in the public sector. Additionally, consideration will be given to the possibility of initiating new paper/pulp projects based on the forest resources in the North East region.

Cement

16.68 The main bottlenecks which had resulted in lower production of cement and under-utilisation of capacity during recent years have been the lack of adequate infrastructural facilities like coal, power and transport. Efforts are being made to improve infrastructure facilities as a result of which it is expected that capacity utilisation would be substantially improved during the Plan period. The cement capacity is expected to increase to 43 million tonnes in 1984-85 from 24.3 million tonnes in 1979-80. A production target of 34.5 million tonnes for 1984-85 is envisaged. A higher production than what has been targeted could be achieved if there is significant improvement in the infrastructural facilities. This could result in narrowing the gap between supply and demand.

16.69 In planning additional capacity, advantage is being taken of economies of scale through the installation of large size one million tonne capacity plants. This has been possible because of the induction of pre-calcination technology. More than 8 plants of one million tonne capacity are expected to go on stream during the Plan period. In addition, a large number of mini cement plants are expected to be established which may contribute around one million tonnes of cement.

16.70 The public sector units have major programmes for utilisation of slag from the steel plants. A capacity of 1.68 million tonnes of slag cement is being set up by U.P. Cement Corporation at Chunar, using slag from Bokaro. Besides, Steel Authority of India are also setting up a two million tonne slag cement capacity at Chilhati using Rourkela and Bhilai slag.

16.71 The Cement Corporation of India have an ambitious programme of setting up three one-million tonne capacity cement plants at Tandur, Neemuch and Yerraguntala. An investment of Rs. 300 crores is envisaged for the Cement Corporation of India.

16.72. The capacity in public sector units will increase from 3.60 million to 9.30 million tonnes and their share in capacity will rise from around 15 per cent to 22 per cent during the Plan period.

Sugar

16.73 As the world's largest producer of sugarcane, the country has considerable potential for the development of the sugar industry to meet domestic demand as well as exports. The rapid growth of the cooperative sugar factories, which account for over 50 per cent of sugar production, illustrates the potential for the development of this industry, as well as the harmonisation of the interest of the farmers and those of the manufacturers of sugar.

16.74 The wide fluctuations in the sugarcane production result in periodic scarcity and surplus in sugar causing distress to the farmers, sugar industry and the consumer. This calls for a rational policy for pricing of sugarcane and sugar, as also the other sweetening agents like gur and khandsari.

16.75 Taking into account the trend in the consumption of sugar the domestic requirements are estimated at 6.64 million tonnes in 1984-85. An export level of one million tonnes is tentatively projected. The level of exports, however, would be influenced by the international demand-supply position and prices. Capacity and production targets of 8 million and 7.64 million tonnes respectively are envisaged for 1984-85.

16.76 The policy for licensing of new sugar factories announced by the Government in July, 1980 gives priority to the cooperatives and public sector units. Applications from private sector would also be considered, if adequate response is not forthcoming from the preferred sectors.

16.77 Incentives to sugar factories established at high cost have been revived in November, 1980, to help in the establishment of adequate capacity to meet the projected demand. A differential price policy of giving an additional levy price for smaller and older units has been adopted for the first time. The proposed development cess and assistance to sick units for modernisation and rehabilitation are other important features of this new policy. The present policy of constructing storage tanks for conservation of molasses would need to be continued for maximising the production of alcohol.

Vegetable oils and Vanaspati

16.78 There is currently a large gap between the demand and domestic production of edible oils requiring considerable imports. With a view to attaining self-sufficiency the production of oilseeds is envisaged to be stepped up from 10.20 million tonnes in 1979-80 to 13.10 million tonnes by 1984-85. An integrated programme for augmenting the total supply of oils both for edible and industrial purposes is under formulation. The maximisation of production of edible oils from newer sources like soyabean, rice-bran, etc. will be a major element in the Sixth Plan strategy for this sector. Facilities for extraction of these oils will be augmented. The demand for vanaspati by 1984-85 is estimated at 0.9 million tonnes. The industry is being supplied with imported oils at pre-determined prices in order to relieve the pressure on indigenous oils which are commonly used for direct consumption. A review of the existing capacity for vanaspati is being carried out taking into account such factors as the prolonged hydrogenation that is required because of the use of a different mix of oils, correction of regional demand-supply imbalance etc.

16.79 The outlay of Rs. 38.65 crores provided in the Plan for development of vegetable oils relates to such programmes as setting up of processing facilities for soyabean oil, modern oil complexes, establishment of a national level organisation for integrated management of vegetable oilseeds and oils and a coordinated research and development programmes. In addition there is a large project in the cooperative sector for the modernisation of the vegetable oil industry in-

cluding production of oilseeds organised through the National Dairy Development Board.

Leather

16.80 India has the world's largest source of leather-its livestock population. With the present availability of 33.2 million raw hides and 69.9 million raw skins per annum, India is well placed to satisfy a significant part of the world's requirement of leather footwear and leather goods. The pattern of leather exports has undergone a significant change since 1973-74. The share of finished leather in the total exports has gone up from about 19 per cent during 1974-75 to about 57 per cent during 1979-80. This is a significant achievement in the first stage of switch over, i.e. from semi-finished leather exports to finished leather exports.

16.81 During the eighties, the most crucial task before the industry is to attain the second phase of conversion from finished leather exports to exports of leather goods. An appropriate policy would be evolved and expeditiously implemented to increase on a sustained basis the export of leather footwear and leather goods, along with the generation of increased employment. In this effort, the various State leather Development Corporations and the Bharat Leather Corporation would play a significant role.

Atomic Energy (Industry and Mineral sector)

16.82 The main objectives underlying the programmes of Atomic Energy under the industry and minerals sector are the development of indigenous capability for achieving self-sufficiency in the production of special materials and equipment needed for all the activities in the nuclear fuel cycle from uranium exploration to waste disposals, development of viable technology and facilities for the application of radiation and radio-isotopes in the field of industry, medicine and agriculture and promoting the commercial exploitation of technology, materials and equipment developed primarily for meeting the needs of the nuclear programme. The bulk of the provision in the Plan is intended for completion of various schemes under implementation in the Bhabha Atomic Research Centre, Electronics Corporation of India, Uranium Corporation, and Indian Rare Earths Ltd. Substantial provision has also been made for expanding the capacity for the production of heavy water.

OUTLAYS

16.83 The overall outlay envisaged in the plan is Rs. 20,407 crores including coal and petroleum. A major part of the outlay amounting to Rs. 19,018 crores is in the Central sector and the balance of Rs. 1,389 crores in the States sector. Some two-third of the outlay in the Central sector is on continuing schemes, the balance one-third representing new starts during the Sixth Plan period. These new starts are intended primarily by way of advance action in order to create the necessary capacity to meet the anticipated demand in the early years of the Seventh

Plan period. The outlays of the Central sector programmes are indicated in Annexures 16.2 and 16.3. The provision in the Central Plan for major section is given below:

	(Rs. crores)
1 Steel	3613
2 Petroleum	4300
3 Coal	2870
4 Fertilizers	2367
5 Heavy Engineering	704
6 Iron ore	223
7 Non-ferrous metals	1262
8 Petrochemicals	962
9 Paper and newsprint	340
10 Cement	421
11 Drugs & pharmaceuticals	145
12 Textiles	102
13 Electronics	165

A significant portion of the outlay has been allocated to petroleum, coal, metals and fertilizers in line with the priorities of the Plan. A rough analysis indicates that approximately 26 per cent of the overall outlay in the public sector would go to support the programmes in the rural and agricultural sector. In the case of metals, the new steel plant at Vizagapatnam, the alumina complex at Orissa and the continuing programmes of expansion of steel plants at Bhilai and Bokaro account for the large investment proposed. In the case of fertilizers, several new starts for nitrogenous fertilizers based on natural gas and also for phosphatic fertilizers are envisaged.

16.84 The Plan provision for the public sector undertakings also includes support for R & D activities many of which will, besides supporting the needs of the concerned public sector units, also cater to the overall technological needs of the industries concerned. Provision has also been made for replacement, rehabilitation and technological improvements in existing undertakings.

16.85 However, the resource constraint for the industrial sector of the Plan has limited the flexibility for inclusion of many essential new schemes. The fact that these schemes are desirable and necessary for maintaining the pace of growth, has been noted but funds would be provided for starting these schemes on the basis of a mid-term appraisal of the Plan and an assessment of the emerging resource position at that time. Schemes which have been so treated are

those where investment expenditure would normally be required in the later part of the Plan period.

16.86 The outlay in the States and Union Territories is generally meant for augmenting the share capital of State Financial Corporations and State Industrial Development and Investment Corporations to enable them to extend financial assistance to small and medium entrepreneurs and to undertake other promotional activities in their respective States. Particular emphasis has been laid on the provision of infrastructural facilities under the programme of development of industrial areas. The State Plans also contain provisions for projects under industries such as cotton spinning, cement, electronics, ceramics,

tannery, light engineering and consumer products based on the processing of local raw materials or to cater to the local market. Under mineral development, provision has been made for carrying out detailed exploration of mineral resources. Special attention has been paid to exploiting the industrial potential of the North East Region and arrangements would be made to ensure a continued and integrated support for quick implementation of the programmes so identified for this region.

16.87 A statement containing the provisions made in the Plans of States and Union Territories for large and medium industries, including mineral development, is at Annexure 16.4.

Annexure 16.1
Capacity and Production Estimates for Selected Industries for 1984-85

Sl. No.	Industry	Unit	1979-80		1984-85	
			Actuals/Anticipated		Targets	
(0)	(1)	(2)	Capacity	Production	Capacity	Production
1 Mining						
	(1) Coal	M. Tonnes	..	104	..	165
	(2) Lignite	"	..	3.12	..	8
	(3) Crude Oil	"	..	11.77	..	21.60
	(4) Iron Ore	"	..	39	..	60
2 Basic Metals						
	(1) Hot Metal (Integ. Plants)	"	12.20	8.47	15.27	13.20
	(2) Pig Iron for sale	"		1.09		1.52
	(3) Steel Ingots	"	14.47	9.62	17.90	14.45
	(4) Steel Ingots (Integ. Plants)	"	11.40	8.03	14.56	12.45
	(5) Saleable Steel	"	11.21	7.38	14.30	11.51
	(6) Saleable Steel (Integ. Plants)	"	8.73	6.04	11.30	9.71
	(7) Alloy & Special Steels	'000 T.	772	610	1050	920
	(8) Sponge Iron . . . . .	"	..	..	330	160
	(9) Aluminium	"	330	192	350	300
	(10) Copper (Blister)	"	47.50	22.45	60	50
	(11) Zinc	"	92	52.60	98	85
	(12) Lead	"	18	11.40	30	25
3 Metal Products						
	(1) Steel Castings	"	168	72	200	135
	(2) Steel Forgings	"	220	110	240	180
4 Non-Metallic Mineral Products						
	(1) Cement	M. Tonnes	24.30	17.68	43	34.50
	(2) Refractories	'000 T.	1640	850	1800	1250
5 Petroleum Products						
		M. Tonnes		25.83		35.34
6 Basic Chemicals						
	(1) Sulphuric Acid	'000 T.	3830	2131	5000	3600
	(2) Caustic Soda	"	768	550	1050	850
	(3) Soda Ash	"	633	556	1000	850
	(4) Calcium Carbide	"	149	87	250	200
	(5) Industrial Oxygen	MCM	123.70	83.50	200	150
7 Agricultural Chemicals						
	(1) Nitrogenous Fertilizers	'000 T.	3891	2226	5938	4200
	(2) Phosphatic Fertilizers	"	1230	757	1825	1400

Annexure 16. I—Contd.

(0)	(1)	(2)	(3)	(4)	(5)	(6)
(3)	BHC (in terms of 13% isomer)	'000 T.	37.90	31.80	43.90	43
(4)	D.D.T.	"	4.10	4.70	9.10	10
(5)	Malathion	"	3.50	2.10	9.20	7.50
(6)	Other Pesticides	"	24.90	11.40	37.60	26.40
8	<i>Thermo Plastics and Synthetic Rubbers</i>					
(1)	L.D. Polyethylene	'000 T.	112	71.30	112	100
(2)	H.D. Polyethylene	"	30	25.40	30	27
(3)	Polyvinyl Chloride	"	77.90	49.90	173	128
(4)	Polypropylene	"	30	13.40	30	27
(5)	Polystyrene	"	23.50	12	23.50	20
(6)	<i>Synthetic Rubbers</i>					
	Styrene Butadiene Rubber	"	30	21.60	30	27
	Polybutadiene Rubber	"	20	8.70	20	18
9	<i>Petro-chemical Intermediates</i>					
(1)	Acrylonitrile	'000 T.	24	3.70	24	20
(2)	DMT	"	24	27.90	66	56
(3)	Caprolactam	"	20	13.50	20	18
(4)	Detergent Alkylate	"	30	13.10	37.50	35
(5)	Methanol	"	44.50	43.20	124	100
10	<i>Man-made Fibres</i>					
(1)	Viscose Filament Yarn	'000 T.	41.10	41.80	43	43
(2)	Viscose Staple Fibre	"	97.40	84.50	150	120
(3)	Viscose Tyre Cord	"	21	15	21	21
(4)	Nylon Filament Yarn	"	21	17.70	31.40	28
(5)	Nylon Tyre Cord & Industrial Yarns	"	12.10	11.20	13.50	13.50
(6)	Polyester Staple Fibre	"	30.40	23.60	58.60	55
(7)	Polyester Filament Yarn	"	8	9	18	18
(8)	Acrylic Fibre	"	16	3.40	16	14
11	<i>Drugs and Pharmaceuticals</i>					
(1)	Bulk Drugs	Rs. crores		226		665
(2)	Formulations	"		1150		2450
12	<i>Food Products</i>					
(1)	Sugar	M. Tonnes	6	3.90	8	7.64
(2)	Vanaspati	'000 T.	1291	626	1351	900
13	<i>Textiles</i>					
(1)	All Yarn (Cotton, blended and mixed)	Cap. Mill Spindles	20.78	1216	22.80	1423
		Prod: Mill. Kg.				
(2)	Cloth (Mill Sector)	Cap: Lakh looms	2.07	4085@	2.17	4900
		Prod: million Mtrs.				
(3)	Cloth (Decentralised Sector)			6350		8400
		Prod: million Mtrs.				
(4)	Jute manufactures	'000 tonnes	1325	1336	1500	1500
14	<i>Leather and Rubber Goods</i>					
(1)	Leather Footwear (Organised Sector)	Mill. pairs	20.80	13	30	25

@excluding art silk fabrics

Annexure 16·1—Contd.

(0)	(1)	(2)	(3)	(4)	(5)	(6)
	(2) Rubber Footwear (Organised Sector)	Mill. pairs	57	40·70	57	55
	(3) Bicycle Tyres (Organised Sector)	Mill. Nos.	34	27·70	34	34
	(4) Automobile Tyres	"	8·58	7·10	12·80	11·50
15	<i>Paper and Paper Products</i>					
	(1) Paper & Paper Board	'000 T.	1538	1050	2050	1500
	(2) Newsprint	"	75	47·40	230	180
16	<i>Soaps and Detergents</i>					
	(1) Soaps (Organised Sector)	'000 T.		300		370
	(2) Synthetic Detergents (Organised Sector)	"	230	170	375	300
17	<i>Industrial Machinery</i>					
	(1) Machine Tools	Rs. crores	190	163·30	300	250
	(2) Mining Machinery	"	42	24·30	50	45
	(3) Metallurgical Machinery	"		40·60		82
	(4) Cement Machinery	"	42·30	25·29	75	60
	(5) Chemicals & Pharmaceuticals Machinery	"	105	73·90	150	130
	(6) Sugar Machinery	"	51·80	31·60	88	70
	(7) Rubber Machinery	"	14	7·70	20	14
	(8) Paper & Pulp Machinery	"	43	32·10	50	42
	(9) Printing Machinery	"	8	7·30	17	14
	(10) Textile Machinery	Textile "	300	210	370	295
	(11) Boilers	"	254	259·40	430	346
18	<i>Electrical Power Equipment</i>					
	(1) Steam Turbines	MKW	2·50	2·28	4	3·50
	(2) Hydro Turbines	"	1·03	0·95	1·50	1·20
	(3) Transformers	MKVA	31·15	18·70	40	35
	(4) Electric motors	M. HP.	6·50	3·81	9	7
19	<i>Construction Machinery</i>					
	(1) Earth Moving Equipment	Nos.	1540	1285	2700	2200
	(2) Road Rollers	"	1800	823	1800	1400
20	<i>Agricultural Machinery</i>					
	(1) Tractors	'000 Nos.	70	62·50	110	100
21	<i>Rail and Water Transport</i>					
	(1) Diesel Locomotives	Nos.	200	150	225	210
	(2) Electric Locomotives	"	80	58	80	78
	(3) Railway Coaches	"	1500	1250	2100	1700
	(4) Railway Wagons	'000 Nos.	22·50	12	30	25
	(5) Ship building	'000 GRT.	90	73	186	140
22	<i>Road Transport</i>					
	(1) Commercial Vehicles	'000 Nos.	84	57·40	140	105
	(2) Passenger Cars	"	52	35	60	48
	(3) Jeeps	"	13	12·50	25	20

Annexure 16. I—Concl'd.

(0)	(1)	(2)	(3)	(4)	(5)	(6)
	(4) Scooters, motor cycles, mopeds	000 Nos.	493	307	675	500
	(5) Bicycles (Organised Sector)	Mill. Nos.	4.60	3.78		6
23	Mechanical Components & Consumer Durables					
	(1) Ball & Roller Bearings	Mill Nos.	36.40	32	80	
	(2) Typewriters	'000 Nos.	131.40	91.80	170	143
	(3) Sewing Machines	"	555	385.91	555	470
	(4) Mechanical Watches	Mill Nos.	7	4.60	15	12.50
24	Electrical Components & Consumers Durables					
	(1) A CSR & AA Conductors	'000 T.	137.30	67.21	137.30	120
	(2) PVC & VIR Cables (Organised Sector)	M. Core Metres	1281	504	1281	900
	(3) Dry cells	Mill. Nos.	1291	851.60	1750	1400
	(4) Storage batteries	"	2.23	1.63	2.77	2.31
	(5) GLS Lamps	"	231.99	194.81	360	290
	(6) Flourescent tubes	"	26.92	23.78	52.50	42
	(7) H.T. Insulators	'000 T.	34	31.50	64	51
	(8) H.T. Circuit breakers	'000 Nos.	16.46	8.96	17	13
	(9) Power capacitors (HT & LT)	MVAR	1332	1100	2750	2200
	(10) Domestic refrigerators	'000 Nos.	339.40	223	520	390
	(11) Welding Electrodes	MRM	742.20	487.24	800	715
	(12) Electric fans	Mill Nos.	3.52	3.87	8.25	6.60
	(13) Power Cables (XLPE, PILC, PVC)	'000 KM	39.33	20.52	60	45
25	Electronics					
	(A) <i>Consumer Electronics</i>	Rs. crores	253	194.40	602	522.50
	(1) Radio Receivers	"	100	84.50	200	177
	(2) T.V. Receivers	"	80	63.50	200	180
	(3) Tape recorders	"	19	11.20	50	38
	(4) Record Players	"	11	8	13	11.50
	(5) Amplifiers & PA systems	"	19	11.30	25	19
	(6) Calculators	"	18	10.50	35	32
	(7) Electronic watches	"		1.4	60	50
	(8) Others (CCTV, TV Glass etc.)	"	6	4	18	15
	(B) <i>Industrial Electronics</i>	Rs. crores	166	115	465	350
	(1) Instruments (T&M, Analytical etc.)	"	49	32.50	148	102.50
	(2) Process Control Equipment	"	65	44.50	157	122.50
	(3) Power Electronics	"	40	29.50	118	95
	(4) Medical Electronics	"	12	8.50	42	30
	(C) <i>Communication Equipment</i>	"	287.50	191.50	653	509.40
	(1) Mass Communication	"	4	1	13	10.40
	(2) Telecommunications	"	175	123	400	306
	(3) Two-way Communication	"	8.50	6.5	35	30
	(4) Aero Space etc.	"	100	61	205	163
	(D) <i>Computer System</i>	"	23.50	16.50	120	90
	(1) CPU	"	13	8	70	50
	(2) Peripherals	"	7	5	25	20
	(3) Unbundled Software	"	3.50	3.50	25	20
	(E) <i>Production in Free Trade Zone</i>	"		11.5		45
	(F) <i>Components</i>	"	180	140	450	395
	(G) <i>Electronic Materials</i>	"		17		60

Annexure 16.2

Outlay for Central Industrial and Mineral Projects in the Sixth Plan (1980-85)

(Summary Statement)

(Rs. crores)

S1. No.	Ministry/Department	Continuing Schemes	Additions, modifications, replacement and renewals, township etc.	S & T Programmes	New Schemes	Total
(6)	(1)	(2)	(3)	(4)	(5)	(6)
1	Departments of Steel	2898.60	230.25	79.83	791.32	4000.00
	(a) Steel	2812.45	211.25	77.83	655.68	3757.21
	(b) Ferrous Minerals	86.15	19.00	2.00	135.64	242.79
2	Department of Mines	312.40	86.58	16.16	964.86	1380.00
3	Department of Petroleum (Petro-chemicals)	287.92	42.97	5.00	599.11	935.00
4	Department of Chemicals & Fertilizers	1191.94	160.09	18.03	979.94	2350.00
5	Department of Agriculture & Cooperation (Fertilizer Projects)	325.00	..	..	..	325.00
6	Department of Industrial Development	551.98	17.00	7.41	273.61	850.00
7	Department of Heavy Industry	234.54	175.77	57.51	236.22	704.04
8	Ministry of Shipping & Transport (Ship-building)	30.07	10.73	1.00	55.57	97.37
9	Department of Electronics	76.18	..	32.34	31.76	140.28
10	Department of Atomic Energy	132.71	10.71	..	208.64	352.06
11	Department of Revenue	0.19	..	..	0.02	0.21
12	Department of Economic Affairs (Currency, Coinage & Mint)	19.73	..	..	20.29	40.02
13	Department of Economic Affairs (Banking Division)	354.70	..	..	..	354.70
14	Ministry of Civil Supplies	6.50	..	..	42.40	48.90
15	Department of Commerce	131.66	..	..	30.70	162.36
	(a) Plantations	121.50	..	..	13.50	135.00
	(b) Other Schemes	10.16	..	..	17.20	27.36
16	Department of Textiles	90.00	..	6.50	5.63	102.13
17	Department of Science & Technology	2.50	..	..	3.50	6.00
	TOTAL	6646.62	734.10	223.78	4243.57	11848.07
18	Department of Coal**	1821.74	*	25.00	1023.26	2870.00
19	Department of Petroleum (Petroleum)**	3642.16	*	37.53	620.31	4300.00
	GRAND TOTAL	12110.52	734.10	286.31	5887.14	19018.07

*Included under continuing schemes.

**Details are given in the Energy Chapter.

Annexure 16.3

Central Industrial and Mineral Projects

(Rs. crores)

Sl. No.	Organisation/Project/Scheme	Sixth Plan (1980—85) Outlay
(0)	(1)	(2)
1.	DEPARTMENT OF STEEL	4000.00
A.	STEEL	3757.21
1.1	<i>Bhilai Steel Plant</i>	915.27
1.1.1	Continuing Schemes	741.64
1.1.1.1	4 m.t. Expansion	740.00
1.1.1.2	Other Schemes	1.64
1.1.2	Additions, Modifications, Replacement, Township, etc.	27.50
1.1.3	New Schemes	110.00
1.1.3.1	Plant Modernisation	100.00
1.1.3.2	Expansion of Dalli Mines and Development of Limestone Quarries	10.00
1.1.4	S&T Programme	36.13
1.2	<i>Durgapur Steel Plant</i>	179.65
1.2.1	Continuing Schemes: Captive Power Plant	74.65
1.2.2	Additions, Modifications, Replacement, Township, etc.	55.00
1.2.3	New Schemes: Modernisation of Steel Plant	50.00
1.3	<i>Rourkela Steel Plant</i>	422.43
1.3.1	Continuing Schemes	96.75
1.3.1.1	Silicon Steel Project	87.21
1.3.1.2	Modernisation of Hot Strip Mill	6.61
1.3.1.3	Additional Naphtha Reforming Plant	2.93
1.3.2	Additions, Modifications, Replacement, Township etc.	52.50
1.3.3	New Schemes	273.18
1.3.3.1	Cement Plant	120.51
1.3.3.2	Fertilizer Plant Diversification	20.00
1.3.3.3	Modernisation of Steel Plant	50.00
1.3.3.4	Coke Oven (Vth Battery)	12.67
1.3.3.5	Captive Power Plant.	70.00
1.4	<i>Bokaro Steel Plant</i>	811.00
1.4.1	Continuing Schemes	711.00
1.4.1.1	1.7 m.t. Stage	8.72
1.4.1.2	4 m.t. Expansion including Cold Rolling Mill Complex	561.14
1.4.1.3	Slag Granulation Plant	1.67
1.4.1.4	Captive Power Plant	101.78
1.4.1.5	Iron Ore Mine (Meghahataburu)	35.88

Annexure 16.3—Contd.

(0)	(1)	(2)
1.4.1.6	Kiriburu Mines Expansion	1.81
1.4.2	Additions, Modifications and Replacement	35.00
1.4.3	New Schemes	65.00
1.4.3.1	4.75 m.t. Expansion	50.00
1.4.3.2	Slag Granulation Plant Expansion	10.00
1.4.3.3	Sixth Blast Furnace Complex	5.00
1.5	<i>Alloy Steel Plant, Durgapur</i>	31.28
1.5.1	Continuing Schemes (Stage I Expansion)	5.03
1.5.2	Additions, Modifications, Replacement and Township	11.25
1.5.3	New Schemes (Secondary Refining Facilities—Stage II)	15.00
1.6	<i>Indian Iron & Steel Co. Ltd.</i>	127.66
1.6.1	Continuing Schemes	16.66
1.6.1.1	Plant Rehabilitation Scheme	2.54
1.6.1.2	No. 10 Coke Oven Battery	11.86
1.6.1.3	Departmentalisation of Mines	2.26
1.6.2	Additions, Modifications, Replacement, Township etc.	30.00
1.6.3	New Schemes	81.00
1.6.3.1	Development of Iron Ore Mines and Collieries	35.00
1.6.3.2	Diversification of Kulti Works	6.00
1.6.3.3	Sintering Plant with Ancillaries	40.00
1.7	<i>Vishakhapatnam Steel Plant (Continuing Schemes) (3.4 m.t. Steel Plant—Stages I & II)</i>	1050.00
1.8	<i>Salem Steel Plant (Continuing Schemes)</i>	78.73
1.9	<i>Second new Steel Plant (New Schemes)</i>	50.00
1.10	<i>Visveswaraya Iron & Steel Co. Ltd. (Continuing Schemes)</i>	6.00
1.11.	<i>Metal Scrap Trading Co. (Continuing Schemes)</i>	5.00
1.12	<i>Metallurgical Engineering Consultants (India) Ltd. (Continuing Scheme)</i>	4.07
1.13	<i>Hindustan Steel Construction Works Ltd.</i>	10.00
1.14	<i>Sponge Iron (India) Ltd.</i>	8.00
1.14.1	Continuing Schemes	3.00
1.14.2	New Schemes	5.00
1.15	<i>Bharat Refractories Ltd.</i>	8.92
1.15.1	Continuing Schemes	6.92
1.15.2	New Schemes	2.00
1.16	<i>SAIL/Central units</i>	4.00
1.16.1	Continuing Schemes	1.50
1.16.2	New Schemes	2.50
1.17	<i>Vijayanagar Steel Plant (New Schemes)</i>	2.00
1.18	<i>R & D Centre at Ranchi</i>	41.70

Annexure 16.3—Contd.

(0)	(1)	(2)
1.19	<i>Mahanadi Project</i> (Loan to Madhya Pradesh Govt.)	1.50
B.	FERROUS MINERALS	242.79
1.19]	<i>National Mineral Development Corporation</i>	68.24
1.19.1	Continuing Schemes (Bailadila No. 5 Mine, Donimalai Mine, Exploration & Feasibility studies)	5.60
1.19.2	Replacement and Renewals	15.00
1.19.3	New Schemes	45.64
1.19.3.1	New Mine at Bailadila	20.00
1.19.3.2	Bailadila No. 11-C Mine	11.78
1.19.3.3	Fine Ore Handling Plant at Bailadila No. 5 Mine	13.86
1.19.4	S & T Programme	2.00
1.20	<i>Kudremukh Iron Ore Company Ltd.</i> (Continuing Schemes)	70.00
1.21	<i>Manganese Ore (India) Ltd.</i>	19.55
1.21.1	Continuing Schemes	5.55
1.21.2	Replacement & Renewals	4.00
1.21.3	New Schemes	10.00
1.22	<i>Mineral Development Board</i> (Continuing Schemes)	5.00
1.23	<i>Pellet Plants</i> (New Schemes)	80.00
2.	DEPARTMENT OF MINES	1380.00
2.1	<i>Hindustan Copper Ltd.</i>	192.98
2.1.1	Continuing Schemes	76.97
2.1.1.1	Khetri Copper Complex	2.93
2.1.1.2	Mosabani Mine Expansion	2.82
2.1.1.3	Malanjkhand Mines	70.72
2.1.1.4	Exploration etc.	0.50
2.1.2	Replacement and Renewals and Township	47.08
2.1.3	New Schemes	66.00
2.1.3.1	Khetri Copper Complex—Expansion of Smelter and Refinery & By-product Plant	15.00
2.1.3.2	Indian Copper Complex—Expansion of Smelter and Refinery & By-product Plant	12.00
2.1.3.3	Exploratory and Pre-feasibility Study of Mining and Metallurgical Project	4.00
2.1.3.4.	Other Mines, Concentrator, Mill, etc.	35.00
2.1.4	S & T Programmes	2.93
2.2	<i>Hindustan Zinc Ltd.</i>	122.83
2.2.1	Continuing Schemes	70.57
2.2.1.1	Debari Smelter Expansion.	1.29

Annexure 16.3—Contd.

(0)	(1)	(2)
2.2.1.2	Vishakhapatnam Smelter	2.91
2.2.1.3	Development of Rajpura-Dariba Mine	39.45
2.2.1.4	Development of Sargipalli Mine	14.01
2.2.1.5	Leach Residue Treatment Plant	10.42
2.2.1.6	Others	2.49
2.2.2	Replacement & Renewals	23.00
2.2.3	New Schemes	26.86
2.2.3.1	Zawarmala Mine	1.82
2.2.3.2	Vishakhapatnam Lead Smelter Expansion	5.04
2.2.3.3	Agucha-Baroi Mine and Smelter Complex	14.00
2.2.3.4	Silver and Mercury Recovery Plants and Other Schemes	6.00
2.2.4	S & T Programme	2.40
2.3	<i>National Aluminium Co. Ltd.</i>	861.00
2.3.1	New Schemes	861.00
2.3.1.1	Orissa Aluminium Complex	860.00
2.3.1.2	Andhra Pradesh Alumina Project	1.00
2.4.	<i>Bharat Aluminium Co. Ltd.</i>	67.11
2.4.1	Continuing Schemes	44.36
2.4.1.1	Korba Aluminium Complex	41.00
2.4.1.2	Korba Alumina Plant (re-vamping) and Proporz Mill	3.36
2.4.2	Replacement & Renewals	10.00
2.4.3	New Schemes	8.00
2.4.3.1	Gandhamardan Bauxite Mines	8.00
2.4.4	S & T Programmes	4.75
2.5	<i>Bharat Gold Mines Ltd.</i>	15.50
2.5.1	Continuing Schemes	4.50
2.5.2	Replacement and Renewals and Township	6.50
2.5.3	New Schemes	3.00
2.5.4	S & T Programmes	1.50
2.6	<i>Geological Survey of India</i>	70.00
2.7	<i>Mineral Exploration Corporation</i>	40.00
2.8	<i>Indian Bureau of Mines</i>	8.55
2.8.1	Continuing Schemes	5.00
2.8.2	S & T Programmes	3.55
2.9	<i>Banjar River Scheme</i>	1.00
2.10	<i>S & T Programme</i> (for Mineral Exploration Corporation and other institutions)	1.03

Annexure 16.3—Contd.

(0)	(1)	(2)
3.	DEPARTMENT OF PETROLEUM (Petro Chemicals, Explosives and Engineering Units)	935.00
3.1	Indian Petro-Chemicals Corporation Ltd.	160.13
3.1.1	Continuing Schemes	92.63
3.1.1.1	Olefins Complex	16.32
3.1.1.2	Poly Vinyl Chloride Project	50.30
3.1.1.3	Acrylates Project	15.92
3.1.1.4	D.M.T. Project (Expansion)	5.24
3.1.1.5	Petroleum Resins Project	4.85
3.1.2	Replacement and Renewals	40.00
3.1.3	New Schemes	22.50
3.1.3.1	Linear Alkyl Benzene Project (Expansion)	5.00
3.1.3.2	Pre-fractionation of Naphtha and Kerosene	7.50
3.1.3.3	Others	10.00
3.1.4	S & T Programmes	5.00
3.2	Donguigaon Refinery and Petro-Chemicals Corporation Ltd. (Petro-Chemicals)	166.56
3.2.1	Continuing Schemes	166.56
3.2.1.1	Xylenes Project	48.65
3.2.1.2	D.M.T. Project	48.31
3.2.1.3	Off-site Facilities Phase II	21.86
3.2.1.4	Polyester Fibre Project	47.74
3.3	Petrofils Cooperative Ltd.	1.00
3.3.1	New Scheme—Polyester Staple Fibre/Nylon Filament Yarn Project	1.00
3.4	Bharat Petroleum Corporation	13.12
3.4.1	Continuing Scheme—Aromatic Complex Phase I	13.12
3.5	Central Institute of Plastics Engineering & Tools	2.23
3.5.1	Continuing Schemes	0.05
3.5.2	New Schemes	2.23
3.6	Schemes under the Department of Petroleum (Petro-Chemicals)	549.00
3.6.1	New Schemes	549.00
3.6.1.1	Gas Cracker Complex including Downstream Units	385.00
3.6.1.2	Aromatics Recovery Unit I	50.00
3.6.1.3	Aromatics Recovery Unit II	50.00
3.6.1.4	Aromatics Recovery Unit III	24.00
3.6.1.5	D.M.T./P.T.A. Project	40.00
3.7	Indo-Burmah Petroleum Co. Ltd.	14.53
3.7.1	Continuing Schemes	7.68
3.7.1.1	Oil Division	2.85

Annexure 16.3—Contd.

(0)	(1)	(2)
3.7.1.2	Engineering Division	1.06
3.7.1.3	Chemicals Division	3.77
3.7.2	New Schemes	6.85
3.7.2.1	Engineering Division	1.10
3.7.2.2	Chemicals Division	5.75
3.8	<i>Balmer Lawrie and Co. Ltd.</i>	14.13
3.8.1	Continuing Schemes	4.22
3.8.2	New Schemes	9.91
3.9	<i>Biecco Lawrie Ltd.</i>	3.90
3.9.1	Continuing Schemes	2.26
3.9.2	Replacement and Renewals	0.40
3.9.3	New Schemes	1.24
3.10	<i>Bridge and Roof Co.</i>	10.35
3.10.1	Continuing Schemes	1.40
3.10.2	Replacement and Renewals	2.57
3.10.3	New Schemes	6.38
4.	DEPARTMENT OF CHEMICALS & FERTILIZERS	2350.00
4.1	<i>Fertilizers and Chemicals (Travancore) Ltd.</i>	134.07
4.1.1	Continuing Schemes	16.98
4.1.1.1	Cochin I Plant	5.70
4.1.1.2	Cochin II Plant	7.24
4.1.1.3	Pollution Control Measures (Udyogmandal)	1.12
4.1.1.4	Others	2.92
4.1.2	Replacement and Renewals	25.00
4.1.3	New Schemes	91.09
4.1.3.1	Caprolactam Project (Udyogmandal)	70.00
4.1.3.2	Pollution Control Measures (Cochin)	6.29
4.1.3.3	Others	14.80
4.1.4	S & T Programme	1.00
4.2	<i>Fertilizer Corporation of India Ltd.</i>	150.10
4.2.1	Continuing Schemes	116.90
4.2.1.1	Sindri Plant (Rationalisation, Modernisation and Renovation)	20.59
4.2.1.2	Ramagundam Project	43.88
4.2.1.3	Talcher Project	44.17
4.2.1.4	Pollution Control Measures (Sindri & Gorakhpur)	3.39
4.2.1.5	Others	4.87

Annexure 16.3—Contd.

(0)	(1)	(2)
4.2.2	Replacement and Renewals	27.00
4.2.3	New Schemes	6.20
4.3	<i>Hindustan Fertilizer Corporation Ltd.</i>	308.24
4.3.1	Continuing Schemes	251.89
4.3.1.1	Namrup Project Phase III	150.56
4.3.1.2	Haldia Project	46.32
4.3.1.3	Captive Power Plant (Durgapur)	12.38
4.3.1.4	Gas Turbine at Haldia and Barauni	9.28
4.3.1.5	Pollution Control Measures (Namrup, Durgapur, Barauni)	2.70
4.3.1.6	Ammonia Storage Facilities and Tank Wagons	9.15
4.3.1.7	Others	21.50
4.3.2	Replacement and Renewals	15.00
4.3.3	New Schemes	41.35
4.3.3.1	Captive Power Plants (Barauni and Haldia)	40.00
4.3.3.2	Others	1.35
4.4	<i>National Fertilizer Ltd.</i>	51.86
4.4.1	Continuing Schemes	28.48
4.4.1.1	Bhatinda Project	17.27
4.4.1.2	Panipat Project	8.66
4.4.1.3	Others	2.55
4.4.2	Replacement and Renewals	14.50
4.4.3	New Schemes	8.40
4.4.3.1	4th Gasifier Plant	5.00
4.4.3.2	Ammonia Storage Facilities (Bhatinda and Panipat)	3.40
4.4.4	S & T Programmes	0.48
4.5	<i>Rashtriya Chemicals and Fertilizers Ltd.</i>	689.41
4.5.1	Continuing Schemes	671.61
4.5.1.1	Thal Vaishet Project	600.00
4.5.1.2	Trombay (V) Project	66.27
4.5.1.3	Pollution Control Measures	1.41
4.5.1.4	Others	3.93
4.5.2	Replacement and Renewals	12.80
4.5.3	New Schemes (Rehabilitation of NPK Plant)	5.00
4.6	<i>Madras Fertilizers Ltd. (Replacement and Renewals)</i>	15.20
4.7	<i>Fertilizer (Planning and Development) India Ltd.</i>	15.05
4.7.1	Continuing Schemes	3.32
4.7.2	Replacement and Renewals	0.73

(0)	(1)	(2)
4.7.3	New Schemes	11.00
4.7.3.1	Expansion & Modernisation of Catalyst Plants	10.00
4.7.3.2	Others	1.00
4.8.	<i>Pyrites, Phosphates and Chemicals Ltd.</i>	26.09
4.8.1	Continuing Schemes	6.39
4.8.1.1	Amjhore Mining Project	5.00
4.8.1.2	Others	1.39
4.8.2	New Schemes	19.00
4.8.2.1	Mining and Beneficiation of Pyrites at Saladipura & Phosphate at Mussoorie	15.00
4.8.2.2	Others	4.00
4.8.3.	S & T Programmes	0.70
4.9	<i>Hindustan Organic Chemicals Ltd.</i>	86.28
4.9.1	Continuing Scheme	44.02
4.9.1.1	Phenol Project	30.00
4.9.1.2	Phase II Expansion	5.37
4.9.1.3	Nitrochlorobenzene Project (Expansion)	4.50
4.9.1.4	Others	4.15
4.9.2	Replacement and Renewals	7.51
4.9.3	New Schemes	29.00
4.9.3.1	Caustic Soda/Chlorine Project	15.00
4.9.3.2	Polytetrafluoroethylene Project	5.00
4.9.3.3	Others	9.00
4.9.4	S & T Programmes	5.75
4.10.	<i>Hindustan Insecticides Ltd.</i>	29.80
4.10.1	Continuing Schemes	10.20
4.10.1.1	DDT Project	7.63
4.10.1.2	Others	2.57
4.10.2	Replacement and Renewals	8.85
4.10.3	New Schemes	10.00
4.10.4	S & T Programmes	0.75
4.11	<i>Indian Drugs & Pharmaceuticals Ltd.</i>	68.20
4.11.1	Continuing Schemes	30.30
4.11.1.1	Antibiotics Plant Expansion	16.53
4.11.1.2	Synthetic Drugs Plant Expansion	7.94
4.11.1.3	Others	5.83
4.11.2	Replacement and Renewals	14.00
4.11.3.	New Schemes	18.90
4.11.3.1	Vitamin B1 and B2 Projects	4.00

(0)	(1)	(2)
4.11.3.2	Analgin Project	2.80
4.11.3.3	Others	12.10
4.11.4	S & T Programmes	5.00
4.12	<i>Hindustan Antibiotics Ltd.</i>	32.37
4.12.1	Continuing Schemes	11.37
4.12.1.1	Streptomycin Project (Expansion)	2.83
4.12.1.2	Semi Synthetic Penicillin Project	2.51
4.12.1.3	Formulation Plant Pimpri	2.19
4.12.1.4	Gentamycin Sulphate Project	2.12
4.12.1.5	Others	1.72
4.12.2	Replacement and Renewals	10.00
4.12.3	New Schemes	8.00
4.12.3.1.	Streptomycin Project —Additional Capacity	5.00
4.12.3.2	Others	3.00
4.12.4	S & T Programmes	3.00
4.13	<i>Smith Stanistreet Pharmaceuticals Ltd.</i>	4.13
4.13.1	Continuing Schemes	0.48
4.13.2	Replacement and Renewals	0.50
4.13.3	New Schemes (Bulk Drugs)	3.00
4.13.4	S & T Programmes	0.15
4.14	<i>Bengal Chemical & Pharmaceutical Works Ltd.</i>	8.20
4.14.1	Replacement and Renewals	5.00
4.14.2	New Schemes	3.00
4.14.3	S & T Programmes	0.20
4.15	<i>Bengal Immunity Company Ltd.</i>	12.00
4.15.1	Replacement and Renewals	4.00
4.15.2	New Schemes	7.00
4.15.3	S & T Programmes	1.00
4.16	<i>Schemes under the Department of Chemicals and Fertilizers</i>	719.00
4.16.1	New Schemes	719.00
4.16.1.1	Nitrogenous Fertilizer Plant I	200.00
4.16.1.2	Nitrogenous Fertilizer Plant II	75.00
4.16.1.3.	Nitrogenous Fertilizer Plant III	60.00
4.16.1.4	Nitrogenous Fertilizer Plant IV	40.00
4.16.1.5	Phosphatic Fertilizer Plant I	130.00
4.16.1.6	Phosphatic Fertilizer Plant II	50.00
4.16.1.7	Phosphatic Fertilizer Plant III	50.00

(0)	(1)	(2)
4.16.1.8	Phosphatic Fertilizer Plant IV	25.00
4.16.1.9	Phosphatic Fertilizer Plant V	15.00
4.16.1.10	Phosphatic Fertilizer Plant VI	3.00
4.16.1.11	Extension Programmes	23.00
4.16.1.12	Equity Participation in Fertilizer Projects abroad.	20.00
4.16.1.13	Institute of Fertilizer Technology	1.00
4.16.1.14	FPDIL/R & D	7.00
4.16.1.15	Tetracycline/Oxytetracycline/Penicillin/Drugs and Pharmaceutical Industry Development Centre	20.00
5.	DEPARTMENT OF AGRICULTURE & COOPERATION	325.00
5.1	<i>Krishak of Bharati Cooperative Ltd.</i>	325.00
5.1.1	Continuing Schemes (Hazira Fertilizer Project)	325.00
6.	DEPARTMENT OF INDUSTRIAL DEVELOPMENT	850.00
6.1	<i>Cement Corporation of India</i>	300.20
6.1.1	Continuing Schemes	117.59
6.1.1.1	Nayagaon Project	2.87
6.1.1.2	Akaltara Project	3.95
6.1.1.3	Yerraguntala Project	5.16
6.1.1.4	Abilabad Project	28.92
6.1.1.5	Tandur Project	71.00
6.1.1.6	Rajban Project	2.35
6.1.1.7	Mandhar Expansion	0.08
6.1.1.8	Kurkunta Project	0.25
6.1.1.9	Bokajan Project	0.20
6.1.1.10	Others	2.81
6.1.2	Replacement and Renewals	12.00
6.1.3	New Schemes	170.61
6.1.3.1	Nayagaon Expansion	79.40
6.1.3.2	Yerraguntala Expansion	60.00
6.1.3.3	Pre-calcination at Nayagaon, Akaltara and Yerraguntala	8.45
6.1.3.4	Training Institute, Central Workshop and R&D Laboratory	2.50
6.1.3.5	Mini Cement Plant (s)	2.00
6.1.3.6	Asbestos Cement Sheet Projects	2.43
6.1.3.7	Advance Action for VIIth Plan	12.00
6.1.3.8	Others (Pathri Mine Development and Joint Sector Projects)	3.83
6.2	<i>Hindustan Paper Corporation (HPC)</i>	314.68
6.2.1	Continuing Schemes	312.34
6.2.1.1	Kerala Newsprint Project	36.05
6.2.1.2	Nagaland Pulp and Paper Project	15.90
6.2.1.3	Nowgong Pulp & Paper Project	130.18
6.2.1.4	Cachar Pulp & Paper Project	129.41
6.2.1.5	Mandya Paper Mills Ltd.—Purchase Consideration	0.30
6.2.1.6	Investigations	0.50
6.2.2	New Schemes (Mandya National Paper Mills Stabilisation Programme)	1.00
6.2.3]	S & T Programmes	1.34
6.3	<i>New Pulp and Paper Projects (Not linked with HPC)</i>	1.00
6.4	<i>National Newsprint and Paper Mills Ltd. (NEPA)</i>	20.38
6.4.1	Continuing Schemes (Modernisation and Renovation Programme Phase I)	0.38
6.4.2	New Schemes (Modernisation & Renovation Programme Phase II)	20.00
6.5	<i>Bharat Ophthalmic Glass Ltd.</i>	3.75
6.5.1	Continuing Schemes	0.75

Annexure 16.3—Contd.

(0)	(1)	(2)
6.5.2	New Schemes	3.00
6.6	<i>Tannery & Footwear Corporation</i> (New Schemes)	4.97
6.7	<i>Hindustan Photo Films</i>	20.33
6.7.1	Continuing Schemes	3.90
6.7.2	Replacement and Renewals	5.00
6.7.3	New Schemes	10.43
6.7.4	S&T Programmes	1.00
6.8	<i>National Productivity Council</i>	3.00
6.8.1	Continuing Schemes	2.00
6.8.2	New Schemes	1.00
6.9	<i>Hindustan Salts Ltd.</i> (New Schemes)	2.00
6.10	<i>National Institute of Design</i> (New Schemes)	2.00
6.11	<i>Patent Information Service</i> (Continuing Schemes)	0.95
6.12	<i>Bharat Leather Corporation</i> (New Schemes)	7.50
6.13	<i>Subsidy to Backward Areas</i> (Continuing Schemes)	100.00
6.14	<i>Instrumentation Ltd.</i>	5.94
6.14.1	Continuing Schemes	2.18
6.14.2	New Schemes	3.50
6.14.3	S&T Programmes	0.26
6.15	<i>Hindustan Cables Ltd.</i>	45.76
6.15.1	Continuing Schemes	11.76
6.15.2	New Schemes (including modernisation)	33.50
6.15.3	S&T Programmes	0.50
6.16	<i>National Instruments Ltd.</i>	0.53
6.16.1	Continuing Schemes	0.13
6.16.2	New Schemes	0.35
6.16.3	S&T Programmes	0.05
6.17	<i>Cycle Corporation of India</i> (New Schemes)	0.75
6.18	<i>National Cycle Corporation of India</i> (New Schemes)	0.75
6.19	<i>Feasibility Studies</i> (New Schemes)	0.25
6.20	<i>Research Associations and Institutions</i> (New Schemes)	1.00
6.21	<i>S&T Programmes (R&D for Paper and Pulp)</i> —New Schemes	4.26
6.22	<i>Andrew Yule Co. Ltd.</i> (New Scheme)	10.00
7.	DEPARTMENT OF HEAVY INDUSTRY	704.04
7.1	<i>Bharat Heavy Electricals Ltd.</i>	350.40
7.1.1.	Continuing Schemes	189.84
7.1.1.1	Large Size Turbo Generator Project	39.04

Annexure 16.3—Contd.

(0)	(1)	(2)
7.1.1.2	Higher Capacity Boiler Project	27.76
7.1.1.3	Boiler House auxiliaries Project	21.59
7.1.1.4	Bowl Mills Project	18.58
7.1.1.5	Traction Expansion Programme (Phase II)	14.04
7.1.1.6	Industrial Machines Manufacturing Project	14.70
7.1.1.7	Hydro sets Manufacturing Project	6.42
7.1.1.8	Others	47.71
7.1.2	Replacement and Renewals, Modernisation, Township etc.	90.03
7.1.3	New Schemes	39.07
7.1.3.1	Valve manufacturing facilities	5.00
7.1.3.2	Turbo generator testing facilities (100 MW)	3.00
7.1.3.3	Upgradation of Technology for Hydro sets	1.80
7.1.3.4	Computers for various units	3.00
7.1.3.5	Captive Power Plant	5.65
7.1.3.6	Others	20.62
7.1.4	S&T Programmes	31.46
7.2	<i>HMT Ltd.</i>	117.00
7.2.1	Continuing Schemes	26.16
7.2.1.1	Two Million Watch Project, Tumkur	3.96
7.2.1.2	Precision Instruments Projects, Srinagar	4.48
7.2.1.3	Dairy Machinery Project, Aurangabad	4.26
7.2.1.4	Lamps Division	2.85
7.2.1.5	Indo Nippon Precision Bearings	3.00
7.2.1.6	Others	7.61
7.2.2	Replacement, Renewals, Modernisation, etc.	29.91
7.2.3	New Schemes	44.17
7.2.3.1	Watch Factory at Bangalore (Diversification and Modernisation)	7.60
7.2.3.2	Watch Case Project, Analog Watch Unit and Electronic Watch Project	6.93
7.2.3.3	Measuring Instruments Project (II Phase) and Optical Instruments project	3.00
7.2.3.4	Printing Machinery Project (Diversification)	4.25
7.2.3.5	Indo Nippon Precision Bearings (Diversification)	4.00
7.2.3.6	Control Systems	3.00
7.2.3.7	Others	15.37
7.2.4	S&T Programmes	12.76
7.3	<i>Bharat Heavy Plates & Vessels Ltd.</i>	14.68
7.3.1	Replacement, Renewals, Modernisation Township, etc.	4.83
7.3.2	New Schemes (Air and Gas Separation Plants, Industrial Boilers Project, Piping Project & Containers Project)	8.00

Annexure 16.3—Contd.

(0)	(1)	(2)
3.3	S & T Programmes	1.85
4	<i>Bharat Pumps and Compressors Ltd.</i>	10.37
4.1	Continuing Schemes	2.53
4.2	Township	0.70
4.3	New Schemes	6.14
4.3.1	Manufacture of special pumps	4.75
4.3.2	Gas Cylinder Project (Diversification Phase I & II)	1.39
4.4	S & T Programmes	1.00
5	<i>Bharat Brakes and Valves Ltd.</i>	2.00
5.1	Replacement and Renewals	0.75
5.2	New Schemes	1.25
6	<i>Bharat Wagon and Engineering Ltd.</i>	3.32
6.1	Continuing Schemes	0.35
6.2	Replacement and Renewals	1.25
6.3	New Schemes	1.72
7	<i>Braithwaites Ltd.</i>	12.10
7.1	Replacement, Renewals and Township	9.10
7.2	New Schemes	3.00
8	<i>Burn Standard Company Ltd.</i>	21.27
8.1	Continuing Schemes	1.27
8.2	Replacement, Renewals & Township	11.00
8.3	New Schemes (Refractory & Engineering Works)	9.00
9	<i>Heavy Engineering Corporation Ltd.</i>	57.10
9.1	Continuing Schemes	8.13
9.2	Replacement, Renewals and Township	4.17
9.3	New Schemes	42.80
9.3.1	Captive Power Plants (2 × 20 MW)	34.80
9.3.2	Other Schemes	8.00
9.4	S & T Programmes	2.00
10	<i>Jessops & Co. Ltd.</i>	8.19
10.1	Continuing Schemes	1.04
10.2	Replacement and Renewals	5.98
10.3	New Schemes	0.97
10.4	S & T Programmes	0.20
11	<i>Mining and Allied Machinery Corporation</i>	13.56
11.1	Continuing Schemes	3.23
11.2	Replacement Renewals and Township	6.03

Annexure 16.3—Contd.

(0)	(1)	(2)
7.11.3	New Schemes	3.99
7.11.4	S & T Programmes	0.31
7.12	<i>Richardson & Cruddas (1972) Ltd.</i>	7.63
7.12.1	Continuing Schemes	1.11
7.12.2	Replacement, Renewals and Township	2.15
7.12.3	New Schemes	3.49
7.12.4	S & T Programmes	0.88
7.13	<i>Scoters India Limited</i>	9.30
7.13.1	Continuing Schemes	0.58
7.13.2	Replacement, Renewals, and Township	5.72
7.13.3	New Schemes	3.00
7.14	<i>Triveni Structural Limited</i>	5.00
7.14.1	New Schemes (Expansion Stage II)	5.00
7.15	<i>Jangabhadra Steel Products Ltd.</i>	4.00
7.15.1	Continuing Schemes (Expansion Programme)	0.30
7.15.2	Replacement, Renewals and Township	2.15
7.15.3	New Schemes	1.50
7.15.4	S&T Programmes	0.05
7.16	<i>Lagan Jute Ltd. (Replacement & renewals)</i>	2.00
7.17	<i>Engineering Projects India Ltd. (New Schemes)</i>	9.12
7.18	<i>Bharat Process and Mechanical Engineers Ltd. (Bird & Co. Ltd.) (New Schemes)</i>	4.00
7.19	<i>Maruti Ltd. (New Schemes)</i>	50.00
7.20	<i>S & T Programmes (CMTI, ARAI and Others)</i>	7.00
8.	MINISTRY OF SHIPPING AND TRANSPORT (Ship Building and Ship Repair Programmes)	97.37
8.1	<i>Hindustan Shipyard Ltd.</i>	38.05
8.1.1	Continuing Schemes	0.32
8.1.2	Replacement, Renewal and Township.	7.73
8.1.3	New Schemes (Development Programme Stage II)	30.00
8.2	<i>Cochin Shipyard Ltd.</i>	36.82
8.2.1	Continuing Schemes	29.12
8.2.1.1	Original Project	19.62
8.2.1.2	Ship Repair Consultancy	3.50
8.2.1.3	Others	6.00
8.2.2	Township	3.00
8.2.3	New Schemes (Expansion Stage I)	4.70
8.3	<i>Ship Repair Facilities</i>	15.50

(0)	(1)	(2)
8.3.1	Continuing Schemes	0.63
8.3.2	New Schemes	14.87
8.3.2.1	Modernisation & Improvement of Equipment at N. S. Dry Dock, Calcutta.	4.18
8.3.2.2	Dry Dock at Madras.	5.15
8.3.2.3	Additional Repair Facilities	5.54
8.4	<i>Development of Ancillaries</i>	1.00
8.5	<i>S & T Programmes</i>	1.00
8.6	<i>New Shipyards</i>	5.00
9.	Department of Electronics	140.28
9.1	Continuing Schemes	76.18
9.1.1	Electronics Trade & Technology Development Corporation (ETTDC)	2.00
9.1.2	Semi-Conductor Complex Ltd. (SCL)	15.43
9.1.3	National Informatics Centre (N. I. C.)	9.06
9.1.4	Industrial Electronics Promotion Programme (IEPP)	3.00
9.1.5	Headquarters	2.17
9.1.6	Standardisation and Testing Infrastructure Programme	14.83
9.1.7	Special Component and Materials Programmes	7.74
9.1.8	Special Microwave Project Unit	3.96
9.1.9	Systems Engineering Cell	10.00
9.1.10	Computer Centres	3.99
9.1.11	Computer Maintenance Corporation (CMC)	4.00
9.2	New Schemes	31.76
9.2.1	Software Promotion Programme	7.25
9.2.2	Export & Production Programme	3.00
9.2.3	Electronics Research & Development Organisation	0.01
9.2.4	Special Manpower Development Programme	6.00
9.2.5	Centres for Electronics Design & Technology	2.50
9.2.6	High Power Microwave Promotion and RD Unit	5.00
9.2.7	Radar System Consultancy and Promotion Corporation	4.00
9.2.8	Reliability Programme; EMI/EMC Programmes	4.00
9.3	<i>Science and Technology Programmes</i>	32.34
9.3.1	Technology Development Council (TDC)	17.45
9.3.2	National Radar Council (NRC)	14.89
10.	DEPARTMENT OF ATOMIC ENERGY	352.06
10.1	<i>Bhabha Atomic Research Centre</i>	31.76
10.1.1	Continuing Schemes	5.78
10.1.2	New Schemes	25.98

Annexure 16.3—Contd.

(0)	(1)	(2)
10.1.2.1	Waste Immobilisation Plant at Trombay	3.0
10.1.2.2	Power Reactor Fuel Reprocessing Plant at Kalpakkam	10.0
10.1.2.3	Central Workshop—III	8.4
10.1.2.4	Others	4.5
10.2	<i>Heavy Water Projects</i>	176.7
10.2.1	Continuing Schemes	33.8
10.2.1.1	Heavy Water Projects—Bombay Office	1.0
10.2.1.2	Heavy Water Project, Kota	13.3
10.2.1.3	Heavy Water Project, Baroda	2.1
10.2.1.4	Heavy Water Project, Tuticorin	0.6
10.2.1.5	Heavy Water Project, Talcher	16.6
10.2.2	Housing Programmes	2.3
10.2.3	New Schemes	140.0
10.2.3.1	New Heavy Water Projects	140.0
10.3	<i>Nuclear Fuel Complex</i>	30.9
10.3.1	Continuing Schemes	29.0
10.3.1.1	Ball Bearing Steel Tubes Plant	15.5
10.3.1.2	Expansion of NFC—Phase I	13.0
10.3.1.3	Others	0.5
10.3.2	Housing Programmes	0.0
10.3.3	New Schemes	1.7
10.3.3.1	NFC Expansion Phase-II	1.0
10.3.3.2	Others (Production of Magnesium Granules, Tantalum, Niobium etc.)	0.7
10.4	<i>Atomic Minerals Division</i>	5.5
10.4.1	Continuing Schemes	3.0
10.4.2	New Schemes	2.5
10.5	<i>Indian Rare Earths Ltd.</i>	68.8
10.5.1	Continuing Schemes	60.3
10.5.1.1	Orissa Sand Complex (OSCOM)	59.0
10.5.1.2	Others	1.3
10.5.2	Housing Programmes	1.0
10.5.3	New Schemes	7.5
10.5.3.1	Producer Gas Plant for OSCOM	1.0
10.5.3.2	Relocation/Expansion of Rare Earths Plant at Alwaye	5.0
10.5.3.3	Thorium Uranium Plant, Trombay and other schemes	1.5
10.6	<i>Electronics Corporation of India Ltd.</i>	15.7
10.6.1	Replacement, Renewals & Housing Programmes	7.0
10.6.2	New Schemes	8.7

(0)	(1)	(2)
10.7	<i>Uranium Corporation of India Ltd.</i>	23.66
10.7.1	Continuing Schemes	0.66
10.7.2	Housing Programme	0.30
10.7.3	New Schemes	22.70
10.7.3.1	New Mine, Bhatin (Bihar)	2.40
10.7.3.2	New Mine & Mill at Narwapahar	6.50
10.7.3.3	New Mine & Mill at Turamdih	6.50
10.7.3.4	Expansion of Mill at Jaduguda	5.00
10.7.3.5	Others	2.30
11.	DEPARTMENT OF REVENUE	0.21
11.1	Continuing Schemes	0.19
11.2	New Schemes	0.02
12.	DEPARTMENT OF ECONOMIC AFFAIRS (Currency, Coinage & Mints)	40.02
12.1	Continuing Schemes	19.73
12.2	New Schemes	20.29
13.	DEPARTMENT OF ECONOMIC AFFAIRS (Banking Division)	354.70
13.1	Continuing Schemes	354.70
14.	MINISTRY OF CIVIL SUPPLIES	48.90
14.1	<i>Metric System of Weights & Measures</i>	2.36
14.1.1	Continuing Schemes	0.61
14.1.2	New Schemes	1.75
14.2	<i>Indian Standards Institution</i>	7.39
14.2.1	Continuing Schemes	5.39
14.2.2	New Schemes	2.00
14.3	<i>Measures for Consumer Protection</i> (Continuing Schemes)	0.50
14.4	<i>Development of Vegetable Oils & Vanaspathi</i> (New Schemes)	38.65
15.	DEPARTMENT OF COMMERCE	162.35
	(A) PLANTATIONS	
15.1	<i>Plantations</i>	135.00
15.1.1	Continuing Schemes	121.50
15.1.2	New Schemes	13.50
	(B) OTHER SCHEMES	27.36
15.2	<i>Santa Cruz Electronics Export Processing Zone</i>	3.35
15.2.1	Continuing Schemes (Second Standard Design Factory)	1.16
15.2.2	New Schemes (Third Standard Design Factory)	2.19
15.3	<i>Marine Products Export Development Authority</i>	12.00
15.3.1	Continuing Schemes	9.00
15.3.2	New Schemes	3.00
15.4	<i>Pilot Test House Bombay</i> (New Schemes)	0.01
15.5	<i>Mica Trading Corporation of India Ltd.</i> (New Schemes)	10.00
15.6	<i>Tobacco Board</i> (New Schemes)	2.00
16.	DEPARTMENT OF TEXTILES	102.13
16.1	<i>National Textile Corporation</i> (Continuing Schemes)	90.00
16.2	<i>National Jute Manufactures Corporation</i> (New Schemes)	5.63
16.3	<i>S & T Programme</i>	6.50
17.	DEPARTMENT OF SCIENCE & TECHNOLOGY	6.00
17.1	<i>Central Electronics Ltd.</i>	6.00
17.1.1	Continuing Schemes	2.50
17.1.2	New Schemes	3.50

Annexure—16.4

Sixth Plan Outlay—Industry and Minerals—States and Union Territories

(Rs. crores)

S. No.	States/ Union Territories	Large & Medium Indus- tries	Mineral Develop- ment	Total
(0)	(1)	(2)	(3)	(4)
1	Andhra Pradesh	55.66	20.00	75.66
2	Assam	22.00	2.75	24.75
3	Bihar	45.15	6.50	51.65
4	Gujarat	88.10	11.50	99.60
5	Haryana	11.00	0.40	11.40
6	Himachal Pradesh	8.00	1.00	9.00
7	Jammu & Kashmir	33.07	5.00	38.07
8	Karnataka	86.60	2.08	88.68
9	Kerala	108.20	1.50	109.70
10	Madhya Pradesh	29.80	5.75	35.55
11	Maharashtra	129.40	2.50	131.90
12	Manipur	7.00	0.50	7.50
13	Meghalaya	4.50	1.00	5.50
14	Nagaland	4.40	2.60	7.00
15	Orissa	32.00	6.00	38.00
16	Punjab	60.87	0.20	61.07
17	Rajasthan	45.09	19.00	64.09
18	Sikkim	1.74	1.20	2.94
19	Tamil Nadu	89.92	1.85	91.77
20	Tripura	5.36	0.10	5.46
21	Uttar Pradesh	180.02	18.10	198.12
22	West Bengal	211.34	2.00	213.34
	TOTAL (States)	1259.22	111.53	1370.75
1	Andaman & Nicobar Islands	..	..	..
2	Arunachal Pradesh	7.51	..	7.51
3	Chandigarh	0.49	..	0.49
4	Dadra & Nagar Haveli	..	..	..
5	Delhi	1.28	0.70	1.98
6	Goa, Daman & Diu	6.00	..	6.00
7	Lakshadweep	..	..	..
8	Mizoram	0.46	0.12	0.58
9	Pondicherry	1.74	..	1.74
	TOTAL (Union Territories)	17.48	0.82	18.30
	GRAND TOTAL	1276.70	112.35	1389.05

TRANSPORT

Transport, in India, plays a crucial role in ensuring sustained economic growth and is vital for the development of the various segments of the economy. The need for according high priority to the transport sector flows virtually from the size of this country as well as from the geographical dispersal of its natural resources. Transport services, unlike other commodities, are neither tradeable nor can they be stored. Transportation is also an aggregate of many linear situations and, as such, highly susceptible to cumulative chain reactions. It is subject to wide fluctuations in demand intensities. Investments in transport infrastructure usually have to be in fairly large indivisible units which prevent precise or continuous 'matching' of demand and supply. All these factors, combined together, make it desirable, as far as possible, to provide a certain amount of flexibility and cushion in the transport system, to prevent bottlenecks and the consequent chain reactions in the economy.

REVIEW

17.2 The principal modes of transport in India have been the railways and roads. Passenger traffic by rail increased from 66 billion passenger kilometres in 1950-51 to 177 billion passenger kilometres in 1977-78 and freight traffic from 44 billion to 163 billion tonne kilometres. In the same period, passenger traffic by mechanised road transport is estimated to have increased from 23 billion to 250 billion passenger kilometres and freight traffic from 5.5 billion to 77 billion tonne kilometres. In the total freight traffic carried by railways and road the percentage share of road increased from 11 per cent in 1950-51 to 32 per cent in 1965-66, while that of railways came down from 89 to 68 per cent. After 1965-66 however, the proportion remained at about the same level *i.e.* 68:32 in 1965-66, 66:34 in 1970-71 and 68:32 in 1977-78. In the case of passenger traffic, the proportion between rail and road changed from 74:26 in 1950-51 to 43:57 in 1968-69. From 1970-71, when the proportion was 41:59, it has remained more or less at the same level upto 1977-78. The passenger traffic cleared by airways has grown steadily from 0.3 billion passenger kilometres in 1955-56 to 3.4 billion passenger kilometres in 1977-78. Coastal shipping and inland water transport accounted for a small proportion of the total traffic.

17.3 In the non-mechanised transport sector, it is estimated that there are presently about 80 million work animals in the country, including 70 million bullocks. The total number of bullock carts is estimated at 13 million. The volume of freight traffic handled by animal power annually is estimated at about 10 billion tonne kilometres.

17.4 The railways have been, and are likely to remain the backbone of the country's transport infrastructure in the foreseeable future, more so in view of the emerging energy situation. The performance of the railways, in terms of output and efficiency norms, is therefore particularly important. Assessments made in this respect indicate that, by and large, the utilisation of assets has shown an improvement over the years and the physical outputs have increased at an equal if not higher pace than the physical inputs.¹

17.5 Although there has been an increase in traffic cleared by the railways in absolute terms, the fact remains that there have been frequent bottlenecks when even important commodities particularly coal, fertilizers, cement, etc. have not moved adequately while the clearance of non-priority traffic has generally been inadequate. This has been mainly due to insufficient resilience in the railway system to absorb unforeseen shifts in the traffic pattern and other unavoidable fluctuations.

17.6 The problem of capacity being inadequate to meet the demand has not been confined to railways alone. A similar situation has prevailed in respect of two other major sectors *e.g.* road transport and ports. Severe shortage of trucks was experienced when the rail system was not able to meet the full demand. Likewise, major ports, particularly Bombay, remained frequently congested leading to long waiting periods for berthing of ships.

17.7 Another sensitive segment of the transport sector where constraints of capacity have been greatly in evidence, has been the airports. The congestion at the airports in India, specially during peak periods, has now become a major factor affecting tourist traffic and thus the foreign exchange earnings of the country.

¹ Report of the National Transport Policy Committee (May 1980) (para 9-3)

17.8 The above review of the actual experience in the recent past confirms what has been mentioned earlier regarding the need for transport infrastructure, especially the more vital sectors of it like railways, ports and roads, being allowed to develop in a manner commensurate with the growth of the economy, particularly of segments with a high transport coefficient, and to have, as far as possible, certain amount of flexibility in investment planning to avoid its becoming a serious bottleneck in the development of the economy.

OBJECTIVES AND POLICIES

Transport and Energy

17.9 The transport sector is one of the largest consumers of commercial energy, consuming nearly 33 per cent of the total. In assessing therefore, the desirable level of inter-modal split of freight traffic between railways and roads, and while making resource cost comparisons in this context, appropriate weightage has to be given to the relative energy intensities.

17.10 As a long term goal, efforts will have to be made for the railways to develop the capacity to clear (i) all train load traffic for long, medium and short distances and (ii) all non-train load traffic (i.e. piecemeal traffic) for long and medium distances (except for certain commodities). This would broadly leave all short distance piecemeal traffic for the road transport. While capacity will have to be developed by the railways to do so, and while fiscal measures would be in keeping with the above objectives, the choice of transport mode will, to a great extent, be conditioned by the consumers' preferences as regulatory or legal measures will be difficult to implement, and could lead to misuse of the regulatory processes.

17.11 Within the railway system, it would be necessary to accelerate the pace of electrification in the interest of more efficient energy utilisation and in order to save use of diesel. Efforts will be made to phase out steam locomotives as early as possible, not only from the point of view of better railway operations but also from the point of view of better utilisation of scarce resources of coal. It is estimated that coal used through electric traction is nearly five times more efficient than its direct use on steam locomotives.

17.12 Vigorous measures will be taken to improve the fuel efficiency of the diesel based road transport vehicles which would include improvement in vehicle design, installation of speed control devices, improvement in the condition of roads, and truck trailer combinations on selected stretches of national highways.

17.13 The transport modes which are relatively more energy efficient like coastal shipping, inland water transport and pipeline transportation and also those dependent on human or animal energy like cycles, bullock carts etc. would be encouraged, and efforts will be made to utilize their full potential.

17.14 Steps will be taken to expand and strengthen the public transport system and thus reduce the level of personalised motor transport which is highly energy

intensive. Efforts will also be made to introduce electric based public transport in urban areas, like electric multiple unit (EMU) rail services and electric trolley buses.

17.15 Abolition of octroi in a phased manner and putting other check posts together are desirable objectives. They will reduce the impediments in the smooth flow of road traffic which is important, keeping in view the highly adverse cumulative effect of these stoppages on fuel consumption and fleet utilisation. It will be necessary therefore for State Governments to take suitable steps in this direction.

17.16 Renewed and vigorous efforts will need to be made to achieve a break-through in research and development in respect of utilisation of alternative sources of energy in the transport sector.

Integrated Planning within the Transport Sector

17.17 While planning for the future, balanced attention would be given to various, and sometimes competing, segments of transport like freight and passenger traffic, industrial and agricultural needs, rural and urban requirements etc. Special emphasis will need to be given to provision of transport facilities at reasonable cost to remote and isolated areas like the North Eastern Region and Andaman and Nicobar Islands, etc.

17.18 In a situation of scarce resources, while the needs of freight traffic will have higher priority, the minimum requirements of passenger traffic will also be catered to for avoiding serious inconvenience to the travelling public. Within the passenger sector, needs of rural, inter-urban and intra-urban passengers will be kept in view.

Transport and Environment

17.19 Unless adequate care is taken, transport, like many other forms of activity in an industrial society, can be a major pollutant of the environment. The problem is particularly acute in cities where vehicles generate noise and fumes, and heavy lorries using roads in residential areas make the effect even more pronounced. Suitable regulatory measures to control noise and fumes by transport vehicles would be taken.

Pricing Policy

17.20 The need to run public sector transport organisations like railways, road transport corporations, airlines etc. on a remunerative basis has assumed even greater importance due to the extremely difficult resource availability position in this Plan period. Elimination of losses being incurred by most of these organisations is necessary not only because they should contribute to national resources rather than be a drain on them, but also because organisations which run at loss tend to lose in morale which affects their productivity and thus set up a vicious circle of further losses. Keeping these considerations

in view and the recommendations made in this respect by two recent Committees, viz., National Transport Policy Committee, May 1980, (NTPC), and Rail Tariff Enquiry Committee, April 1980 (RTEC), transport undertakings should be required to cover their short-run operating costs and also yield a reasonable rate of return on the capital. Apart from limited cross subsidization which a transport organization may undertake for its own commercial or operational reasons, subsidies will, as a rule, be avoided. If, however, there are exceptional socio-economic considerations for a subsidy, it would, as far as possible, be provided direct to the users and not through the transport organisation. Efforts would thus be made to keep the commercial and non-commercial segments of transport undertakings separate not only to avoid their running at a loss but also in order to facilitate accountability for the proper and remunerative functioning of the commercial segments.

17.21 While tariffs of transport organisations would be suitably enhanced, wherever necessary, care will be taken that these increases are not made to cover avoidable fall in productivity, particularly in sectors where the organisation has a monopolistic or semi-monopolistic position.

Improvement in Productivity

17.22 Greater productivity in transport undertaking like railways, ports, state road transport corporations, airlines etc. would be ensured through various measures like satisfactory maintenance of existing assets, better and modernised management, greater discipline, better law and order conditions, more satisfactory power supply to the transport sector, etc. Norms of efficiency indices, based on past performance and scope for further improvement, would be laid down and their achievement effectively monitored.

Backward and Isolated Areas

17.23 It would be necessary to pay special attention to backward areas through a proper network of transport linkages, mainly through the construction of rural roads under the Minimum Needs Programme. It will also be necessary to provide special transport facilities at reasonable rates to isolated areas like North East, Andaman and Nicobar Islands, Jammu and Kashmir and also to hilly areas in general. In this context, a number of projects in the railways, as well as in the roads and bridges sectors, have been approved and in respect of air services a third level air service for the North Eastern Region would be introduced.

Urban Transport

17.24 The problems relating to urban transport have tended to become more and more complex due to massive increase in needs on the one hand and

the shortage of resources on the other. Due to the growth in population and migration from rural to urban and metropolitan areas for job opportunities, the pressure of population on urban areas and metropolitan cities and consequently the pressure on metropolitan transport, has been extremely heavy. The experience of the West in providing rapid suburban transport systems at heavy cost, has not been entirely successful as it has tended to encourage the development of a suburbia consisting of dogmatory type of satellite towns with ever increasing growth of traffic in commuters, travelling in vast numbers in peak periods from the suburbs to the Central Business District and back. Efforts, therefore, would be made to pursue the question of the development of counter magnets, beyond the commutable distance, in the shape of self-contained residence-cum-work places through suitable incentives* Urban transport policy would also keep these objectives in view and avoid schemes which would encourage the further growth of existing, or development of new, dormitory type of satellite towns. Subject to this, urban transport facilities will be augmented to the maximum feasible. Pricing policy for urban transport would ensure that urban transport is not an undue strain on resources. In this context, the recommendations of the Rail Tariff Enquiry Committee that the railway fare structure for suburban services should be suitably revised in order to keep the suburban services either self-sustaining or at least part of a self-sustaining passenger segment of the Indian Railways, would be considered. In any case, there should be no occasion for continuous budgetary support for recurring expenditure on suburban rail services. Similarly, in case of city bus services, the fare structure would be rationalized so as to fully cover at least their operating costs.

Pipeline Transportation

17.25 In view of its low recurring cost, including low energy consumption, pipeline transportation tends to be more economic than other modes in case of certain commodities and in those segments where long-term heavy density corridors of traffic are anticipated. Movement of petroleum products by pipeline is already fairly well established but would need to be enlarged. Pipeline has also been laid for movement of iron ore in slurry form from Kudremukh to Mangalore. A significant and extremely useful development in pipeline transportation could be the movement of coal in slurry form from pitheads to thermal power houses whose requirements are heavy and of a long-term nature and where coal is, in any case, required in pulverised form. The possibility of movement of coal slurry through pipeline has assumed greater importance recently in view of the growing role of coal as a source of energy as well as the increased value and importance of the lower level of transit losses involved in pipeline transportation. There are, however, a number of parameters which have to be examined before assessing the techno-economic feasibility of pipeline transportation of

*Please also see Chapter on Urban Development, Housing and Water Supply.

coal slurry in a particular segment. Arrangements will be made in this Plan to have an in-depth techno-economic feasibility study of pipeline transportation of coal in slurry form, to enable further steps being taken.

International Traffic and Export Promotion

17.26 One of the most remarkable changes in international transportation technology in the last two decades has been the spectacular growth of containerisation. This has been due to many compelling reasons like savings due to quicker turn round of ships at ports, economy in handling costs, facilitation of inter-modal transport, reduction in damage and pilferage, etc. It has therefore become imperative for India to develop container handling facilities in a big way in the absence of which it would become almost impossible for us to get our due share in international trade. The full benefits of containerisation are achieved only when complete door to door operations from origin to destination are arranged. While this may be difficult to realise in the near future in India, it is proposed to proceed in respect of containerisation in three stages as under:

- (i) Movement of containers to and from Indian ports where containers would be retained and cargo stuffed and destuffed. This would be purely port-oriented arrangement.
- (ii) Movement of containers to and from Inland Container Depots (ICDs.). This would involve coordinated transport and procedural arrangements.
- (iii) Introduction of door to door containers from origin to destination.

17.27 The main objectives of the Sixth Five Year Plan in respect of container traffic would be (a) to enable the four main ports, viz., Bombay, Cochin, Madras, Haldia to handle gearless ships, (b) to develop facilities for handling cellular ships at Madras and at the proposed Nhava Sheva port, (c) to encourage inter-modal transport of containers by barge, rail and road in Calcutta/Haldia complexes and (d) to set up three Inland Container Depots at Delhi, Ahmedabad and Bangalore on a priority basis.

17.28 In order to promote the export of cargo by air, integrated air cargo complexes will be developed at a number of international as well as domestic airports. Strengthening of runways at certain airports like Varanasi and Kanpur to enable landing of bigger aircrafts in the interest of despatch of export cargo by air, will be completed during the Sixth Plan period.

Transport Coordination

17.29 For a country of the size of India, with varying regional and geographical characteristics, it is essential to compile data on traffic flows together

with costs and to subject them to adequate analysis on a continuous basis for effective coordination and investment programming, as well as pricing, taxation and regulatory measures. The need for effective coordination in respect of these aspects being entrusted to a suitable agency like a National Transport Commission at the Centre, as recommended in the Report of the National Transport Policy Committee would be examined. With the growth in the dimensions of the energy problem, coupled with the transport sector being one of the heaviest consumers of energy, the need for maximum coordination and inter-modal integration, both at the investment planning as well as operational levels, will be given attention.

Major Policy Objectives

17.30 The requirements and the need for action in the transport sector are varied and cover a large number of segments. Keeping in view what has been stated above, the important policy objectives in the Sixth Plan period would be:

- (a) To remove the transport bottlenecks which have acted as serious constraints in the movement of industrial and agricultural goods and in the promotion of international trade;
- (b) To create adequate additional capacity in the transport sector to meet the requirements of anticipated traffic;
- (c) To conserve energy, particularly diesel, to the maximum extent possible;
- (d) To evolve a high degree of coordination within the transport sector and with user organisations, to make optimum use of available capacity;
- (e) To give priority to the completion of ongoing works;
- (f) To maximize the utilisation of existing assets through higher productivity;
- (g) To evolve a rational pricing structure in the public sector transport undertakings so as to ensure their running on profitable basis and contributing adequately to the national resources; and
- (h) To give special attention to the transport needs of remote and isolated areas, such as the North Eastern Region.

RAILWAYS

Review

17.31 A statement showing the growth of freight traffic on Indian Railways in the shape of originating tonnage and tonne kilometres and also the position in respect of the utilization index, that is, net tonne kilometres per wagon day, during the last 15 years, i.e. from 1965-66 (last year of the Third Five Year Plan) is given in the Table below:

Table 17.1

**Growth of Freight Traffic on Indian Railways
1965-66 to 1979-80**

Year	Originating tonnage (million)	Average lead (Kms.)	Net tonne Kilometres (billion)	NTKMS Per wagon day (BG)	NTKMS Per wagon day (MG)
(1)	(2)	(3)	(4)	(5)	(6)
1965-66	203.0	576	116.9	940	510
1966-67	201.6	578	116.6	899	485
1967-68	196.6	605	118.9	985	474
1968-69	204.0	613	125.1	905	503
1969-70	207.9	617	128.2	916	522
1970-71	196.5	648	127.4	938	524
1971-72	197.8	674	133.3	935	540
1972-73	201.3	678	136.5	953	552
1973-74	184.9	662	122.4	837	482
1974-75	196.7	683	134.3	907	528
1975-76	223.3	664	148.2	982	545
1976-77	239.1	656	156.8	1019	570
1977-78	237.3	686	162.7	1045	570
1978-79	223.4	693	154.8	976	543
1979-80	217.7	710	154.5	972	534

17.32 It will be observed from the above that the handling of traffic by the Railways in terms of tonne kilometres has shown a considerable increase over the years going up from about 116.9 billion net tonne kilometres in 1965-66 to 162.7 billion net tonne kilometres in 1977-78. There was however, a sharp decline in 1978-79 to 154.8 billion net tonne kilometres; in 1979-80 traffic remained at about the same level as in the previous year. In the case of the utilization index, that is, net tonne kilometres per wagon day, there is an improvement in some years and set-back in others. The performance in 1977-78 was the best when the utilization index touched a figure of 1045 net tonne kilometres per wagon day on the broad gauge and 570 on the metre gauge. Unfortunately, however, this was followed by substantial drop in 1978-79 and 1979-80.

17.33. A statement showing the growth of passenger traffic on the Indian Railways in terms of origi-

nating traffic and in terms of passenger kilometres is given in Table 17.2.

Table 17.2

**Growth of Passenger Traffic on Indian Railway
1965-66—1979-80**

Year	Originating Passengers (Million)			Passenger kilometres (Billion)		
	Sub-urban	Non-Sub-urban	Total	Sub-urban	Non-Sub-urban	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
1965-66	1025	1059	2084	17.2	79.1	96.3
1968-69	1084	1129	2213	19.5	87.4	106.9
1973-74	1437	1217	2654	28.1	107.6	135.6
1974-75	1373	1056	2439	27.2	99.1	126.3
1975-76	1639	1306	2945	32.9	115.9	148.8
1976-77	1802	1498	3300	37.1	126.7	163.8
1977-78	1928	1575	3503	39.4	137.3	176.7
1978-79	2113	1606	3719	43.4	149.5	192.9
1979-80 (prov.)	1911	1599	3509	38.7	162.3	201.0

It will be observed that there has been a substantial increase in the growth of passenger traffic during the last five years.

17.34 The National Transport Policy Committee (May 1980) has gone into the question of the level of output of the railways in relation to the physical inputs provided to them. The Committee has stated as follows:*

“The rail system has recorded a sustained growth in creation of transport capacity since 1950-51. With the growth of traffic, the assets created have been intensively utilised. . . .”

The Committee has also provided indices of growth of traffic and inputs which are reproduced below:

*The Report of the National Transport Policy Committee, May 1980, Para:9-3.

Table 17.3
Indices of Growth of Traffic and Inputs

Year	Net tonne Kms.	Wagon capacity	Non sub-urban passenger Kms.	Passenger coaches	Route Kms.	Running track Kms.	Tractive effort*
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
1950-51	100	100	100	100	100	100	100
1955-56	135	118	91	122	103	103	117
1960-61	199	152	110	154	105	107	144
1965-66	265	206	132	174	109	115	175
1970-71	289	226	169	191	112	121	179
1971-72	302	226	159	188	112	123	180
1972-73	309	229	178	195	112	124	180
1973-74	277	235	179	199	112	125	181
1974-75	304	246	165	200	112	125	180
1975-76	336	249	193	201	112	125	191
1976-77	355	256	211	200	113	126	193
1977-78	369	259	229	203	113	126	199

*Motive power available

Strategy for Sixth Plan

17.35 There will have to be a major effort in the Railways to increase the out-put from the existing assets and improve substantially the utilisation indices which have shown a steep decline in 1978-79 and 1979-80 as compared to the past performance and trends, particularly as compared to the very good results achieved in 1976-77 and 1977-78. Against the current 1979-80 level of 972 net tonne kilometres (NTKM) per wagon day on the BG and 534 on the MG, efforts will be made by the Railways to achieve a minimum of 1045 on the BG and 570 on the MG (which were the best ever achieved by them in the past) and to aim at a higher target of 1125 on the BG and 580 on the MG. The factors which have affected the productivity of the Railways and the utilisation of assets have been varied and while some of these are internal to the Railways, others are related to the external environment. A massive effort will be required to deal with both these aspects and particular attention would be paid to technical and managerial modernisation, better industrial relations, improvement in law and order, better power supply, greater efficiency in the handling of wagons by user organisations, etc.

17.36 The demand on rail transport, keeping in view the anticipated growth in various commodity sectors, is estimated at about 309 million tonnes of

originating traffic in 1984-85[@]. Taking the average lead of different commodities in 1984-85 as assessed in the Report of the Working Group on Railways for the Sixth Plan, 1980-85, and applying it to the commodity-wise break-up of 309 million tonnes of overall demand, the weighted average of the lead comes to about 710 kms. The total freight transport effort required by railways in 1984-85 will, therefore, be about 220 billion tonne kms.

17.37 The growth in passenger traffic has been very heavy as mentioned in para 17.33 above and generally higher than anticipated during the Plans. In the Sixth Plan, however, it will be necessary, in the context of scarce resources, to give considerable priority to freight traffic.

17.38 As mentioned above in the Transport and Energy Section (para 17.10) from the long term point of view and taking into account the emerging energy situation, it would be desirable for the Railways to develop capacity to clear almost all types of freight traffic except short distance piecemeal traffic which can be met by road transport, subject of course, to exceptions to this being made in case of certain commodities due to their nature and requirement of handling. It would, however, take some time to develop capacity on the Railways to move all the desired categories of traffic. It may, therefore, be necessary for the Railways to leave, in the interim period, not only piecemeal short distance traffic but piecemeal medium

[@]Commodity-wise break-up given in Chapter 3, Table 3.26.

distance traffic also to road transport and concentrate on the other categories.

17.39 During the Sixth Plan period, keeping in view the extremely difficult position in regard to energy, a high degree of inter-modal coordination, particularly between rail and road, would be required in order to ensure that the available railway wagons are utilised preferentially for long distance traffic. This would involve not only considerable coordination between various Ministries and user organisations but also the effective functioning of commodity dumps for coal, steel, fertilizers, etc., as well as creation of adequate terminal facilities by Railways and the user organisations.

17.40 The Railways have gradually grown into a massive and complex organisation. It has, therefore, become necessary to use all the established modern techniques of management particularly a greater degree of computerisation of freight controlling which is the most important segment of Railways' activities. Vigorous efforts in this direction would be made during this Plan period.

17.41 The pricing of rail services would be rationalised with a view to generating maximum resources and avoiding subsidies. In this context the recommendations of the National Transport Policy Committee and the Rail Tariff Enquiry Committee will be kept in view. Special attention would need to be paid to the introduction of a proper level of fares in the passenger segment, particularly in the suburban sectors, so that the passenger operations on the Railways, including suburban services, remain a self-sustaining segment, even though there may be a degree of cross-subsidisation within that segment, as recommended by the Rail Tariff Enquiry Committee*. An increase in passenger tariff on the railways is desirable not only from the point of view of increasing the revenue but also as an instrument of demand management, keeping in view the scarce resources. In this context, the passenger fares on the railways for short distances would generally be such as to discourage short distance movement by rail, except in dense corridors where high capacity movement may be required.

Outlays and Programmes

17.42 A provision has been made for an outlay of Rs. 5100 crores in the 1980—85 Plan for the Rail-

ways. The Plan head-wise break-up of the outlay is as follows:—

Table 17.4

**Plan headwise Outlay in the Five Year Plan 1980—85
(Railways)**

(Rs. in crores)

1	Rolling Stock	2100
2	Workshops & Sheds	280
3	Machinery & Plant	230
4	Track Renewals	500
5	Bridge Works	90
6	Traffic Facilities	480
7	Signalling & Telecommunications	90
8	Electrification	450
9	Other Electrical Works	20
10	New Lines	380
11	Staff Welfare	30
12	Staff Quarters	60
13	Users' Amenities	25
14	Other Specified Works	20
15	Inventories	40
	Sub-Total (1 to 15)	4795
16	Investment in Road Services	50
17	Metropolitan Transport Projects	255
	Sub-Total (16 and 17)	305
	GRAND TOTAL	5100

17.43 Some of the important features of the programme are indicated below:

- (1) It is proposed to acquire about 1,00,000 wagons (in terms of 4 wheelers), 5680 coaches, 390 EMUs and 780 diesel/electric locomotives during the Plan period. (The question of procurement of additional Rolling Stock would, if necessary, be considered later in periodical reviews taking into account trends in traffic generation and other relevant factors.)
- (2) It is planned to undertake about 14,000 kms. of track renewals.
- (3) A new wheel and axle plant is being set up near Bangalore to increase availability of wheels and axles. A workshop modernization programme is proposed to be undertaken to improve the maintenance facilities on the Railways.

*. Para 6.66 of the main report of the Rail Tariff Enquiry Committee (April, 1980).

- (4) Under the electrification programme, it is proposed to energise about 2800 kms during this Plan period apart from executing pre-energisation works in respect of some of the sections to be completed in the Seventh Plan period.

ROADS

17.44 Despite the energy crisis and the difficult position in regard to the cost and availability of diesel, the role of road transport in moving certain types of commodities, including some export oriented goods, and its role in carrying the distributional traffic for reaching the interior of the country, are some of its functions which are irreplaceable by any other mode of transport like railways, inland water transport, etc. There is also a need for developing additional capacity on the road system for meeting the needs in the short term, till Railways can develop capacity to clear all the types and levels of traffic desirable from the energy point of view (Ref. para 17.38). This capacity on the road system would be dovetailed into the road transport system's own long term requirements.

Review

17.45 The quantum of traffic on the road system, both for passenger and freight has shown a steady upward trend, as may be observed from the following figures:

Table 17.5
Traffic Carried by Road

Year	Passenger (Billion PKM'S)	Freight (Billion TKM'S)
(1)	(2)	(3)
1950-51	23	5.5
1960-61	57	35.0
1970-71	169	66.0
1973-74	208	67.0
1977-78	250	77.0
1978-79	270	81.0

Note : The share of total traffic is given in para 17.2

The brunt of the increased traffic is borne by the national highways which constitute the main trunk routes of the road system in the country. While the total length of the system in the country increased from 7,26,727 kms. to 16,04,110 kms, during the period 1961 to 1979, the increase in the length of national highways was not significant. In 1961, the length of national highways was 23,798 kms. About 5,540 kms. of new national highways were added during the period upto 1979. The total surfaced road length in the country increased from 2,62,700 kms. to 6,23,402 kms. during the same period. The length of the national highways now stands at about

29,340 kms. which works out to approximately 5 per cent of the entire surfaced road length but is estimated to carry about 25 to 30 per cent of the total road transportation load. This highlights the priority necessary for the development of national highways.

Outlays and Programmes

17.46 Keeping in view the deficiencies existing on national highways, as on 1-4-1980, some of the important targets proposed during the Sixth Plan period are indicated below:

(1) Missing Links (Kms)	196
(2) Missing Major Bridges (Nos.)	9
(3) Double Laning including strengthening (kms.)	4224
(4) Double laning without strengthening (kms.)	
(5) Widening to 4 lanes (km.)	130
(6) Construction of Bye-passes (Nos.)	52

Though the national highways constitute the most important programme under the central sector road plan, the following programmes also contribute to the overall development of road network in the country for which suitable outlays have been provided:

- (i) Strategic roads;
- (ii) Centrally aided State roads of inter-State or economic importance; and
- (iii) Road communications in the sensitive border areas, etc.

17.47 In State sector of the road plan, the most important programme is for construction of the rural roads under the Minimum Needs Programme (MNP) which envisage provision of all-weather link roads for all villages with a population of 1500 and above and for 50 per cent of the villages with a population of 1000—1500 within a time-frame of 10 years. In the case of hill, tribal, desert and coastal areas, where population is sparse, cluster of villages approach will be followed. It is expected to provide link roads to a total of about 20,000 villages in the country under this programme during the Sixth Plan period.

17.48 The removal of deficiencies in the national highway system and upgrading some selected stretches of roads taking into account the projected traffic growth, would be one of the major policy thrusts during the Plan period 1980-85. Addition to the national highway system would be made on a selective basis and the needs of the North Eastern Region would receive a high priority in this regard. Similarly, in the State sector, the major thrusts would be the removal of the existing deficiencies in the State highways and implementation of the rural roads under norms of the Minimum Needs Programme.

17.49 The following table indicates the scheme-wise break-up of the outlay of Rs. 830 crores provided under the Central Sector for Roads:

Table 17.6
Plan outlay for Roads Central Sector

(Rs. crores)		
S. No.	Scheme	Outlays
(1)	(2)	(3)
I.	National Highways (N.H.)	
(a)	Spill-over works :	
(i)	works continuing from the 4th and 5th Plans	} 250.00
(ii)	works sanctioned during 1978-79 and 1979-80	
(b)	New works	300
(c)	Strengthening the weak major arterial routes for pavement strengthening and reconstruction of weak culverts and bridges	60
(d)	New addition to the N.H. System	50.00
	Total	660.00
II.	Machinery	
(a)	spill-over	3.00
(b)	New requirements	15.00
	Total	18.00
III.	Strategic Roads	
(a)	Spill-over	23.00
(b)	New requirements	15.00
	Total	38.00
IV.	Roads of Economic and Inter State Importance	
(a)	Spill-over	25.50
(b)	New works	15.00
	Total	40.50
V.	Road Communication in the Sensitive Border Areas	
(a)	Spill-over works	35.00
(b)	New Works	15.00
	Total	50.00
VI.	Highway Research Development and Planning Studies	4.00
VII.	Special provision for Over/Under-Bridges across Railway Crossings	99.00
VIII.	Special provision for the Development of Roads in Tribal Areas	65.50
IX.	Provision for setting up of Highway Training Institute	11.00
X.	Central Road Research Institute	33.00
	GRAND TOTAL	830.00

17.50 In the State sector an outlay of Rs. 2608.96 crores has been provided with the following break-up:

Table 17.7
Plan Outlay for Roads—State Sector

(Rs. crores)		
(i)	Rural Roads under MNP	1164.90
(ii)	Other Roads	1444.06
	Total for State Sector	2608.96

ROAD TRANSPORT

17.51 Road transport has been playing an important role in the economy of the country. Over the years, there has been increase in the share of road transport in the total traffic, both for passengers and goods movements. The share of mechanized road transport in passenger traffic increased from 26 per cent in 1950-51 to 59 per cent in 1977-78. In freight traffic too, the share of road transport increased albeit slowly from 11 per cent in 1950-51 to 32 per cent in 1965-66, 34 per cent in 1970-71 and 32 per cent in 1977-78:

17.52 Non-mechanised road transport in India is particularly important as it caters to the requirements of rural areas of the country. Greater attention, therefore, needs to be paid to improvements in this segment of transport, specially the development of draught animal power which is, and would remain, an important source of energy in rural transport. The animal driven cart, particularly the bullock cart, has assumed added significance in view of the energy situation. There is, thus, an urgent need for modernising this area of transport, including the allied sector of the bullock cart industry. Special attention would be paid to intensification of research and development for improving the design of the animal carts like improvement in the design of the yoke, use of rubber and pneumatic tyres, etc. The feasibility of setting up an apex body to identify and lay down policies in respect of animal systems as a whole, including various aspects pertaining to agriculture, rural transport, etc. would also be examined.

17.53 At present, 55.5 per cent of mechanized passenger road transport vehicles are in the public sector. The following table gives the development of road transport services in terms of number of State Road Transport Corporations/Undertakings (SRTC's), their fleet strength and traffic handled by them:

Table 17.8
Growth in Passenger Transport in Public Sector

Item	1960-61	1970-71	1978-79
(1)	(2)	(3)	(4)
1 No. of SRTCs	28	32	48
2 Bus fleet			
(i) No. of buses owned	17,962	37,073	61,661
(ii) Percentage of total buses in the country	31.6	39.5	55.5
3 Passenger traffic handled (billion PKM)	26.2	80.7	182.8

17.54 Unfortunately, most of the State Road Transport Corporations/Undertakings (SRTCs) are at present showing net losses. In 1979-80, out of 48 SRTCs only two made net profit and the rest showed net losses. The main factor responsible for this has been the rising cost of operations on account of increasing prices of inputs used in the road transport industry, without matching increase in fares. It is significant that, in most cases, an increase of fares by only 1 paise per kilometre, would have wiped off the losses. The total losses of all the SRTCs* in 1980-85 were estimated at about Rs. 1433 crores at 1979-80 fares but are expected to come down substantially as result of the revised fares already introduced in 1980-81 or proposed to be introduced in subsequent years. It will also be necessary to bring down the cost of operation significantly through appropriate administrative measures and improvement in utilisation indices with better workshop facilities, timely replacement of over-aged vehicles, route rationalisation and improved scheduling etc.

17.55 The performance of SRTCs in terms of efficiency and cost of operations shows considerable variation. Comparative study of utilisation indices and efficiency indicators like fleet utilisation, load factor, fuel consumption, show that there is considerable scope for improvement in many of the organisations in respect of these indices. Arrangements for exchange of data and experience in this regard will be strengthened.

17.56 Where the losses being incurred by the SRTCs are the result of present uneconomic fares, fare revisions will be considered. Serious efforts will be made during this Plan period to run the SRTCs on a profitable basis both by improving utilisation indicators and through suitable pricing policy.

17.57 The road freight traffic is predominately in the private sector. The national permit scheme for public carriers under the 20-Point Programme which

was introduced in 1975 to remove the constraints on the free flow of inter-State goods traffic, is being further enlarged and recently, the Government have increased the number of national permits from 8,300 to 16,600.

17.58 The major effort in the Plan period with respect to road transport would be on replacement of overaged vehicles and development of workshop facilities to improve fleet utilisation and fuel efficiency. Augmentation of services subject to availability of funds would also be catered to.

17.59 In the Central Sector for Road Transport, an outlay of Rs. 70 crores has been provided bulk of which, viz. Rs. 68 crores being for Delhi Transport Corporation (DTC). This will cover the purchase of buses, construction of depots, provision of workshop facilities and bus terminals, feasibility studies regarding the introduction of electric trolley buses in Delhi etc.

17.60 In the State Sector, a provision of Rs. 1125.55 crores has been made for Road Transport during the Sixth Plan. The SRTCs are expected to generate Rs. 825 crores from their internal resources for financing their programmes taking into account the estimated yield of Rs. 1379 crores from fare revision.

INLAND WATER TRANSPORT

17.61 Inland Water Transport (I.W.T.) is recognised as the cheapest mode of transport for certain kinds of commodities provided the points of origin and destination are both located on the water front, no transshipment is involved and the total route length is not inordinately higher than by other modes of transport. It is one of the most energy efficient modes of transport and has considerable potential in limited areas which have a net-work of waterways. In the North-Eastern Region where other transport infrastructure is severely lacking and more expensive to provide, inland water transport has additional importance as an instrument of development.

17.62 There is considerable paucity of data in respect of traffic carried by water transport. The available data shows that the cargo carried by mechanised vessels in some important waterways in 1975 was about 16 million tonnes (including 12 million tonnes of ore movement by barges in Goa). In terms of tonne kms., this amounted to 0.8 billion tonne kms. which was only 0.4 per cent of the total freight surface traffic in the country.

17.63 In the Central Sector, the major schemes executed during the last two decades have been construction of inland ports at Pandu and Jogigopa in Assam, development of Rajabagan Dockyard and Kulpi Workshops, construction of mooring buoys etc.

17.64 The National Transport Policy Committee have recently identified the problems of this mode of transport. Slow movement, limited spatial accessibility (since navigable waters are confined to specific

*This pertains to 25 State Road Transport Corporations/Undertakings and excludes those under the local bodies and Delhi Transport Corporation.

regions), and the non-availability of adequate water throughout the year in many areas due to needs of irrigation, are some of the inherent difficulties of water transport in the country. However, the Committee have concluded that "IWT continues to be functionally important in regions in which it enjoys natural advantages, as on the Brahmaputra and the Ganga in eastern and north eastern regions of India, Kerala, Goa and in the deltas of Krishna and Godavari".

17.65 Considering the recommendations of the Committee and the fact that IWT is important for the development of the North Eastern Region, efforts will be made to give a fresh impetus to this mode during the Sixth Plan. The broad strategy will be to move in this area selectively taking up specific schemes of inter-State and national importance for development under the Central Sector. Other schemes mostly of intra-State nature, will be included in the Plans of the State Governments.

17.66 In the Central Sector, an outlay of Rs. 45 crores has been made for IWT. The most important programme relates to the investment proposal of Central Inland Water Transport Corporation (CIWTC). The programme with a Plan outlay of Rs. 30 crores includes capital repairs to vessels, acquisition of additional vessels, development of Rajabagan Dockyard, creation of infrastructure facilities for the smooth flow of vessels etc. An amount of Rs. 27 crores has been provided for the State Sector programme.

MAJOR PORTS

17.67 Keeping in view the vast coastline of the country as its predominant gateway to the world, and the rapid growth of international shipping, the major ports in India are an important segment of the country's transport scene.

17.68 The traffic at major ports which was 19.2 million tonnes at the beginning of the First Plan increased to 78.57 million tonnes, in 1979-80. The traffic would have been even more but for a variety of reasons, mainly the short-fall in the anticipated export of iron ore due to a recession in the world steel industry. The traffic at the major ports in 1984-85 on account of export and import of major commodities is likely to be about 130 million tonnes. A major part of the expected increase in traffic will be on account of bulk commodities like crude oil, petroleum products, iron ore, coal, fertiliser and fertiliser raw materials. Substantial increase in traffic is also expected in general cargo particularly in the containerised traffic.

17.69 Substantial investments made on the development of major ports in the Fourth and Fifth Plans have added considerably to their capacity for handling bulk cargo including iron ore and P.O.L. However, shortages of capacity have been experienced for handling fertiliser and general cargo from time to time at most of the major ports except at Calcutta and Cochin. At some of the ports there have been severe congestions and long detentions to ships bringing essential

commodities including fertilisers, sugar, steel, edible oils, cement etc., substantial imports of which became necessary in recent years to meet the requirements. There is hardly any room in the existing port capacity to accommodate sudden demands of imports or exports necessitated by changing conditions.

17.70 In making provisions for major ports in the Sixth Plan, account has been taken of the unutilised capacity available at different ports for some specific commodities like iron ore and P.O.L. and shortage of capacity for certain other commodities including fertilisers and general cargo. Priority has been given to completion of on-going schemes. A provision of Rs. 555 crores has been made for major ports in the Sixth Plan (inclusive of Rs. 531 crores for major ports, Rs. 20 crores for the Dredging Corporation of India, Rs. 1 crore for Central Dredging Organisation and Rs. 3 crores for training, research and development). Of the total provision of Rs. 555 crores, an outlay of Rs. 184.62 crores is for on-going schemes and the balance of Rs. 370.38 crores is for new schemes. This provision includes about Rs. 200 crores to be contributed by the Port Trusts from their own resources.

17.71 Since the ports have adequate capacity for handling projected traffic in iron ore, no new facilities are proposed in the Sixth Plan except for some marginal investments for optimising the existing facilities. As regards POL, the port capacities will be augmented by constructing new berths at Vishakhapatnam, Cochin and Butcher Island (Bombay). At Haldia, a new oil jetty will be constructed in replacement of the existing oil jetty which has been damaged, resulting in its capacity being down-rated.

17.72 At present, fertilizer is handled by conventional methods at most of the ports except Kandla which has high speed mechanised handling facilities and Madras where medium speed arrangements have been made. At Haldia, the high speed handling facilities are likely to become operative in 1981. During the Sixth Plan period, high speed mechanised handling facilities will be provided by the user Ministries/agencies at Madras and Vishakhapatnam. At Cochin, a separate berth for handling fertiliser will be constructed under the integrated scheme for handling POL and fertilisers. The medium speed handling facilities provided at Bombay will also be brought into operation. All these measures are expected to create substantial port capacities to cater to the requirements of fertiliser traffic at different ports.

17.73 Substantial increases in port capacities will also be made for general cargo on completion of on-going schemes and a number of new schemes included in the Sixth Plan. Provision has been made for new additional general cargo berths at a number of ports including Kandla, Mormugao, Vishakhapatnam, Paradip, Mangalore, Tuticorin and Cochin. Provision has also been made for the acquisition of new cargo handling equipment, floating craft and for the replacement of old equipment/floating craft. The warehousing and transit shed facilities will be augmented at different ports.

17.74 Priority will be given to the development of container handling facilities at different ports to meet the growing needs of container traffic. At Haldia, a full fledged container berth has already been provided. A new container berth is proposed to be constructed at Vishakhapatnam Port. Provision has been made for acquisition of container handling equipment for Bombay, Madras, Cochin, Vishakhapatnam, Kandla, Paradip, Mangalore and Tuticorin. Ship to shore gantries will be provided at Bombay and Cochin on the west coast and Haldia and Madras on the east coast. At the other ports a limited number of containers will be handled by the shore cranes/forklifts and chassis.

Andaman and Lakshadweep Harbour Works

17.75 The programme for Central Sector also includes Andaman & Lakshadweep Harbour Works (ALHW) for which a provision of Rs. 20 crores has been made in the Sixth Plan. This includes Rs. 11.72 crores for Andaman Harbour Works, Rs. 3.29 crores for Lakshadweep Harbour Works, Rs. 2.99 crores for the Minor Ports Survey Organisation and Rs. 2.00 crores for establishment and contingencies. Of the total provision of Rs. 20 crores, an outlay of Rs. 7.51 crores is for the on-going schemes and Rs. 12.49 crores for new schemes. The major on-going schemes include dry dock at Port Blair, new jetties at different locations and dredging at Chetlat and Kavaratti. The more important new schemes are: breakwater at Campbell Bay, deep water wharf at Port Blair, breakwater and wharf at Mus in Car Nicobar, procurement of dredger and hopper barges for Lakshadweep Islands and survey launches for the Minor Ports Survey Organisation.

MINOR PORTS

17.76 The function of minor ports is mainly to serve the needs of coastal shipping for their limited hinterland. In coastal areas where rail and convenient road facilities are lacking, the minor ports also cater to the requirements of passenger traffic. Some of the minor ports have, however, handled imported foodgrains and fertilizers to relieve pressure on the major ports. Development of minor ports is essential to cater to anticipated increase in coastal traffic, for promotion of deep water fishing and to provide supplementary capacity in the port sector for use in the event of congestion at major ports caused by bunching of ships, fluctuations in traffic and other factors. The traffic handled by minor ports which was 3.8 million tonnes in 1951-52, increased to 8.2 million tonnes in 1965-66. Since then it has fluctuated between 5-8 million tonnes from year to year.

17.77 The responsibility for development of minor ports essentially vests with the State Governments although technical assistance wherever necessary is rendered by the Centre. An outlay of Rs. 72.18 crores has been provided for minor ports in the State Sector.

LIGHTHOUSES AND LIGHTSHIPS

17.78 For lighthouses and lightships, a provision of Rs. 12 crores has been made in the Central Sector which includes Rs. 9 crores for completion of various on-going schemes and Rs. 3 crores for new works. The more important on-going schemes, are: additional navigational aids at Salaya, Car Nicobar and East Island Radio Beacon, lighthouses at Porbunder, Kasargad, Kalingapatnam, Armagaon, Machhiliapatnam and Ramayapatnam. The major new schemes include modernisation of existing Decca Chains, new Decca Chains for Bombay, Goa, Lakshadweep, Vishakhapatnam and Cochin, replacement of MV Sagardweep and a number of new lighthouses at different locations.

SHIPPING

17.79 Overseas shipping has an extremely important role to play in India's international trade. The overseas shipping tonnage of the country has grown substantially during the planning era. As on 1-4-1980, the overseas tonnage consisted of 319 ships aggregating 5.3 million Gross Registered Tonnage (GRT). The progress of overseas tonnage is indicated in the following tables:—

Table 17.9
Growth of Indian Overseas Shipping Tonnage

As on 1st April	Number of Ships	Total GRT in millions
1956	36	0.24
1961	75	0.55
1966	122	1.22
1974	214	2.83
1980	319	5.29

17.80 The share of Indian shipping in the transportation of India's overseas trade has been increasing over the years. At the end of 1978-79, the share of Indian bottoms in the total overseas trade of the country was 30.5 per cent. Indian bottoms carried 22.3 per cent in bulk cargo, 39.8 per cent in general cargo and 64.7 per cent in POL and edible oils.

17.81 Coastal shipping has a vast potential in India with its long coastline of more than 5,000 kms. However, for various reasons, coastal shipping in India has not had a significant or steady growth. In fact, there has been a sharp decline in the size of its operations. The figures are given below:—

Table 17.10
Coastal Shipping Tonnage

As on 1st April	Number of Ships	Total GRT (in millions)
1956	90	0.24
1961	97	0.31
1966	99	0.32
1974	63	0.26
1980	56	0.25

17.82 The main factors affecting the growth of coastal shipping in India have been high transportation costs especially for movements other than those between a pair of water front locations, port delays, poor turnaround time of coastal ships on account of overaged vessels, lack of mechanical handling facilities etc. Considering the importance of this mode of transport in supplementing the internal transport system, and its low energy consumption per unit of transport, it is essential to strengthen the coastal shipping sector for such movements for which it is economically viable.

17.83 The shipping industry faced a world-wide recession during the late seventies. The freight market was severely depressed affecting adversely the earning capacity and liquidity of the shipping companies. The recession in shipping industry is now showing signs of decline.

17.84 The Sixth Plan envisages the augmentation of shipping tonnage for meeting increasing requirements of India's foreign trade and also to replace the overaged tonnage especially the coastal vessels. It is proposed to acquire additional tonnage of 2 million GRT during the Sixth Plan period. Part of this will be from indigenous sources and the rest would be acquired from abroad. Provision has been made to acquire small tankers to meet the essential lighterage and coastal movement requirement of the refineries.

17.85 A provision of Rs. 720 crores has been made in the Central Sector for shipping. This includes Rs. 705 crores for loans to Shipping Development Fund Committee (SDFC) and subsidy to SDFC which would cover the acquisition of tonnage from Indian shipyards and also meet the commitments arising out of deferred credits to be utilised from abroad. Adequate provision has been made for expansion of training facilities and for carrying out the programme for the welfare of seamen. Funds have also been allocated for giving loans to sailing vessels industry for mechanisation and modernisation of the sailing vessels. In the State Sector, a provision of Rs. 35.10 crores has been made for purchase of vessels by the maritime States.

CIVIL AVIATION

17.86 Civil Aviation is the fastest means of transport and on long hauls offers a substantial saving in transit time. Consequently, air transport handles considerable traffic on long distance routes. It also has a crucial role to play on routes which involve difficult terrain.

17.87 Air transport in India has experienced very rapid rate of growth during the last two decades. The traffic on Indian Airlines which was 614 million Revenue Passenger kms. in 1960-61 increased to 4,229 million RP kms. in 1979-80. The passenger and freight traffic on Air India went up from 76 million Revenue Tonne Kilometers in 1960-61 to 816 million RT kms. in 1979-80. To meet the growing traffic in passenger and cargo, the capacity of Indian Airlines was increased from 864 million Available Seat Kms (ASKms) in 1960-61 to 5,771 million ASKms in 1979-80. The capacity on Air India increased from 161 million Available Tonne Kms (ATKms) to 1372 million ATKms during the same period.

17.88 Earlier, the fleet of Indian Airlines consisted of various types of aircraft. Emphasis was, therefore, placed on modernisation and standardisation of fleet mix. Low capacity turbo-prop aircrafts have been substantially augmented/replaced by higher capacity, more productive and economic jet aircraft. These steps have resulted in considerable savings in consumption of fuel and also significantly reduced the maintenance cost burden. However, the infrastructure facilities have not kept pace with increased operations. Considerable emphasis was laid in the Fifth Plan on the provision of safety-oriented and reliable communication, navigation and landing aid equipment. Efforts were also made to relieve congestion at the international airports. The construction of new international terminal complex (Phase 1) at Bombay was a major step in this direction.

17.89 In the 1980-85 Plan, the major objectives would be (a) to provide additional capacity at the international airports to relieve the heavy congestion at peak hours, (b) to provide additional workshop and maintenance facilities in order to achieve self reliance and thereby improve the utilisation of existing resources, (c) to provide additional safety-oriented equipment at airports.

Air India

17.90 A provision of Rs. 277 crores has been made in the Plan for Air India. The outlay includes the loan repayment of aircraft already acquired by Air India. As on 31-3-1980, the fleet of Air India consisted of 9 Boeing 707 and 9 Boeing 747 aircraft including 2 B-747 acquired in 1979-80. In April 1980, Air India acquired another B-747 aircraft. In addition, the capacity equivalent to 5 B-707 aircrafts would be acquired, which will enable Air India to replace its 5 old B-707 aircrafts in the interest of fuel

economy. The capacity of Air India at the end of the Plan is expected to go up to about 1900 million ATKms as compared to 1372 million ATKms at the end of 1979-80.

Indian Airlines

17.91 An outlay of Rs. 272 crores has been provided for the Indian Airlines in the Sixth Plan. As on 31-3-1980, Indian Airlines had a fleet of 6 Air Bus, 13 Boeing 737 and 23 Turbo Prop. In the 1980-85 Plan period, Indian Airlines expect to acquire capacity equivalent of 9 Boeing 737 aircraft and 3 Air Bus aircraft including 8 B-737 and 2 Air Bus for which orders have already been placed. With this addition, the carrying capacity in terms of Available Seat Kilometres is expected to increase from 5771 million ASKms at the end of 1979-80 to about 8750 million ASKms at the end of 1984-85.

17.92 Under the supporting facilities, the major programme proposed to be taken up by Indian Airlines relates to the construction of a Jet Engine Overhaul facility. With the commissioning of this, the support facilities are likely to improve considerably leading to better utilisation of the fleet. It is also proposed to instal a Real-Time Computer Reservation System.

International Airports Authority of India

17.93 Constituted in 1972, the International Airports Authority of India (IAAI) is responsible for management and development of four International Airports namely Bombay, Calcutta, Delhi and Madras which handle 40 per cent of the domestic flights and most of the International air services. IAAI development programmes include construction and improvement of runways, taxi tracks and aprons and supply of electrical and other equipment.

17.94 An outlay of Rs. 141 crores has been provided in the Sixth Plan for the programme of IAAI. This includes provision for completing Bombay Terminal Complex Phase I, Bombay Terminal Complex Phase II, Delhi Terminal Complex Phase I and Madras Domestic Terminal Complex. The new International Terminal Complex in Bombay Airport (Phase I) was completed in December 1980 and it will be fully operative on installation of aero-bridges in February 1981. Provision has also been made for modification of existing terminal buildings so as to meet the growing requirement of space for handling increasing traffic. In addition, outlay has also been provided for operational works and electrical equipment for improving the lighting of runways.

Civil Aviation Department

17.95 A provision of Rs. 143 crores has been made for the projects of Civil Aviation Department. In the programme of Civil Aviation Department, emphasis has been placed on the provision of safety-oriented equipment so as to make air operation more safe and reliable. It is proposed to augment calibration facilities so as to improve the quality and reli-

ability of the equipment installed at various airports. Under the programme of civil works at aerodromes, the policy of generally developing the existing airports rather than construction of new ones will be continued. The main programme under this head would be upgrading of the existing airports so as to facilitate the safer operation of jet aircraft.

Third-level Air Services

17.96 An outlay of Rs. 17 crores has been given for the operation of Third Level Air Services to provide better communication in the difficult and isolated areas of the North Eastern Region. Out of this Rs. 10.5 crores have been provided for infrastructure facilities at airports and Rs. 6.5 crores for purchase of aircraft.

Outlays for Civil Aviation Sector

17.97 The table below gives the broad break-up of outlay for the 1980—85 Plan for the Civil Aviation Sector:—

Table 17.11
Plan Outlay in Civil Aviation

Sub Sector	Outlay (Rs. crores)
Air India	277
Indian Airlines	272
International Airports Authority of India	141
Civil Aviation Department	143
Third Level Air Services	17
Total	850

NOTE: This provision is in the Central Sector and is exclusive of Rs. 9.10 crores provided in the State Sector mainly for improvement of airstrips and helipads and for flying clubs, training facilities etc.

METEOROLOGY

17.98 Meteorological services are provided by India Meteorological Department (IMD) for use in Aviation, Shipping and Agriculture sectors. The Department has the responsibility for operating a timely warning system for cyclones, heavy rains and snow and dust storms as also for detecting and locating earthquakes. The Monex 79 Experiment conducted has been concluded. Some of the observational activities are being continued during the current Plan. The raw data is being analysed and disseminated to World Data Centre at Washington DC and Moscow. Major gains expected from this experiment are in respect of (a) understanding of Monsoon rain fluctuations, date of onset of monsoon etc., (b) impro-

TOURISM

vement in weather prediction capability and (c) availability of oceanographic data operationally useful to the Indian Navy. In addition to India Meteorological Department, the three autonomous Institutes namely the Indian Institute of Astrophysics, Indian Institute of Geomagnetism and the Indian Institute of Tropical Meteorology carry out basic scientific research in their respective fields.

17.99 In the Plan 1980—85, it is proposed to operate INSAT which is a multipurpose satellite programme fitted with a very high resolution infra-red radio-meter and other equipment which will facilitate continuous monitoring of clouds and wind conditions thereby improving the ability to predict weather changes especially the monsoons and give advance and precise warning of cyclone and severe storms.

17.100 Another major programme under Meteorology relates to the proposed replacement of cyclone warning, storm detecting and wind finding radars which have become obsolete and out-dated. In addition, meteorological services to assist farmers, fishermen, aviation etc. will be improved. The Indian Institute of Astrophysics would complete fabrication of its 2.36 M telescope besides following a programme of effective research on spiral structure of Galaxy and high resolution astronomy. The Indian Institute of Geomagnetism plan to work on a comprehensive equatorial electrojet while the Indian Institute of Tropical Meteorology would primarily engage itself in the continuation of Monex studies.

17.101 For the Sixth Plan, a provision of Rs. 94.64 crores has been made for Meteorology Sector which includes a sum of Rs. 43 crores for the IMD and the Institutes in the budget of the Ministry of Tourism and Civil Aviation and Rs. 51.64 crores for the meteorology portion of the Space Segment of INSATI-I which is provided in the budget of the Department of Space. The break-up of Plan outlay is as follows:

Table 17-12
Plan Outlay for Meteorology

	(Rs. crores)
1 India Meteorological Deptt.	
INSAT-I Ground Segment	11.70
MONEX	2.50
Others	21.80
Total	36.00
2 Institutes	
Indian Institute of Astrophysics	4.00
Indian Institute of Geomagnetism	1.50
Indian Institute of Tropical Meteorology	1.50
Total	7.00
3 Space Segment of INSAT-I	
	41.64
GRAND TOTAL	84.64

17.102 Tourism, both domestic and international, has rapidly won considerable recognition as an activity generating a number of social and economic benefits like promotion of national integration and international understanding, creation of employment opportunities, removal of regional imbalances, opening up of new growth centres in the interior of the country, augmentation of foreign exchange earnings, thus redressing the balance of payments situation, etc. It is significant that many of these beneficial aspects of domestic and international tourism have special relevance to the socio-economic scene in India as emerging in the Sixth Plan period. Tourism also tends to give support to local handicrafts and cultural activities, both in urban and rural areas. Expenditure by tourists has a multiplier effect and also generates considerable tax revenue for Government, both in the Central and State sectors. It is also relevant that the various multi-faceted socio-economic benefits of tourism are achieved with a relatively low level of investment.

17.103 International tourism in India has grown substantially during the last 15—20 years. The number of foreign tourist arrivals increased from about 17,000 in 1951 to 7,65,000 in 1979. The average stay per tourist has also registered an increase over the years. The rate of growth of tourist arrivals in 1979 and 1980 has no doubt been below expectation. The reasons for this have been connected to some extent with global factors like the oil crisis and recessionary trends, but, to a great extent tourist arrivals have also been affected adversely by the inadequacy of infrastructure like hotel accommodation, internal transport, particularly air services and comfortable surface transportation, air port facilities, etc. Despite the global factors mentioned above, international tourist traffic has increased at a high rate in many of the developing countries. It is expected that international tourism in the world will develop at much higher rates, keeping in view the growing place it is occupying in the life style of the people in many countries. The share of India in international tourism continues to be very low. It should be possible for India to get a much higher share keeping in view the inherent attractiveness of the country from the tourist point of view. Efforts will be made during this Plan period to develop adequate infra-structural facilities to cater to substantially higher levels of tourist traffic.

17.104 During the Sixth Plan the main objectives of the investments in the Tourism Sector would be to optimise the use of existing capacity and to increase substantially tourist accommodation in the public and the private sectors. It will be ensured that development of tourism does not adversely affect the environmental surroundings or the local culture and ethos of the tourist areas and locations. While taking up schemes for development of tourism, a scientific approach will be followed with a view to maximizing the return on investments. In the deve-

lopment of tourism, the selected travel-circuit approach would be followed and matching facilities will also be provided accordingly. Close coordination in regard to provision of facilities in the Central, State and private sectors in the same areas and locations would be maintained to obtain the optimum results from the available resources. This approach will give flexibility in offering a mixed tourism package, help to regionalise tourist traffic and promote repeat visits to increase the overall volume of the traffic.

17.105 The broad divisions of responsibility between Central and State Governments will continue to be on the basis that, by and large, the schemes intended primarily for international tourism will be in the Central Sector and those meant mainly for the promotion of domestic tourism, in the State sector. However, India Tourism Development Corporation would provide technical assistance to State Governments for promotion of tourism.

17.106 An outlay of Rs. 187.46 crores has been provided in plan 1980—85 which includes a sum of Rs. 115.46 crores under the State sector and a sum of Rs. 72 crores under the programme of the Central Sector. Of the total outlay included in the Central Sector, a sum of Rs. 30 crores is provided for Department of Tourism and Rs. 42 crores for the programmes of India Tourism Development Corporation (ITDC). In the programme of Deptt. of Tourism, the emphasis will be on the development of selected

beach and mountain resorts, wild life and cultural tourism, training facilities and overseas promotion. In order to encourage private sector to build hotels, it is proposed to continue interest differential subsidy to financial institutions through Industrial Finance Corporation of India. In the programme of ITDC, with the completion of existing and proposed schemes, the total availability of tourist accommodation with the ITDC is expected to increase from 2,644 rooms at present to roughly 5,000 rooms by 1984-85. The outlay for the ITDC will also cover the equity capital to be provided for their joint ventures abroad.

17.107 A number of infrastructural facilities not directly covered by the investments in the tourism sector are extremely important for tourism development; for example, increase in capacity at international and domestic airports to prevent congestion and long queues at peak hours and increase in the passenger carrying capacity of Indian Airlines to enable confirmed bookings for internal travel. Investments in this regard are being included in the respective sectors.

OUTLAYS IN THE TRANSPORT & TOURISM SECTOR

17.108 The sub-sectorwise break-up of the outlays for 1980—85 in the Transport & Tourism sector is indicated in Annexure 17-I and the state-wise break-up in Annexure 17-II.

Annexure 17.1
Sixth Plan Outlay on Transport and Tourism

(Rs. crores)

Sub-Sector	Centre	States including UTs	Total
(1)	(3)	(4)	(5)
Railways	5100	..	5100
Roads	830	2608.96	3438.96
Road Transport	70	1125.55	1195.55
Inland Water Transport	45	26.66	71.66
Major Ports	555	..	555
Minor Ports	20	72.18	92.18
Lighthouses	12	0.32	12.32
Shipping	720	35.10	755.10
Sub-Total—Ministry of Shipping & Transport	2252		
Civil Aviation	850	9.10	859.10
Meteorology (Excluding INSAT-I Space Segment)	43	..	43
Tourism	72	115.46	187.46
Sub-TOTAL—Ministry of Tourism & Civil Aviation	965		
Meteorology (INSAT-I Space Segment)*	51.64	..	51.64
Farakka Barrage**	50.00	..	50.00
GRAND TOTAL	8418.64	3993.33	12411.97

*Provided in the Budget of Department of Space. 50% of total outlay of Rs. 103.29 crores shown in Transport Sector and 50% in the Communication, Information & Broadcasting Sector.

**Provided in the Budget of the Department of Irrigation.

Annexure 17.II

Sixth Plan Outlays Transport and Tourism—States & Union Territories

(Rs. lakhs)

States	Road & Bridges	Road Transport	I.W.T	Civil Aviation	Ports	Shipping	Light Houses	Tourism	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
1 Andhra Pradesh	5500	17500	200	..	300	..	..	100	23600
2 Assam	8400	1250	550	..	..	..	..	250	10450
3 Bihar	22735	2000	50	40	..	..	..	150	24975
4 Gujarat	22000	9000	..	..	2500	..	..	260	33760
5 Haryana	11000	5200	..	200	..	..	..	550	16950
6 Himachal Pradesh	10000	950	10	190	..	..	..	700	11850
7 Jammu & Kashmir	6400	1640	..	..	..	..	..	2400	10440
8 Karnataka	6600	6800	51	..	660	..	..	410	14521
9 Kerala	6600	2000	575	..	825	..	..	675	10675
10 Madhya Pradesh	13000	2750	..	..	..	..	..	500	16250
11 Maharashtra	25000	18000	100@	30	600	..	..	330	44060
12 Manipur	3200	300	..	..	..	..	..	50	3550
13 Meghalaya	4000	800	..	..	..	..	..	200	5000
14 Nagaland	5000	550	..	..	..	..	..	55	5605
15 Orissa	8900	1000	@@	..	600	..	..	325	10825
16 Punjab	7000	4000	..	70	..	..	..	225	11325
17 Rajasthan	10000	3000	..	..	..	..	..	650	13650
18 Sikkim	2420	480	..	..	..	..	..	175	3075
19 Tamil Nadu	13900	7550	300	..	400	500	..	800	23450
20 Tripura	2800	370	..	..	..	..	..	60	3230
21 Uttar Pradesh	31932	12000	..	..	..	..	..	1054	44986
22 West Bengal	13500	14000	600	100	..	..	..	307	28507
ALL STATES	239887	111140	2436	630	5885	500	..	10256	370734
UNION TERRITORY									
1 Andaman & Nicobar Islands	1150	200	..	..	876	2360	24	38	4648
2 Arunachal Pradesh	5000	300	..	280	..	..	..	30	5610
3 Chandigarh	75	300	..	..	..	..	..	150	525
4 Dadra & Nagar Haveli	300	..	..	..	..	..	..	5	305
5 Delhi	9475	40	..	..	..	..	..	265	9780
6 Goa, Daman & Diu	1600	250	200	..	32	..	8	700	2790
7 Lakshadweep	44	..	..	..	175	650	..	12	881
8 Mizoram	2890	300	30	..	..	..	..	30	3250
9 Pondicherry	475	25	..	..	250	..	..	60	810
ALL UNION TERRITORIES	21009	1415	230	280	1333	3010	32	1290	28599
TOTAL STATES/UNION TERRITORIES	260896	112555	2666	910	7218	3510	32	11546	399333

@For Konkan Railways (Land Acquisition)

@@Included under Ports.

COMMUNICATIONS, INFORMATION AND BROADCASTING

Communications have a key role to play in the development process; and so have the information media. Programmes in these sectors will, therefore, be so geared as to enable their use being made more effectively for development activities, particularly in agriculture and rural development, education (including adult education) family planning, the preservation of ecological balance, protection of environment, energy management and more generally national integration.

18.2 Past experience suggests that many of the programmes intended for the poor do not reach them partly because of the lack of awareness on the part of the potential beneficiaries of the opportunities that are being made available for them. People's participation in the planning process as well as in the effective implementation of programmes can be greatly helped by the expansion of communications as well as through the information media. During the Sixth Plan, the choice of policy alternatives and the media structure will be so realigned as to give priority to this task.

18.3 Development of software is of critical importance in the foregoing context. Concerned agencies will be involved in preparing software relevant to their respective areas. INSAT will pose special challenge for software development which has to be area-specific to be able to make the desired impact. The 1980-85 Plan takes note of the important role of communication-information media and development of software to respond to national as well as local-specific needs.

COMMUNICATIONS

Review

18.4 Communication services include postal, telegraphs, telecommunications and overseas communications. Development of communication infrastructure being crucial to the growth of vital sectors like agriculture, industry, etc., due priority was assigned to communication services in the successive Five Year Plans resulting in substantial expansion of postal and telecommunication facilities. Despite this, the demand for communication facilities has continuously been rising, outstripping the growth and creating conditions of shortage and congestion.

18.5 An outlay of Rs. 1,266.61 crores was made for communication services in the Fifth Five Year

Plan (1974-79) and the expenditure incurred was Rs. 850 crores for the period 1974-78. Against an outlay of Rs. 757.87 crores provided for the two year period 1978-80, the expenditure was Rs. 592.27 crores. During the course of six years (1974-80), 20,259 post offices were opened, raising the total number of post offices in the country to 136,999 while 770,000 Direct-exchange lines were added to the existing 1,244,000 lines. Besides, 11,970 telegraph offices and 8,825 long distance public call offices were opened during the six year period raising their total number to 24,457 and 13,834 respectively.

PROGRAMMES

18.6 During the Sixth Plan, the communication services, particularly the postal and telecommunication services, will be extended to all parts of the country with a view to subserve a balanced and sustained growth in the key sectors of development. Special attention will be given to the development of communication facilities in rural areas including backward, tribal and hilly areas in order to correct the persisting imbalances in the communications net work. For the North-Eastern region, special measures will be aimed at strengthening the postal and telecommunication facilities.

Postal System

18.7 During the Plan period, expansion of postal net work is envisaged mainly for the rural, backward, hilly and tribal areas. Measures will simultaneously be taken to improve the quality of the existing rural postal services.

18.8 As on 31st March 1980, the number of rural post offices in the country was 1,22,839. During the Plan period 1980-85, it is proposed to open another 8,000 post offices including 5,000 in tribal, hilly and backward areas. Postal counter facilities through mobile post offices will also be provided to 10,000 villages which do not now have regular post offices. About 10,000 Extra Departmental Delivery Agents are also proposed to be appointed for strengthening the rural post offices net work and improving the efficiency of rural mobile postal services. Clearance facilities are made available to the rural areas through the existing letter boxes numbering 3.08 lakhs and

the position will be strengthened by installing 10,000 more letter boxes during the Plan period. To monitor the rural postal services, a new cadre of Planning and Monitoring Inspectors is proposed.

18.9 The Plan provides for renovation and construction postal buildings and staff quarters on a sizeable scale. Many of the postal buildings are old and the percentage satisfaction of staff quarters has remained inadequate. Provision is also being made for training the postal staff, increasing the fleet of rail-mail and mail-motor services and mechanisation and modernisation of postal operations.

18.10 An outlay of Rs. 172 crores has been provided in the 1980-85 Plan for the postal services. This includes provision for expansion of postal facilities as well as construction of postal buildings, staff quarters, etc.

Telecommunications

18.11 While significant progress in telecommunications has been made, the supply capabilities have not been able to keep pace with growing demand resulting in mounting backlog. As an important objective of the telecommunication Plan, it is proposed to reduce the backlog for telephone demand and to relieve the heavy congestion in the network over a ten year time-frame. Technological updating of telecommunication services is also envisaged by way of introducing modern techniques through SPC electronic Local Exchanges, SPC electronic TAXs, SPC electronic Telexes, Digital Trunk Exchanges, Digital Microwave Systems, Satellite Communication, etc. Consistent with the emphasis on accelerated development of the rural and backward areas in the Plan, communication systems are proposed to be suitably geared as a meaningful complementarity to this task. With the objective of evolving new patterns based on new technologies for use in rural areas, special studies are being carried out in a few selected districts throughout the country. During the Plan period, telecommunication net work based on innovative modes is proposed to be tried out in 18 selected districts. A significant step will be the provision of telecommunication facilities to remote and inaccessible areas through satellite communication. Steps will concurrently be taken to augment the indigenous production of telecommunication equipments in order to reduce the country's dependence on imports and efforts intensified for updating technology.

18.12 The telecommunication Plan envisages an addition of 14 lakh direct exchange connections to the existing 20.14 lakh working connections. About 18,300 telex connections are to be provided during the Plan period. The requirement of the rural areas including the backward, hilly and tribal areas are proposed to be met by opening 20,000 long distance public call offices. About 20,000 telegraph offices are also proposed to be opened during the Plan period and a large majority of them located in the rural areas. However, due to severe constraint on resources, while these targets may have to be somewhat modified, efforts will be made to approximate them as closely as possible.

18.13 On a priority basis, the telecommunication net work of the North-Eastern Region will be strengthened during the Plan period so as to have communication links with the remotest locations. Different micro-wave and UHF systems supplemented by satellite communication linking several places in this region are planned for implementation during the Plan period. Earth stations are being set up at Shillong, Agartala, Itanagar, Imphal, Kohima and Aizwal and these stations will start functioning as soon as Indian National Satellite (INSAT) becomes operational.

18.14 An outlay of Rs. 2,336 crores has been provided in the 1980-85 Plan for the development of telecommunications. Of this, over 43 per cent is reserved for rural and semi-urban areas and more than 6 per cent for tribal areas. Further, an outlay of about Rs. 75 crores is earmarked for the North Eastern Region.

INSAT

18.15 The Indian National Satellite is expected to be in orbit in 1982. INSAT will strengthen the long distance telecommunication links with various cities and remote areas through earth stations at different locations. Thirty one earth stations are being established. Of these stations, four will be at main area locations—Delhi, Bombay, Calcutta and Madras and one at Shillong; 8 will be at primary area locations—Ahmedabad, Erankulam, Jullundur, Lucknow, Patna, Bhubaneshwar, Hyderabad and Jaipur and 15 at remote area locations—Leh, Gangtok, Itanagar, Aizwal, Agartala, Kohima, Port Blair, Car Nicobar, Jodhpur, Srinagar, Kavaratti, Minicoy, Bhuj, Imphal and Panaji. There is provision for three transportable earth stations. The telecommunication Plan includes necessary outlays for the INSAT project.

Indian Telephone Industries Ltd. (ITI)

18.16 An outlay of Rs. 155 crores is provided for the development programmes of the ITI. In view of the widening gap between the demand for and supply of the switching equipment in the country, it has become necessary to increase the indigenous production of switching equipment. Besides the ongoing schemes, the two important programmes of the ITI included in the Plan are (a) second phase of the Rae Bareilly Unit for creating a capacity of 2 lakh lines of crossbar equipment and (b) expansion of the Palghat Unit which is engaged in the manufacture of small type of electronic exchanges.

18.17 Two large electronic switching factories with a capacity of 5 lakh lines each are proposed to be set up during the Plan period. A provision of Rs. 50 crores has been made in the Plan for this purpose.

Hindustan Teleprinters Ltd. (HTL)

18.18 A provision of Rs. 14 crores has been made for the programmes of HTL. The Plan programmes include production of teleprinters and electric typewriters besides the replacement of old plant and machinery.

Overseas Communications Service (OCS)

18.19 A provision of Rs. 85 crores has been made in the Plan for the Overseas Communications Service. Besides providing for the completion of the major spillover schemes such as IOCOM Cable Project and Indo-USSR Tropo Scatter Link, the Plan includes provision for new schemes like (a) construction of Videsh Sanchar Bhavan and Gateway Terminal Complex at Calcutta; (b) construction of a Satellite Earth Station in the Eastern region (as Phase II of the project relating to Calcutta Videsh Sanchar Bhavan and Gateway Terminal Complex); (c) Westward Submarine Cable Link from Bombay to the Gulf Region and (d) creation of facilities to work with INMARSAT, etc.

Monitoring Organisation

18.20 In the last few years there has been a major shift in wireless operations in the country in view of the rapid advances in satellite and space communication systems. The Plan, therefore, envisages updating the monitoring facilities to respond to the rapid advances in the radio communication systems. Two new monitoring stations are proposed to be set up at suitable locations not covered by the existing network. For the monitoring of space emissions, it is proposed to establish a new monitoring centre during the Plan period. A provision of Rs. 8 crores has been made for the various activities of the Organisation.

OUTLAYS

18.21 A total allocation of Rs. 2810.27 crores has been made for all the programmes in the Communication sector. However, additional outlays could be considered during the formulation of successive Annual Plans depending on the resources generated by the P&T Department. The following table indicates the programme-wise outlay in the Central Communication Sector:

Table 18.1

Outlays in the Central Communication Sector

		(Rs. in crores)	
Sl. No.	Item	Fifth Plan (1974-79)	Sixth Plan (1980-85)
(0)	(1)	(2)	(3)
A. P & T Department			
(i)	Postal Services	24.38	172.00
(ii)	Telecommunications (including INSAT)	1149.45	2336.00
Total—A		1173.83	2508.00
B. Other Communications			
(i)	Ministry of Communications (Main) . . . . .	..	40.00
(ii)	Indian Telephone Industries	52.85	155.00
(iii)	Hindustan Teleprinters	3.00	14.00
(iv)	Overseas Communications Service	35.87	85.00
(v)	Monitoring Organisation	1.06	8.00
Total B		92.78	302.00
TOTAL (A) & (B)		1266.61	2810.00

NOTE: A separate allocation of Rs. 51.65 crores has been made towards the space segment of INSAT during 1980-85. Expenditure incurred for the space segment in earlier years will be adjusted against the overall Plan provision of Rs. 2,536 crores for telecommunications.

SOUND BROADCASTING, TELEVISION AND INFORMATION SERVICES

18.22 The Ministry of Information and Broadcasting at the Centre and the Departments of Information and Publicity in the States are mainly responsible for keeping the people informed of the policies, plans and programmes of the Central and State Governments. Radio, Television, Films and other forms of audio-visual media prepare software with informational, educational and developmental content along-

with cultural and entertainment inputs. Sustained professional research in software programming would provide more imaginative intermeshing of the various programme elements.

18.23 With a network of 84 broadcasting centres including 66 full-fledged stations and 14 auxiliary centres as well as two exclusive Vividh Bharati Commercial Centres and two relaying centres, the All India Radio provides coverage to 90 per cent of the population and 78 per cent of the area of the country. Television, first introduced in Delhi on an experimental basis in 1959, has at present 7 full-fledged centres, 3 programme production centres, 7 SITE-on-going centres and 4 relay centres. The network currently covers an area of 2 lakh sq. kms. with a population of over 832 lakhs. It is felt that information media now need to be restructured so as to respond more fully to the tasks of development with proper coordination *inter-se* as well as with the information apparatus of the State Governments.

Sound Broadcasting

18.24 During the Sixth Plan, the radio network is proposed to be strengthened for supporting the development programmes of the country. The major thrust would be on upgrading the power of medium wave transmitters, converting auxiliary centres to full stations, setting up new stations in uncovered pockets, provision of a powerful short wave transmitter for the North Eastern Region, pilot scheme for local radio broadcasting and strengthening of the External Services.

18.25 The Plan for sound broadcasting recognises the need for development of a dedicated national broadcasting channel. The present national hook up necessitates cutting into regional and local service. The Plan provides for a beginning in this direction with one MW transmitter at Nagpur to be installed for this purpose. Outlays are being provided to strengthen the medium wave transmitters to protect them from interference caused by high powered transmitters of neighbouring countries.

18.26 The expansion of the coverage is being sought through opening of new stations at select places including the North Eastern Region where a high powered short wave transmitter is to be set up. Besides, a pilot scheme of setting up radio stations with low power transmitters are programmed for local areas to augment the development oriented programmes for such regions. The pilot scheme visualises location of such stations in areas with large population of Scheduled Castes and Scheduled Tribes.

18.27 Funds are also being provided for installing high-powered short wave transmitters to strengthen the External Services, development of software to effectively respond to local specific needs, for installing diesel generators at centres particularly in the coastal and cyclone prone areas as standby power supply to enable undisturbed cyclone warning to the inhabitants and replacement of the transmitters at Delhi damaged

during 1978 floods. The Plan also provides for a permanent building to store archives of recorded programmes of national interest.

18.28 A total provision of Rs. 122.38 crores has been made for Sound Broadcasting including Rs. 25.00 crores for spillover schemes and Rs. 97.38 crores for new schemes.

Television

18.29 The Plan envisages expansion of TV coverage by opening new TV stations and through the satellite system. It is proposed to provide direct reception of programmes through satellite by installing direct reception sets in the villages in areas where electrification of villages is low and by installing transmitters at suitable locations in areas of high density of electrified villages. This will enable rebroadcasting the programmes through conventional TV sets. It is also proposed to set up TV stations at some of the State capitals.

18.30 A provision of Rs. 86.95 crores has been made for Television expansion which includes Rs. 65.95 crores for continuing schemes and Rs. 21.00 crores for new ones, emphasis being laid on the completion of the spillover schemes from earlier Plans.

Information Services

18.31 One of the main objectives of the programmes of Information and Publicity is to reach the rural, backward and tribal regions, including the North Eastern parts of the country through appropriate media of mass communication suited to these areas. People's involvement in the developmental activities will continue to be the critical factor in the successful implementation of the Plan programmes. Information and Publicity support will be effectively provided to achieve this end.

18.32 The strategy for expansion of information and publicity activities will be on an integrated basis with each communication medium functioning as part of an overall operational multi-media structure designed to achieve optimum results. Under this arrangement, programmes taken up by media like radio and TV will be followed up by the other media like press, printed materials, films, exhibition, song and drama, etc.

18.33 The field publicity units, including those of State Governments, will have a pivotal role in respect of reaching out to the people and coordinating with other media. During the Plan period the field units will intensify their activities, with close coordination between the Central and State Units. At present there are 232 Central field units to cover 400 districts in the country. A modest increase in the number of units is envisaged during the Plan period. Other media units like Photo Division, Directorate of Advertising and Visual Publicity and the Publications Division will also enlarge their activities.

The Press Information Bureau has also drawn up programmes for servicing small and medium newspapers.

18.34 Among the various mass media, film is a very powerful channel of communication. Programmes for the production of films will, therefore, receive high priority. Introduction of 16 mm technology and decentralisation of film production with particular emphasis on films for rural audiences and an increase in the production of films for children are envisaged during the Plan period. The Indian Institute of Mass Communication and the Film and TV Institute of India will augment their training facilities in the context of intensification of various media activities.

Outlays

18.35 In the Sixth Plan the total provision for schemes relating to Information and Publicity is Rs. 63.01 crores. Of this, an outlay of Rs. 31 crores is for the schemes of the Ministry of Information and Broadcasting and an outlay of Rs. 32.01 crores is for the schemes of the States and Union Territories.

18.36 The statement given below indicates the outlay for Information and Broadcasting in the Sixth Plan.

Table 18.2
Outlays for information & Broadcasting

(Rs. crores)		
Sl. No.	Sector	Outlay
(0)	(1)	(2)
I.	Sound Broadcasting	122.38
II.	Television	86.95
III.	Information & Publicity	
	(a) Centre	31.00
	(b) States	28.46
	(c) Union Territories	3.55
	Total	272.34

SCIENCE AND TECHNOLOGY

The crucial role of science and technology as an instrument of social and economic change has been appreciated and the rapid development of science and technology and of its application, accepted as a major objective of planning. This trust in science is embodied in the historic Scientific Policy Resolution of the Government of India adopted in 1958. In the last thirty years or so, 119 universities, affiliating about 1650 colleges, 5 institutes of technology, 150 engineering colleges and about 100 medical colleges and 350 polytechnics have been established; about 150,000 qualified scientific and technical personnel are produced every year. The total stock of scientific and technically qualified manpower is estimated at 2.5 million, ranking India as the third largest complement of such manpower in the world, occupying a unique position among developing countries. Simultaneously, about 130 specialised research laboratories and institutes have been established under the aegis of Indian Council of Agricultural Research (ICAR), Council of Scientific and Industrial Research (CSIR), the Indian Council of Medical Research (ICMR), the Departments of Atomic Energy, Science & Technology, Space, and the Defence Research & Development Organisation, etc. In recent years, public and private sector organisations and undertakings, assisted by fiscal incentives, have established over 600 in-house research & development laboratories largely to meet their internal technological requirements. A relatively new but important development in the last fifteen years is the rapid growth of engineering consultancy organisations to provide design and consultancy services and act as the bridge between research institutions and industry. There are now over 150 such firms of varying size and capability employing over 20,000 technologists. The total expenditure on science and technology is now close to 0.6 per cent of the GNP.

19.2 Political independence has thus been matched by increasing technological independence in many areas. A range of industries, from the small to the most sophisticated, has been established covering wide areas of utilities, services and goods, and a large number of technologists are now familiar with their operations. There is now a reservoir of expertise well acquainted with the most modern advances in basic and applied areas, and equipped to make choices between available technologies, readily absorb new

technologies and provide a framework for future national development. Scientists and technologists have distinguished themselves not only in class rooms and laboratories but also in factories and fields, in conceptual planning and formulation of strategies and in their implementation. Indian scientists and technologists have demonstrated on many fronts that given clearcut objectives and tasks and necessary support, they can fulfil national expectations. The relevance of a large part of the effort in Indian Science and Technology to, and its correlation with, national development can be well established.

APPROACH

The present position and the perspective for the future

19.3 Over the past few decades, the growth of science and technology in the advanced countries of the world has been phenomenal. The frontiers of knowledge have been moved forward in unbelievable fashion and new areas have emerged with clearly great potential for the benefit of mankind. These strides have taken place in the developed countries. The reason for this is that 97 per cent of the world R&D is confined to the advanced countries and the developing countries, with their share of 3 per cent, have not been able to contribute as they should have.

19.4 While the total stock of scientific and technical manpower in India appears large at first sight, as a proportion of the total population it does not compare favourably with that in the advanced countries or even some other developing countries. The fact is that the science and technology content of Indian society as it is today (as borne out by the total national investment in this sector, the number of technically qualified personnel, facilities for science and technology education, size of technical services, etc.) as well as its involvement in R&D is low in comparison to the size and population of the country. A large part of the total stock of S&T manpower is not actually engaged in activities that can be construed as scientific or technical. Even more significantly, the quality of these personnel varies widely; there will be need for a considerable reorientation and upgrading of a large proportion of this stock of manpower through appropriate training programmes. In large areas of economic activity, relatively obsolete cost in-effective technology conti-

nues to be applied, the pace of scientific and technological innovation remains unimpressive and the adoption of the available scientific and technological knowledge is tardy. There are many gaps in new important fields and in the ranks of leadership and in excellence. While in the early years after Independence, there was a rapid expansion in university education, an increase in the number and size of facilities and in the formation of new institutions, all of which created a new plan, few new institutions have been started recently. In universities and several other institutions, the support provided has not kept pace with the increased need for better facilities. In a large number of areas, our capabilities are almost twenty years behind those in the advanced nations and also behind those established recently in some developing countries. The competitive capability, in international terms, of our scientific community has been impaired and this has prejudiced the provision of experience of modern science backed up by modern technology and instrumentation to the large majority of graduate and post-graduate students, thereby affecting their level of appreciation of new science and their capabilities for research. There is a lack of coordination between manpower requirements (in terms of areas and levels of training and numbers) and the actual training of personnel which has led to serious shortage of qualified and trained manpower in many areas. In sum, while significant advances have taken place on the science and technology front in India over the past three decades, the gap between what obtains in the country and in other advanced countries in terms of infrastructure and capabilities has significantly widened due to the much faster rate of progress in those countries. There is, therefore, no room for complacency on the basis of our past accomplishments.

19.5 In the area of application of science, success has been achieved in several fields in agriculture and in specific mission-oriented specialised agencies for atomic energy and space. The need to conserve foreign exchange and consideration of national security induced the application of domestic science and technology in the substitution of imports. With the increasing emphasis on cost effectiveness in establishing domestic production and exports, a new challenge is posed to the use of domestic scientific and technological talent. There is a serious danger that this new emphasis could lead to greater insistence on provenness and aversion to risk; this is particularly true if suitable mechanisms (both administrative and financial) are not developed to adopt and force technological development to a point of satisfactory performance and demonstration and also the acceptance of risk. Calculated risk taking and the development of risk reduction through systematic scientific effort is yet to be promoted adequately. A detailed strategy for major technological break-through appropriate to our resources and changing national environment has therefore to be properly formulated.

19.6 While linkages and mechanisms for the effective application of science are deficient in most fields,

this lack is specially serious in the optimal use of natural resources and in areas such as energy, health and medicine, population control, ecology and environment and integrated industrial and rural development. This has also led to an insufficient use of science generated in universities and national laboratories, giving rise to the often expressed feeling that the fruits of science and technology have not reached the bulk of the population and have not contributed to planned economic and social growth. Consequently, these deficiencies are tending to reduce the impact of science and technology in dealing more effectively with the economic and social problems of the country. While there are exceptions to this, it is clear that the major investment areas in our plans require a much more deliberate and sustained application of science and technology than hitherto. This requires not only financial support for S&T activities but linkages between the various sectors (educational, R&D establishments, industry and Governmental machinery) and policies conducive to the use of endogenous efforts. Instruments for policy formulation and task implementation in this regard are lacking at present. When we consider the magnitude and dimensions of India's problems of economic and social development, associated with the vast and increasing population and immense poverty, especially rural poverty, it becomes clear that massive application of science and technology has to be an essential component for their solution. Science and technology must now be considered a vital input in all investments on par with capital and trained manpower although it has a longer gestation period; the latter implies advance planning beyond the normal five year framework. Science can and must establish new heights for achievement and endeavour, which are big enough to provide the challenge and excitement for the country's best talent. This will generate pride and self-confidence, as well as new innovative ideas and solutions which go beyond mere import substitution. With the much lower costs at which S&T activities can be carried out in India, compared to that in other countries, science and technology is the one resource, which more than any other, provides the greatest advantage and it is, therefore, only logical for us to base our strategy for economic and social growth on this important resource.

19.7 Some well-planned measures are called for to see that the best and well trained among our post-graduate students of science and technology are provided adequate incentives to take up research as a career and that areas are defined and supported that best serve national interests and priorities towards which such talent can be directed or encouraged to work on. On the one hand, we have pockets of excellence in terms of sophisticated manpower in some areas with no exploitative base, on the other, vital areas are crying out for expertise. Such mismatch needs to be avoided. Our R&D institutions have had a tendency to work on a large number of programmes that have been going on for years with a fair proportion of obsolete equipment and manpower. There is need to modernise them and provide them the challenges that will stretch them to the full.

19.8 Science and technology must help to speedily improve production through better efficiency and fuller utilisation of capabilities already created in the various sectors of the economy. Technology has to be oriented to improving productivity. It has to help in the creation of more employment opportunities and in the reduction of drudgery especially of the weaker sections of the community. It should strengthen the nation and reduce vulnerability. Hence, self-reliance must be at the very heart of S&T Planning and there can be no other strategy for a country of India's size and endowments. The achievement of our development goals has often been impaired due to several national disasters like floods, droughts and communicable diseases; S&T has an important role to play in eliminating or controlling them, if instead of short term ad-hoc approaches, long term strategies are worked out. Problems of extreme poverty, sought to be mitigated through the minimum needs programme, are also well known. Science and technology has an important role to play in finding rational and long term solutions for such disasters and national problems.

19.9 Science is both an outlook and a value system. Despite the tremendous growth of science, very few scientists have taken upon themselves the responsibility of creating a scientific ethos. The task of creating a scientific temper is a vital necessity for the growth of science and its utilisation in the development process. There is need to create a scientific climate and involve the people in discussions on various issues of science and technology which affect their lives. There has to be dissemination of knowledge about natural phenomena and technological innovations, through popular science journals and other media. There is also need for promoting public debate on major issues of science and technology. The full potential of science has to be utilised for eradication of irrational attitudes, which tend to hold back the nation from the path of progress.

19.10 The total role assigned to science and technology must, therefore, be to develop on a long term basis a sound base in science, in competence and in skills. Shorter term plans must harmonise with this ultimate objective which may have a gestation period extending well over one five year plan. The aim must be to:

- attract (and retain) the very best and young talent to contribute to science and technology and achieve originality and excellence in international terms;
- improve and transform the existing structure of science and technology for this purpose (e.g. support for exciting areas of scientific activity, greater involvement of scientists in defining the tasks that they are expected to perform, better career prospects and amenities for scientists and technologists, improving the mobility of scientists within the country etc.); establish much more effective linkages in organisational form and policy framework and an

effective utilisation of science and technology to meet economic and social objectives; and

- identify major new areas of science and technology of special significance to the country and in some of these areas invest in an optimal manner so as to achieve technological breakthrough in the shortest possible time.

S & T and Education

19.11 The first priority must be to nurture talent by a substantial improvement in the general science and technology facilities in universities and research institutions. The University science system has been allowed to run down through lack of support in the recent past, a trend which, if allowed to continue, may result in an irretrievable situation. The current pressure to which the universities are subjected in terms of the enormous intake of science students needs to be reduced. The ten-plus-two-system of higher secondary education has to be effectively brought to use uniformly in all regions, taking note of the opportunities that it provides for filtration at successive levels of 10 to 12 years of school level education. This filtration will only succeed if the alternative channels for vocational training and, later, opportunities for gainful employment, are taken care of.

19.12 The higher education institutions with their research facilities are a unique base for the training of competent scientists and technologists. But with the rapid expansion of the number of institutions and students, without the corresponding inputs by way of facilities, the role of universities as advanced centres of teaching and research has been eroded, leading not only to the weakening of science teaching and research but also adversely affecting the climate so essential for higher learning. The need today is therefore to restore to the universities their proper image as centres of higher learning. Although it would be unrealistic to expect all the members of the academic community to take up research in addition to teaching, there is an urgent need to revive the concept of integrating of teaching and research so that in 10 to 15 years from now, our universities present a different image and are restored to their recognised position.

19.13 Facilities available in universities are not adequate. That they should be increased cannot be over-emphasised. It is in the general interest of not only the universities, but also scientific agencies such as CSIR, DAE, ISRO, public enterprises and technical departments in the Centre and the States, that the resources in the education sector are considerably augmented, since the manpower that they need comes from the University sector. Moreover, as the benefits of these researches will extend to several sectors of the economy, State Governments and industries should also share in funding research in universities.

19.14 Linkages between academic institutions on the one hand and national scientific agencies, laboratories and public sector enterprises on the other, have to be strengthened. This can be done in several ways

such as through increased mobility of scientific personnel between education and research organisations, joint research projects, and insistence on a minimum percentage of the R&D budget of government scientific agencies and public sector enterprises being spent in the academic sector. Universities and colleges should also be encouraged to under-take applied research, useful for several regions of the country. Since the problems of a particular region are unique and intrinsic the best way that the S&T thrust could be made in finding out solutions to those regional problems would be to make use of the local resources—people, the scientists and community at large.

Basic Research

19.15 Basic research is important not only for its own sake, but also because of the solid foundation it provides for applied research and development. By definition, basic research has to be carried out at the frontiers of human knowledge and can only be carried out by those with originality and innovativeness of a high order. Successful accomplishment of basic research automatically results in the creation of manpower imbued with great intellectual quality, self-confidence and the ability to find new and innovative solutions to problems. There are many areas of basic research today that are very expensive in terms of resources, both financial and manpower. Therefore, one has to be selective in the areas chosen to ensure that real progress is made. With the continuing emergence of inter-disciplinary areas, it is important to support the newly developing broad spectrum activities where many of the classical disciplines such as physics, mathematics and chemistry are brought to bear rather than attempt to build isolated peaks on a narrow basis. With our preoccupation to foster research programmes of a highly applied nature, much attention has not been paid to these advancing frontiers of science. While we strengthen the universities for carrying out advanced research in the frontiers of science, there may be a need to set up a few new research institutes in some important areas such as plasma physics, immunology and applied microbiology. The new institutions must have a strong mandate for theoretical and pure research. A beginning of this kind must be made immediately if the gap is not to widen.

Policy Formulation and Implementation

19.16 It is important to create on an urgent basis appropriate instruments relating to policy formulation for science and technology and for S&T planning. At the apex level, there will be a Cabinet Committee on Science and Technology which will consider all important issues related to science and technology. The Cabinet Committee will be supported by the Scientific Advisory Committee to the Cabinet. This Committee will critically assess the progress of S&T policies in relation to the aspirations of the people and in relation to the achievements of advanced nations and make appropriate recommendations to the Government.

19.17 The Department of Science & Technology will have the overall responsibility for the implementation of science and technology policy, administering special research institutions especially in their nascent stages and promoting scientific research in frontier areas. The Department will also play the role of drawing on the expertise available in the agencies, Ministries/Departments and universities.

19.18 There is need to have in the economic Ministries, particularly those concerned with large investments, properly structured Information Planning & Analysis Groups staffed with professional scientists and technologists and headed by senior scientists/technologists, who will function as Scientific Advisers to the Ministers; it has to be ensured that their views are given appropriate consideration. What is important is to ensure that in all areas of priority in the Plan, where large investments are to be made, the S&T component is clearly identified and broken down into tasks that can be assigned to institutions capable of working on them (whether coming under the concerned Ministry or otherwise) and where necessary, new capabilities built up. It has been past experience that there is very little correlation between R&D decisions and activities on the one hand and investment and production decisions on the other; or between R&D scientists and decisions relating to import of know-how.

19.19 The Planning Commission's role is with regard to the optimal allocation and utilisation of resources to fulfill national aspirations and goals. S&T has an important role to play in specifying the manner in which these aspirations can be met in the shortest possible time at minimal cost. The plan programmes of the economic ministries and State Governments in various sectors of the economy have to be appropriately analysed in the Planning Commission with a view to integrating the S&T plans and programmes as a part of the investment plans. This would call for clear delineation of the S&T information for planning purposes, analysis of the capabilities and content of the S&T programmes and advice on priorities for investments in S&T. Programmes emerging from bilateral and multilateral foreign assistance agreements would need to be harmonised with the national science and technology plans and policies. The Planning Commission would need to be supported by an appropriate structure for S&T advice, staffed with professional scientists and technologists and headed by a senior scientist as Scientific Adviser.

19.20 It is only in recent years that a number of enterprises and a few departments of the Government have set up in-house R&D organisations. Their efforts have been mostly confined to providing assistance in establishing process and product standards, substituting imported raw materials and intermediates and towards bringing about product improvements based on feed back from the market or users. A major initiative in the Plan would be to induce the public and private enterprises to enlarge their nascent R&D capabilities to grow rapidly with a view to engaging them in the task of promoting technology.

cal innovations. These would also need to be facilitated through appropriate institutional mechanism to enable the managements of such enterprises to have R&D advice in the pursuit of technological innovations as a part of corporate planning.

19.21 Financial institutions and development banks could play a useful role in evaluation of technology, preinvestment studies, choice of technology, risk taking in the use of indigenous technology, facilitating horizontal transfer of technology etc.

19.22 The activities of the National Research and Development Corporation (NRDC) need to be radically modified so that apart from licensing indigenous technologies, it vigorously promotes research and development. It should also concern itself with evolving mechanisms for dissemination and transfer of technology within the country, export of Indian technologies and mutual transfer of technology between developing countries.

19.23 There has to be a National Register of foreign collaboration. The prime contractor of any project must invariably be Indian; there must also be a commitment to associate appropriate Indian R&D activities with all import of know-how, and thereafter a commitment to ensure a scale of investment in R&D for the absorption of the import of know-how and subsequently for its adaptation, improvement and conversion to new technologies.

19.24 The import of technology should be preceded by advice tendered by competent groups in the larger interest of the country. The imports should be so planned as to result in their internal dissemination and further development as far as possible.

19.25 A strong information base is a prerequisite for a S&T plan with self-reliance as one of its principal objectives. Since information is utilised not only for the understanding of current status but also for anticipating the shape of things to come, a strong base for the pursuit of intellectual efforts in the direction of technological forecasting, information analysis, R&D management etc. has to be created. Computerised net-works for handling of information would have to be institutionalised to meet the requirements of policies trends of research, monitoring on a global level, resources availability, industrial, technological and market intelligence.

19.26 Steps will have to be taken to bring scientists and society together through appropriate feed back mechanisms. Science through proper communication should be made a powerful force to eradicate old irrational attitudes. A science information bureau would be established for this purpose.

19.27 A serious lacuna in the research system is the inadequacy of testing, calibration, standard and quality control facilities : these significantly affect the optimal use of national resources and health, environment and safety aspects while in use. The Sixth Plan would endeavour to promote a comprehensive programme which will establish a national centre of standards and expand the existing laboratories, test houses and certification centres so that in

due course these can cover a large range of activities throughout the country.

Science and Technology and Rural Development

19.28 It is necessary to emphasise that application of existing knowledge to the solution of neglected problems of development, especially in interdisciplinary areas with an additional socio-political dimension, often demands highly creative and innovative efforts and an application of a systems analysis capability of a high order, which is typical of any S&T endeavours.

19.29 Rural technology should not be taken to mean primitive technology or technology of yesterday. A determined effort is needed to take modern science and technology to the rural areas so that it is brought well within the material, financial and skill resources of rural people. Therefore, while searching for and improving upon such technologies which increase employment opportunities for our people, it will be simplistic and dangerous to confine indigenous efforts to relatively simple technology for rural needs and depend on import of technology in the high technology areas. We have also to ensure an appropriate mix of small, medium and large scale technologies, in a manner consistent with our long-term interests.

19.30 A national rural resources corps of young professionals would be organised to cover, in the beginning, the tribal, drought and flood prone and hill areas. A similar corps of professionals trained in managerial skills would be developed for helping the small and marginal farmers. The first group could be of great assistance in providing the needed support for implementing effectively the employment generation, agricultural and industrial programmes, the minimum needs programme and programmes of energy supply, housing and urban development, nutrition, elementary and adult education. The second group has the potential to make a significant contribution to the processes of transfer of new agricultural technology to millions of small and marginal farmers who have continued to lag behind. These farmers need management support in the form of agro-services of various kinds in our villages, blocks and districts, which can be provided through a large number of young professionals trained in modern management techniques.

Science and Technology and Human Resource Development

19.31 S&T can obviously play a significant role in the promotion of human welfare. In the coming years, the benefits of science must percolate more effectively to the vulnerable sections of the community and backward areas of the country. The manner in which this is sought to be achieved is briefly set out in the paragraphs which follow.

19.32 *S&T for weaker sections:* In promoting the applications of science and technology for the benefit of the weaker sections, special programmes would be de-

vised in the Sixth Plan. A more coordinated and vigorous effort than in the past is needed to equip suitable persons from socially backward groups and weaker sections of the society to play a purposful role in the S&T area. Consortia of S&T institutions could be formed in each district to provide the needed technical training and back up for the implementation of special programmes for Scheduled Castes and Scheduled Tribes and the weaker section of the society. In order to ensure appropriate technological back-up for this programme, it is proposed to initiate an all-India coordinated research project for technologies for landless labour families to be jointly undertaken by major scientific agencies, State universities, colleges and technical institutions and to mobilise professionally qualified young persons for service in rural areas.

19.33 It will be the endeavour of major S&T institutions to follow an integrated strategy which will aim at increasing production and productivity in agriculture and allied sectors based on the better use of irrigation and improved technology. Programmes in the areas of agriculture, animal husbandry, village and small industries will receive special emphasis. In the hill areas, afforestation, soil conservation and water shed management will receive priority. Alternative land management systems may have to be introduced to make shifting cultivation unnecessary. There is also need for introducing high-value, low-volume crops backed by processing and marketing to include horticulture, tea, coffee, spices etc. particularly in the north-eastern region. New technologies based on local raw-materials to minimise transportation cost and on the locational advantage of cool climates will also have to be developed.

19.34 A desert development programme will be implemented both in the hot and cold arid zones of the country. The emphasis will be on arresting desertification through activities which restore the ecological balance, stabilize sand dunes and facilitate soil and water conservation. Plantation of shelter belts, adoption of water harvesting techniques and developing pastures to sustain the livestock economy will have to be vigorously pursued. S&T programmes for improved agricultural and animal husbandry practices would be intensified in cold and arid zones.

19.35 *S & T for Women*: The question of developmental activities related to women *vis-a-vis* science and technology has two aspects. First, there is the contribution by women to the development of science and technology. Secondly, one has to consider as to how science and technology can contribute to improvement in the life and status of women generally. As regards greater involvement of women in science and technology, it is felt that the following areas deserve special attention:

- (a) science teaching in girls' schools and colleges;
- (b) Greater enrolment of women in engineering, agricultural, veterinary, fisheries and forestry colleges;

- (c) better personnel policies to enable them to look after their families as well as continue in employment; and
- (d) their involvement in the decision making process including opportunities for placement at higher levels of decision making.

The educational programmes should be so conceived as to pay greater attention to training both boys and girls to share responsibilities at home. Restructuring of courses in womens' colleges and training institutions, imparting of new skills to rural women and training in cooperative marketing for women are some of the other programmes that need be taken up.

19.36 Application of science and technology to the improvement of the life and status of women will depend upon the development of home technologies, suitable agricultural technologies and technologies for improvement of productivity. Forestry, sericulture, handloom and crafts like pottery could be considered potential segments of women's work where application of simple technology can go a long way in improving their productivity and give them enough time to participate in programmes for their educational and other development.

19.37 There is greater need to develop appropriate technologies for those working in the small and unorganised sector. This is particularly applicable to women facing serious occupational hazards in several professions leading to avoidable health problems. There is also a need for a coordinated research project to find out methods to improve the production efficiency and reduction of drudgery in the occupations of women. In the field of information dissemination, mass media could play a useful role in spreading information on technologies relevant to home needs such as care and maintenance of household gadgets, electrically operated utensils etc.

19.38 Special cells for promotion of S&T for women could be set up in the University Grants Commission, CSIR, ICAR, ICMR, Departments of Atomic Energy, Space, Electronics Science and Technology and Defence Research and Development Organisation. Specific programmes relating to technologies for rural women and warding off of occupational hazards, have to be structured. There is also need to look into the personnel policies for promoting greater involvement of women in S&T. The coordinating role in this regard has been entrusted to the Department of Science and Technology.

19.39 *Involvement of the Scientific Community* : The large S&T manpower available in the country has to be mobilised towards the objective of accelerating the pace of economic growth of the country. Measures will have to be taken to give a sense of involvement to the scientists, to energise the different segments of the scientific community and to utilise purposefully the scientific academies and professional societies. These are highlighted in the following paragraphs.

19.40 *Young Scientists:* The involvement has to be at the following three levels:

- (a) development of the programmes of the institutions and organisations where the scientists are working;
- (b) interaction with the State Councils of Science and Technology; and
- (c) at the national level, there is a need for a proper mechanism for a continuous involvement of young scientists in the formulation and implementation of policies for science.

19.41 *Scientific academies and professional societies:* In planning of S&T, a sense of perspective and a futuristic outlook are essential. Gaps in S&T between what exists in our country and that in the advanced countries have to be identified, particularly because S&T is to be used as an important instrument of our future development. Current trends in research have to be studied, state of art reports have to be prepared and forecasting has to be resorted to in several areas. The expertise available with the science academies and professional societies could be fruitfully employed for these activities. These academies and societies could interact with educational and training institutions in the matter of curriculum development, retraining and refresher course for the older groups in the profession and intensive training for special categories of professional scientists. They could organise seminars and workshops where the society comes face to face with the decision makers, the scientific community and those concerned with implementation at grass-root levels. The academies and societies should work in close collaboration with State S&T Councils and State Planning Boards. Financial allocation for stimulating such activities has been made in the Plan under Department of Science and Technology.

Facilities and Amenities for Scientists

19.42 The Indian scientists are a part of the society for whose development they are deeply committed. The socio-economic problems faced by the scientists are not different from those of other citizens. Many of the younger scientists in their creative years have to devote too much of their time to problems of every day living while they would like to devote their time to thinking and researching. Attention will have to be given to the problem of salary structure, housing, educational facilities and other incentive if research institutions are to be made more creative and greater returns are expected from research.

S & T in States

19.43 The State Councils of Science and Technology are being activated under the new plan. One of the specific ways by which the State Councils could foster S&T in their own region could be to associate the national laboratories, university science departments, research scientists and professional societies

in the States, in the identification of problem areas and application of S&T for their solution. The State Councils could also organise public discussion and debate on S&T policies, plans and programmes being followed or proposed to be followed by the various Central and State S&T institutions situated in the State. Dissemination of science and fostering of scientific temper should be the guiding principle for the working of these State Councils. This could be achieved by the publication of special journals in local languages, programmes for the children in schools and science melas organised in research institutions in which a large number of people participate. The Councils could also commission mobile science museums for purposes of exhibition in rural areas.

Technical Cooperation in S & T

19.44 Collaborative efforts through multilateral programmes such as those of the various agencies of the UN system or bilateral technical assistance programmes have emerged as significant vehicles for inter-country cooperation in S&T. It is, however, important that such programmes of technical cooperation are enmeshed with the indigenous S&T capability and linked to the S&T plan.

In devising programmes of technical cooperation with other countries, aid as such should not be the primary objective. Since the basic infrastructure of S&T is strong enough in the country, it would be advantageous to look for programmes which call for collaborative effort between our scientists and those of the advanced countries. It should be the endeavour of R&D institutions to see that, as far as possible, the emphasis in the collaboration is on exchange of specialised knowledge on both sides and procurement of specialised equipment from advanced countries. Certain specific areas in which we have advantage could be considered for offer of training facilities for the scientists of other developing countries. In this regard, the Centre for S&T for non-aligned countries and Regional Centre for Transfer of Technology (under ESCAP auspices) will be supported and developed. It may also be possible to offer proven technologies to neighbouring countries faced with development problems similar to ours.

PROGRAMMES

19.45 As explained in the sections which follow, the Plan investment on science and technology in the Sixth Five-year Plan will be significantly higher than in the earlier plans. While the realignment of the scientific effort in the country fully in line with the foregoing approach will take some time, the programme content in the new Plan marks a step in this direction.

Indicative thrust areas for S & T

19.46 In order to utilise our existing manpower resources and strengthen the infrastructure of our institutions, so as to leapfrog into advanced areas of

science and technology, it will be necessary to concentrate on well selected areas of science and technology and provide the requisite amount of resources so that major breakthrough may be achieved in the selected thrust areas; these must be chosen such that even limited resources can make an impact. The identification of these thrust areas and assignment of appropriate priorities is a continuous process involving interaction amongst different groups of scientists and technologists from educational and research institutions as well as from the industry. Many of these thrust areas need inter-disciplinary work encompassing different traditional disciplines such as physics, chemistry, biology and engineering. Another feature relates to the setting up of appropriate institutional mechanisms to ensure that these new interdisciplinary areas are pursued by scientists of high calibre, particularly young scientists from different parts of the country around whom suitable core groups or units may have to be built up, providing them with the necessary facilities including appropriate training programmes, specialised courses, career award schemes etc. Some of the indicative thrust areas identified so far and the corresponding Departments/Ministries and agencies which might take the lead in implementation are indicated in Annexure 19.1.

19.47 The programmes on Science & Technology are described in the various sectoral plans. For an integrated picture, the salient features of the S&T plan programmes are indicated in the following paragraphs:

Agriculture, Animal Husbandry, Fisheries and Food

19.48 Agricultural research in India has many achievements to its credit. The production of foodgrains touched a record level of 131.4 million tonnes in 1978-79 as compared to 45.6 million tonnes in 1947. This improvement in foodgrains production has been made possible by the development of high-yielding crop varieties and improved production technology through sustained research effort. Similarly, the research advances made in commercial crops, horticultural crops, plantation crops etc. have added to the production potential of these crops. The technology has also been developed for reclamation of saline, alkaline and desert soils into productive lands and for improvement of live-stock and their disease control. Cross-breeding programmes in live-stock and sheep have been introduced for increasing the milk yield and wool and meat production. Relevant technology for improvement of both inland and marine fish production is being developed. Research for improvement of goats, poultry, pigs etc. is also under way. Extension programmes for transfer of technology have been undertaken through national demonstrations, whole village operational research projects, Krishi Vigyan Kendras and Lab-to-Land programmes.

19.49 During the last three decades, the major objective of agricultural research and development was to achieve self-sufficiency in food. During the eighties, the goal would not only be to further improve productivity and stabilise and diversify production,

but also to conserve it and to generate rural employment and enhance consumption by increasing the purchasing power of the people. High-yield-cum-stability production system, in both terrestrial and aquatic farming will be developed, ensuring maximum utilization of available resources in soil, water and sun light. Identification of constraints responsible for the gap between the potential and actual farm yields and causes of slow technology transfer would continue to be of prime concern. Research effort will be oriented to conservation of plant, animal, soil and water resources, evaluation and stabilisation of production trends in unirrigated areas, evolving technology to suit marginal and small farmers' holdings, improvement of animal and fisheries resources and development of integrated farming systems. Measures for effective transfer of technology to the field and providing research support to the farming community will receive special consideration.

19.50 The S&T programmes under the Department of Food pertain to Indian Grain Storage Institute and its field stations and the National Sugarcane Institute. Promotion of research effort and popularisation of improved techniques for foodgrains storage and pest control at farm level are important facets of the Grain Storage Research and Training Centre. The Centre also undertakes training for Government personnel deployed for procurement and buffer stock maintenance and for pest control in Government godowns. The development of designs of metal and non-metal storage structures, appropriate insect and rodent control techniques for adoption in the village and identification of field problems in various post harvest operations are some of the programmes in the Plan. The National Sugar Institute will continue its programme of research on problems pertaining to sugar technology, sugar and sugarcane chemistry and sugar engineering, render technical advice and assistance to sugar factories with a view to improve efficiency and provide specialised technical education.

Forestry

19.51 The S&T component in the forestry sector is built around the programmes of the Forest Research Institute. These will be concerned with developing technologies to increase, maximise and stabilise wood production per unit area under different management and exploitation methods, improvement in utilisation and generation of employment without endangering ecological security. Particular attention will be paid to the extensive cultivation of leguminous shrubs and trees which can provide fodder, feed, fuel and fertiliser (through fixation of atmospheric nitrogen).

Environment and Ecology

19.52 A new Department of Environment has been set up. The activities in this important area will pertain to:

- (1) support for R&D programmes, developing an information system, monitoring network, field action and demonstration schemes, and matters relevant to planning and coordination on environment and ecology at the national and State levels;

- (ii) operational programmes such as establishment of biosphere reserves and centres of excellence for environment education and managements, and Eco-development force and Eco-development camp
- (iii) programmes pertaining to pollution control measures (water, air, noise etc.).

Irrigation

19.53 The focus of the research activities will be on evolving improved and economical designs, use of locally available materials, adoption of better construction practices and development of indigenous technology for new instruments and materials, identification of activities required for the optimum development of water resources by remote sensing techniques and promotion of studies in pure and applied hydrology.

Meteorology

19.54 The S&T programmes in meteorology are undertaken by the establishments of the Indian Meteorological Department, Indian Institute of Tropical Meteorology, Indian Institute of Geomagnetism and Indian Institute of Astrophysics. The programmes pertain to strengthening the infrastructure capabilities and competence to provide weather forecasts, warn against severe weather phenomena (like cyclones, heavy rains, snow, heat and cold waves), and for detection and location of earth-quakes and evaluation of seismic risks. New programmes proposed relate to integrated weather service for agricultural operation and planning, application of remote sensing technique to agricultural meteorology, extension of soil moisture observational network, reconnaissance of cyclonic storms and development of instruments.

Health

19.55 Over the years, the aim of Indian Council of Medical Research has been to strengthen indigenous capabilities and develop a broad-based and balanced cadre of research personnel able to cope with the present and new problems affecting the health of the nation. In the Plan, the activities of Indian Council of Medical Research would be oriented to operational research for improving health conditions in major problem areas like fertility regulation, control of communicable diseases, improving the nutritional status, particularly of mothers and children and alternative strategy of delivery of health care. The effort would be to strengthen and develop capabilities in new areas such as immunology, genetics including molecular biology and genetic engineering for control of intractable communicable diseases, viz. malaria, leprosy, filariasis and kala-azar. An important step towards implementation of the programmes will be the adoption of the task force approach, viz. to set up interdisciplinary/inter-institutional task forces for specific problem areas like child health, nutrition, cancer, communicable diseases and endocrinology, in which the R&D tasks would be identified and programmed for achievement in a time bound manner. In addition, the Indian Council of Medical Research have proposed to set up a national cancer registry with four regional centres, three advanced centres in areas of

hematology, neurophysiology and neurobiochemistry and five regional centres to promote regional biomedical research during the Plan period. Among other major S&T objectives in the Health sector will be development of indigenous capabilities for the manufacture of bulk drugs and utilisation of medicinal plants

Education

19.56 The basic approach will be to provide selective support for high calibre but broad-based scientific research and thereby to improve the quality of the educational system.

19.57 The University Grants Commission has provided assistance to Universities to set up computer facilities, instrumentation centres, and centres for advanced study in science. Support is also provided by UGC to selected university science departments to develop accessory and infrastructure facilities for undertaking group research in selected subjects, strengthen and consolidate their teaching and research programmes and to identify an area of specialisation in which they would ultimately strive to achieve excellence. With UGC support, specific time bound research projects are also undertaken by university faculty members and junior teachers in colleges and universities. These activities will continue in the Sixth Plan.

19.58 In the area of technical education, besides strengthening R&D in Indian Institutes of Technology, it is envisaged to take up programmes relating to expansion of facilities in areas where gaps have already been identified, such as instrumentation, computer science, electronics, bio-sciences, and development of emerging areas like microprocessor applications.

Housing, Urban Development and Construction

19.59. The S&T programmes in the area of housing and construction materials will concentrate on applied research and development covering building materials, soil engineering, building processes, rural housing, construction equipment and techniques and structural designs, marine structures, construction management and solar energy in buildings. The implementing organisations include Central Water Commission, Central Board of Irrigation and Power, Indian Road Congress, Defence Research and Development Organisation, National Building Organisation, Central Building Research Institute, Indian Institutes of Technology and other laboratories.

Energy

19.60 The thrust of the research effort in the energy sector will be on improving the efficiency of production, distribution and utilisation of all forms of energy, improvement of energy efficiency in processes and equipment, recycling of waste for augmenting energy supply and development of new and renewable energy technologies. As the energy problem has emerged as the most critical problem which the world has to face in the coming decades and as investments on this sector are growing increasingly massive, the S&T effort in the energy sector is being intensified

over the entire range from atomic energy at one end to animal energy at the other.

19.61 Apart from the potential role of new and renewable energy sources in meeting the country's energy demands, the development of solar, wind and bio-mass sources of energy are of particular interest for supplying the energy needs of the decentralised and rural sectors, as well as several potential industrial uses. In order to have institutional arrangements for a well-coordinated approach in this area, a Commission for alternative energy sources is being established. This Commission will be similar in structure and powers to the Atomic Energy Commission. It will be responsible for formulating policies and programmes for development of non-conventional and renewable sources of energy, for coordinating and stepping up the research and development activities in this area and for ensuring implementation of Government's policies in regard to matters concerning such sources of energy.

19.62 The highlights of the S&T programmes relating to energy are set out in the sections which follow.

19.63 *Petroleum*: R&D effort in the petroleum sector is undertaken by three institutes of ONGC viz. Institute of Petroleum Exploration (IPE), Institute of Reservoir Studies (IRS) and Institute of Drilling Technology (IDT) as well as by the Indian Institute of Petroleum (IIP), Engineers India Limited (EIL), Indian Oil Corporation (IOC)—R&D Centre, and Indian Petrochemicals Corporation Limited (IPCL) R&D Centre.

19.64 IPE will be undertaking studies on basic issues connected with petroleum genesis and accumulation, by adopting an integrated and multidisciplinary approach. IRS will be concentrating on programmes for developing enhanced recovery techniques for different oil fields. IDT will initially concentrate on solutions for problems of drilling deep wells. The developmental activities of the three institutes include import substitution and indigenisation of equipment. In the field of oil refining, IIP will be the prime organisation to conduct R&D programmes, it will be supplemented by IOC (R&D Centre), EIL and others. The main areas of research would be thermal and fluid catalytic cracking, catalytic reforming, solvent dewaxing and deoiling, hydro-treatment and sweetening of various petroleum products. The Plan programmes envisage setting up a semi-commercial pilot plant next to the Koyali Refinery. Concentrated efforts will also be made to develop catalysts required for various refining processes.

19.65 The R&D projects undertaken by EIL are in the areas of chemical engineering, petroleum refining, petro-chemicals, slurry transport, equipment development, environmental engineering, non-ferrous metallurgy and ocean engineering. The R&D schemes of IPCL and IOC pertain to product development and process improvements relevant to their corporate objectives.

19.66 *Coal*: The Coal R&D projects are coordinated and monitored by the Central Mines Planning and Designs Institute, Ranchi. Under the Department of Coal, an inter-ministerial Standing Committee on Science and Technology has been formed. The programmes include those of the Central Fuel Research Institute, the coal companies and research sponsored in academic institutions like Indian School of Mines, Central Mining Research Station and Indian Institute of Technology and Banaras Hindu University. In the Sixth Plan two new techniques of mining, viz. shield mining and hydraulic mining will be tried on an experimental basis. Other S&T schemes include the introduction of geophysical methods for the estimation of river sands, monitoring of environmental conditions, underground communications and technologies for Coal beneficiation, conversion, agglomeration etc.

19.67 *Power*: The first stage expansion of Central Power Research Institute (CPRI) has been completed; during 1980-85, the programmes include setting up of an experimental line for research on UHV/HVDC transmission, contactor and transformer testing facility at Switchgear Testing and Development Station, Bhopal and setting up of a 2500 MVA short circuit testing facility. Additional regional laboratories are also proposed to be set up by CPRI for routine testing of various power apparatus. In addition, CPRI proposes to undertake research projects on problems of thermal power station operation such as failure of boiler tubes, water chemistry in thermal stations, corrosion of ID fans and corrosion of coal conduits.

19.68 The Central Board of Irrigation and Power, which sponsors problem-oriented research activities, specially among the State Electricity Boards, will intensify its activities in the next five years. Geothermal field investigations in progress in the Parbati Valley in Himachal Pradesh and in the Puga Valley in J&K are expected to be completed by 1982-83 and 1983-84 respectively. These will be followed by schemes to explore the feasibility of harnessing the energy. Investigations and studies have been proposed regarding development of tidal power in the Gulf of Kutch.

19.69 *Renewable Energy Sources*: The Department of Science and Technology has an ambitious programme for research and development in new energy sources. As explained in the Chapter on "Energy", it covers development of technologies and devices for utilising new sources of energy such as Solar, biomass and wind. Research activity is also to be initiated on energy conservation and energy efficiency in industries, agriculture and transport, and for developing integrated energy systems for the decentralised sector. The establishment of a 5 MW (thermal) Magneto-Hydro Dynamics (MHD) experimental facility will be completed in the Plan period.

Atomic Energy (R&D)

19.70 The R & D effort is oriented to achieving self-sufficiency in the exploitation of the potential for

nuclear power generation and applications for national development and is accordingly directed to the development of power reactor systems and applications of radioisotopes in industry, agriculture and medicine. The reactor technology development programmes, have hitherto concentrated on thermal reactor development; several types of experimental reactors have been built and project engineering capacities developed. As a spin off, special expertise has become available in areas like special materials, electronics, and exploration and exploitation of atomic minerals. At the Bhabha Atomic Research Centre, the 100 MW thermal research reactor is expected to be commissioned in 1983.

19.71 Some of the new programmes envisaged at the Bhabha Atomic Research Centre are the development of a Medium Energy Heavy Ion accelerator, studies in laser induced fusion and related high temperature high density plasmas, and development of a 500 MW thermal reactor. At the Reactor Research Centre at Kalpakkam, the Fast Breeder Test Reactor is expected to attain criticality in 1982. The R & D programmes of the Centre relate to sodium technology, reprocessing engineering and special materials research. At the Variable Energy Cyclotron project at Calcutta, which is the national facility for advanced work in nuclear physics and for the controlled direct irradiation of biological and agricultural products, research facilities are being set up for biological, biomedical and chemical studies of charged particle and induced radio isotopes. The Atomic Minerals Division will carry out a reconnaissance survey of an additional 50,000 sq. kms and detailed surveys in 1200 sq. kms.

19.72 New research efforts envisaged in the Plan at the Tata Institute of Fundamental Research are in the areas of molecular biology, radio-astronomy, chemical physics and computer sciences. The research programmes of the Saha Institute of Nuclear Physics in the areas of bio-physics, cyclic accelerators, molecular biology, plasma and laser physics will continue. Grant-in-aid support to universities for basic research would be further augmented with a view to help strengthen the infrastructure capability of the university system and develop a national base for expertise in areas of interest to atomic energy development programmes.

Rural Development

19.73 Science and technology programmes relevant for rural reconstruction would be designed to generate expertise and skills for using local resources and manpower, establishing structural linkages between national laboratories, institutions of higher education and state development agencies and programmes through a consortium approach, developing a corps of young professionals and stimulating action-oriented research for development and transfer of appropriate technologies. In this regard, special attention will be paid to the betterment of landless labour, marginal farmers, village artisans and rural women. The S&T programmes would be oriented to the plan programmes which are specially geared for rural development, such as the minimum need programme, village and cottage

industries development, integrated rural development, national rural employment programme and special programmes for hill areas, deserts and tribal areas. Specific measures envisaged are the starting of an all India coordinated research project for technologies for landless labour, developing a corps of young professionals, promotion of S&T for weaker sections and women, and involvement of younger scientists for solutions of local specific problems.

19.74 These new initiatives will be in addition to the on-going S&T programmes such as those undertaken by the Khadi and Village Industries Commission, the National Institute of Rural Development, Centres for application of S&T to rural development and sponsored R&D in other institutions. S&T programmes which relate to improvement and development of implements and machinery needed for village industries, reduction of drudgery and increasing the earning capacity of the workers, will continue.

Large and Medium Industries

19.75 *Heavy Industries:* The principal objectives in this sector would be the development of energy efficiency, increasing productivity, improving the process design and development of capabilities for the design and fabrication of equipment and plants for the manufacture of fertilizers, petrochemicals, cement, paper, steel, non-ferrous metals, etc. As far as machine tools are concerned, development of the capacity of the industry to design and manufacture newer and more sophisticated tools and development of supporting technologies would be the principal goal. Specific areas where major effort would be required are automobiles, agricultural equipment and machinery, mechanical and electrical equipment and printing technology.

19.76 The RD programmes will be carried out by the public sector units such as Bharat Heavy Electricals, Hindustan Machine Tools, Bharat Heavy Plate and Vessels, Bharat Pumps and Compressors, Heavy Engineering Corporation, Mining and Allied Machinery Corporation, and institutions such as Welding Research Institute, Central Machine Tool Institute and Automotive Research Association Institute. The main objective of in-house R&D units will be to develop competence to provide engineering services, bring about improvement in product design and efficiency, import substitution and technology absorption, as also for a steady flow of new products, processes and services.

19.77 In the case of textiles, the R&D programmes will be looked after by industrial research associations for jute, cotton textiles, silk, man-made fibres and wool. The R&D programmes identified in the Plan cover jute—fibres, jute re-inforced plastics, energy and water conservation in textile mills, improvement in technologies of yarn and fabric preparation in the decentralised sector, open end spinning technology, machinery development and instrumentation.

19.78 *Mining and Minerals:* The S&T projects are implemented through five Central public sector units

(Bharat Gold Mines, Hindustan Copper, Hindustan Zinc, Bharat Aluminium and Mineral Exploration Corporation), the Indian Bureau of Mines and Gujarat Mineral Development Corporation; grant-in-aid support is also given to research schemes of Indian School of Mines and other academic institutions. The programme will be oriented to the development of new and efficient methods of exploration and exploitation of mineral deposits, improvement of efficiencies in mines and plants, recovery of precious and minor (but valuable) metals present in base metal ores, applied research for pollution control and protection of environment in the process of mining and production of non-ferrous metals.

19.79 Chemical Industries: It is proposed to set up facilities for in-house R&D under Indian Drugs and Pharmaceuticals and Hindustan Antibiotics for carrying out development work and improving productivity in the field of drugs and pharmaceuticals. Hindustan Organic Chemicals intend to establish multi-purpose pilot plant facilities. A central complex for R&D in the field of insecticides is planned by Hindustan Insecticides.

19.80 A National Institute of Fertilizer technology under the administrative control of the Department of Chemicals and Fertilizers is proposed to be set up during the Sixth Plan. Some of the R&D areas identified for special attention in the field of fertilizers are fuller exploitation of pyrites resources; recovery of sulphur from gypsum, production of nitro-phosphate with use of nitric acid to reduce dependence on sulphur, methods of making tailor made nutrient mixture for specific requirements, miniaturisation of ammonia plants and simplification of process routes to encourage decentralised production units and bio-fixation of nitrogen. The thrust in R&D on drugs will be on the development of processes for drugs like anti-leukaemic, anticonvulsant, antifertility, anti-malaria, anti-tumor and anti-tuberculosis drugs. Work on development of technology for drugs from indigenous plants would be continued. A coordinated programme is envisaged on development of fermentation technology covering drugs, pharmaceuticals, food and industrial raw material particularly aimed at replacing petro-chemicals.

19.81 Steel: The Research and Development Centre for Iron and Steel under Steel Authority of India is engaged in undertaking in-house R&D projects of the steel plants. The Sixth Plan programmes will cover areas such as raw materials for producing iron, direct reduction steel making, rolling mills, refractories, instrumentation control etc. Amongst the important projects, mention may be made of the partial briquetting of coal charge which aims at utilisation of about 20 per cent non-coking coal in the existing coke oven batteries, installation of coal dust injection facility at Bhilai Steel Plant, development of alternate routes for production of iron and steel using non-coking coal by rotary kiln sponge iron pilot plant, improvement in the LD lining life, pilot plant at Durgapur for development of bottom blow oxygen steel making process, development of technology for removing alumina from iron ore on a commercial

scale and commercial scale production of cold bonded pellets utilising steel plant wastes. An Information and Documentation Centre is being set up at Ranchi.

Council of Scientific and Industrial Research

19.82 The national laboratories under CSIR have undertaken turn-key projects and provided basic designs for processes to various industries. Upto 1979-80, more than 1200 processes have been released to industry of which over 500 have gone into commercial production. Design and consultancy capabilities have been developed in several specialised area e.g. optics, electronics, instrumentation, geophysical surveys, pollution control, chemicals, food processing, leather, glass, civil engineering structures etc. For taking science to the grass roots level, CSIR has also pioneered a programme of adoption of districts.

19.83 The R&D programmes are implemented through a net-work of national laboratories and institutes, regional field stations, extension centres and polytechnological clinics. The S&T programmes of CSIR are reviewed, monitored and managed through a multi-tier system involving the governing body, the executive committees of the laboratories and coordination councils of Directors of laboratories. The CSIR also supports extra-mural research in universities, IITs etc.

19.84 Attention in the Sixth Plan period would be directed towards projectisation and making an impact through close coordination on an inter-institutional, inter-agency and multi-disciplinary basis, with full utilisation of existing facilities and infrastructure. Programmes in some of the major areas are:

(i) *Materials Development including polymers, corrosion and catalysis*

Development of special alloys steel, aluminium alloys, magnets, cryogenic materials, infra-red materials, industrial ceramics, special glasses, speciality paper products; rheology, processing and reaction engineering of polymers; simulation, chemical engineering and process design of industrial catalysts; evaluation and prevention of metallic corrosion in structures.

(ii) *Chemicals*

Biological evaluation of pesticides and agro chemicals; process technology for drugs; special surface coatings and paints; fuel cells, phosphors, ion-selective electrodes; biological active principle from marine flora & fauna, marine chemicals as by-products; and desalination technologies.

(iii) *Bio-technologies*

Tissue culture application for medicinal and economic plants; fermentation technology and enzyme engineering for chemicals, antibiotics and other medicinal products development; agricultural and forest residues and slaughter house wastes utilisation; emerging areas like genetic engineering and molecular biology.

(iv) *Oceanography*

Geo-physical, geological and biological surveys in the ocean areas; dynamics of ocean environment; sea farming technology; marine instrumentation; collection, collation and analysis of data for ocean engineering.

(v) *Environmental Research*

Studies on environmental pollution, marine pollution, biological monitoring techniques, rural sanitation, industrial pollution and protective measures.

(vi) *Mining and Metallurgy*

New mining methods, mine modelling techniques, ground movement investigations, mine safety problems, productivity improvement in mining techniques, development of extractive technologies hydro-electrometallurgical techniques, metal working techniques for clad metal, and material conservation.

(vii) *Electronics*

Semi-conductor materials and devices, industrial control system, silicon and other electronics materials, micro-processors and instrumentation.

(viii) *Natural Products*

Survey and screening of medicinal aromatic and other economic plants; identification of active principles and application of tissue culture, chemical engineering, agricultural engineering, bio-chemical engineering and technology for extraction and application.

(ix) *Energy*

Coal utilisation inclusive of gasification; development of other non-conventional energy sources, e.g. solar energy and biomass, geothermal studies, wind power, energy storage and battery systems.

(x) *Aeronautics*

Turbo-machinery and combustion studies, fatigue study, design studies on aircrafts structure; active flight control technology; development of other materials and composites for structures; rigs & tools development.

19.85 While acquiring new equipment for modernisation of facilities, the needs of the major thrust areas and projects of national priority would receive special consideration. The linkages of the CSIR laboratories with the user Ministries/Departments under the Central and State Governments, Universities, IITs and industries would be further strengthened.

Department of Science and Technology

19.86 The Department of Science and Technology is concerned with promotional efforts in new areas of science and technology as also coordination of S&T activities in the areas in which a number of institu-

tions and other Departments have interest and capabilities. The Department also provides support to some scientific establishments, science academies and societies and deals with matters concerned with international scientific collaboration programmes. The Department has established appropriate mechanisms to operationalise S&T schemes such as advisory Committees and steering Committees, which bring together various institutions, expertise and capabilities to help in implementing schemes and monitoring them in a coordinated manner.

19.87 In the Sixth Five Year Plan, the infrastructure facilities for the promotion of scientific and technological effort in oceanography and sophisticated instrumentation will be strengthened. The Ocean Science & Technology Agency would be acquiring oceanographic research vessels for undertaking scientific surveys and research for both mineral and biological resources; a marine research and development fund to intensify R&D work is envisaged. The four Regional Sophisticated Instrumentation Centres already set up would be strengthened by adding new equipment; a few more centres to serve the instrumentation needs of scientists in other regions are envisaged.

19.88 The Department has another set of Plan schemes which pertain to industrial promotion. The programmes under instruments development pertain to design and fabrication of optical, opto-mechanical and opto-electrical instruments, which would include process control, pollution control and electro-medical instruments. Another programme relates to the development of new fibres and composites: the development of resin systems would be undertaken and the earlier technology efforts would be operationalised through pilot plants for glass fibres, carbon fibres and fabrication of end products. The NRDC would be reoriented to promote diffusion of technology. Suitable mechanisms would be evolved and implemented for screening of proposals for analytical testing facilities and accreditation of quality of testing.

19.89 A major effort would be made in the Plan for supporting basic research, multi-disciplinary research and initiating efforts in the emerging areas of science. In the exploratory phase, more than thousand scientists were involved in undertaking inter-disciplinary research work on 200 projects through the Science and Engineering Research Council. Thirty thrust area research programmes are envisaged in the second phase. Intensification of scientific research in some newly emerging areas by providing financial support to viable groups of scientists and technologists e.g. immunology, vaccine development, plasma physics etc. are envisaged: a national consultation and consensus process will be evolved for this purpose.

19.90 Four sectoral scientific information centres (drugs, leather, food and machine tools) were set up as a first step for developing a National Information System for Science and Technology (NISSAT). The plan envisages setting up four more such centres, as also training in information acquisition,

storage and retrieval and bringing about linkage towards developing the national system. Support for seminars and symposia in selected areas would continue.

19.91 Promotion of scientific interest would be an important Plan effort of the Department. The schemes under this category envisage promotion of awareness of science and technology, fuller and purposeful utilisation of the capabilities of scientific academies and professional bodies, younger scientists and women scientists. Promotional efforts for catalysing the State Councils for Science and Technology would be undertaken for application of S&T for local and regional problems. Appropriate programmes to involve young scientists would be developed to help in promoting self-employment schemes in the areas of sericulture, animal husbandry, social forestry, fisheries, small industries etc.

19.92 Under international science collaboration, the support for the Regional centre for Technology Transfer in collaboration with ESCAP would continue. The setting up of a Centre for Science and Technology for non-aligned countries is envisaged, as also coordination of programmes under Technical Cooperation among Developing Countries (TCDC).

Testing and Analytical Facilities

19.93 The National Test House (NTH) renders analytical and testing services to Government and non-Government agencies and industries. The ongoing scheme of strengthening of testing facilities at Calcutta and Bombay and setting up of regional test houses at Madras and Delhi would be completed. The facilities are proposed to be modernised and updated in the areas of chemical, physico-mechanical, electrical and electronic disciplines so that the NTH can work on quality control, standardization, calibration of testing equipment and also provide services of consultancy and training to other testing laboratories.

Electronics

19.94 The S&T programmes in electronics are funded through the Technology Development Council and National Radar Council sponsored by the Electronics Commission. These institutional mechanisms are responsible for identifying, financing and monitoring R&D efforts in this sector. The projects are selected through national consultative processes and on the basis of a comprehensive definition linking all the elements such as technology gaps, technology competence, in-house R&D needs of industry, import of know-how, manpower needs, creation of facilities, appropriate applications etc. in order to ensure the establishment of a viable technology base for electronics development in the country. The development on micro-electronics on a major scale and its applications for microprocessors and computer systems, development of efficient and reliable systems needed for tele-communication, satellite technology, process control etc. will receive special attention in the Sixth Plan. Several schemes are also envisaged relating to spin-offs from space research, atomic energy research and defence research, which would cover video technology, telemetry and tele-

control, navigational systems, UHF/microwave communication systems, tethered balloon technology, infrared and mm wave technology. Some of the application areas will be thyristor controlled industrial devices, digital switching, opto-electronics and control systems and systems engineering, production of electronic materials, components and equipment.

Space, Science and Technology

19.95 The principal objective of the space programme in India has been to develop indigenous competence in designing and building sophisticated hardware involved in space technology, including rockets and satellites for scientific research and practical applications, the use of the systems for providing point to point communications and the application of satellites for meteorology and for remote sensing of earth resources. During the last decade, substantial progress has been made in establishing a firm indigenous base for the development of space science and technology. More than a thousand rockets have been launched from Thumba and Sriharikota ranges for scientific, technological and meteorological studies. The technology for development and fabrication of satellite launchers, complete with solid propellants, rocket motor propulsion systems, control and inertial systems and electronics has been successfully established. The building up of the capability to construct satellites indigenously has also registered a good advance. The successful launch and operation of the satellite Aryabhata was followed by the launching in 1979 of Bhaskara, both with the cooperation of the Soviet Union. In the area of applications, two major experiments were completed. The Satellite instructional television Experiment, which was conceived to test the feasibility of utilising satellite T.V. broadcasting for rural audiences, has led to the establishment of technical and organisational capabilities within the country for organising a large scale satellite based rural T.V. system. Under the other experiment, the Satellite Telecommunication Experiment Project, the applicability of space technology for remote area communication and emergency communication, was investigated.

19.96 A milestone in the development of space science and technology in our country was the successful launching of SLV-3, India's first satellite launch vehicle, in August, 1980. The fabrication of an experimental three-axis stabilised communications satellite APPLE, which is a preparatory step to building future operational communications satellites, has been completed and is to be launched in 1981 in a developmental flight of the European launcher Ariane. Also scheduled for launch in 1981 from USSR is a satellite SEO-II, which will be a further step in the development of remote sensing satellite systems.

19.97 During the decade 1980—90, there will be three major missions in the space programme. The first is to develop and launch an Indian remote sensing satellite in 1984-85 for effective utilisation of remote sensing technology and the promotion of a national natural resources survey and management system. The second major objective will be to develop by 1986-87 a launch vehicle capable of launching

satellites of the class 500—600 KGs in the equatorial orbit and more importantly in the polar orbit. As an intermediate step, launch vehicles capable of placing 140—150 Kg. satellites in near circular orbits will be developed by modifying the SLV-3 system. The third major programme is geared to the commissioning, in the early years of the Seventh Plan period, of the proto type of a multi-purpose satellite so that the country could eventually utilise indigenous satellites to meet its needs of space communication. Subservicing these three major objectives, launch vehicle development facilities, satellite development facilities, tracking, telemetry and command net work will be augmented and R&D programmes in the area of advanced communication techniques, geodesy etc. intensified.

19.98 The National Remote Sensing Agency, now under the Department of Space, has acquired facilities for aeromagnetic surveys and for data collection from satellites and interpretation. The use of microwaves in remote sensing and the development of expertise for modelling in areas like agricultural yield prediction and hydrology would be experimented.

Telecommunications and Broadcasting

19.99 The Telecommunications Research Centre will take up R&D schemes in the switching and transmission areas and creation of support facilities e.g. telephone instruments, digital telephones, key telephones, micro-wave and line systems, UHF/VHF and environmental laboratory facilities. The major areas in the plan of Indian Telephone Industries relate to digital and rural communication hardware e.g. Telephone subscriber apparatus and instrumentation, telemetry, RTs and powerline carrier communication systems and integrated communication systems. Hindustan Teleprinters propose to set up functional laboratories and facilities such as pilot production shop, prototype machine shop, PCB facilities, technical library etc. The programmes of Wireless Monitoring Organisation pertain to formulation of interference criteria, simulation studies, channelisation plans in VHF and UHF bands etc.

19.100 In the Information and Broadcasting sector, S&T programmes have been taken up by the Research Department of All India Radio. Studies and projects catering to immediate needs of AIR and Doordarshan in the areas of VHF/UHF, TV studio equipment, TV translator, multi-lingual attachments, scale model measurements of antenna and colour TV systems have

been taken up. New programmes will include MF/HF propagation, stereophonic broadcasting, TV transmitting and receiving aerials, TV transmitting equipment, digital TV, audio and acoustic engineering studies, development of MF/HF equipment and FM transmitting equipment.

Shipping & Transport

19.101 The focus in this sector would be on optimisation of the operational efficiency and quality of the existing Systems, energy savings and efforts related to materials, structures. The projects in the road sector pertain to highway training design studies, highway materials and construction, bridges and highway structures, Research programmes have been initiated for development and design of various modes of road transport like motorised cycle-rickshaws, mini buses and bullock-carts. The projects relating to ports pertain to siltation in artificially developed ship channels, coastal erosion and protection, floating break waters, marine structures, port layouts, designs for light beacons, etc. Ideal designs for mechanised country craft, improvement in ferry craft and development of low horse power engines are some of the R&D programme relevant to inland water transport systems. As regards ship building, research Schemes in the areas of ship design and production control systems would be taken up.

OUTLAYS FOR S & T

19.102 The plan outlay for science and technology is broadly categorised under two groups. Under the first category are the outlays pertaining to the R&D programmes in the S&T Sector of the plan of the five S&T agencies, viz., Department of Atomic Energy, Department of Space, Department of Science & Technology, Department of Environment and Council of Scientific and Industrial Research and of the National Test House (Deptt. of Supply). The aggregate of the outlays of these Departments constitutes the S&T sectoral outlay as shown in the Plan. In the second category are the outlays for S&T programmes in other Ministries/Departments, which form a part of the sectoral outlays in the respective sectors. In addition to the Plan outlays, expenditure is also incurred on S&T efforts under 'non-plan' by various agencies and Ministries/Departments. The deployment of internal resources by the public sector undertakings for S&T is also being categorised as 'non-Plan'.

19.103 During the Sixth Plan, the approach would be to fund the programmes under S&T agencies undertaking research, development and design upto the stage of competence building and data collection and to a more limited extent in terms of pilot plants or product and process demonstration units; the latter will be in areas where the application is clear and likely. The further requirements for application oriented efforts in terms of up-scaling of technology, extension and field trials etc. would be funded by the concerned ministries and departments. In addition, certain areas of work in S&T agencies such as CSIR, particularly those calling for large S&T expenditure, will be taken up only on the basis of a clear-cut indication of their need or priority in the concerned economic sector; the S&T agency will then take up its part

of the programme on the basis of funding provided from the S&T allocation of the concerned economic ministry or department. This would ensure both the rationale for the programmes and their need and also utilization of the technology developed. Suitable mechanism is being evolved for such complementary funding of programmes in the agencies or research institutions.

19.104 A total picture of the S&T outlay (both plan and non-plan) under the S&T agencies and Ministries for the period 1974—80 is presented in Annexure 19.2. The plan outlays for S&T during 1980-85 and estimates of the likely non-plan expenditure on S&T programmes during the same period are indicated in Annexure 19.3 .

Annexure 19.1

Indicative Areas of Thrust — Ministries/Departments/Agencies Concerned with implementation

Sl.No.	Thrust Areas	Ministries/Departments/Agencies concerned with implementation (indicative and not comprehensive)
(0)	(1)	(2)
A. LIFE SCIENCES		
1. Basic Life Sciences :		
1.1	Molecular biophysics and theoretical biology.	} Ministry of Health/ICMR } Ministry of Agriculture/ICAR, Deptt. of Science & Technology/CSIR } Ministry of Education/UGC, National Institutions like TIFR, Deptt. of Environment.
1.2	Molecular and Cellular Biology	
1.3	Developmental biology of multi-cellular systems.	
1.4	Neurobiology and mechanisms of Behaviour.	
1.5	Animal behaviour, Ecology and Evolution.	
1.6	Biology of reproduction.	
2. Medical Sciences :		
2.1	Immunological control of Tropical and communicable diseases and modernisation of vaccine production technology.	} Ministry of Health/ICMR } DST/CSIR } DAE/TIFR } DAE/TIFR } Min. of Education/UGC
2.2	Virology as related to Hepatitis, Japanese Encephalitis etc.	
2.3	Human Neurobiology in relation to mental health.	
2.4	Fertility Control	
3. Applied Biological Sciences :		
3.1	Genetic Engineering.	} Ministry of Health/ICMR } ICMR } DST/CSIR } DST/CSIR } Ministry of Education/UGC } Department of Environment.
3.2	Microbial Productivity.	
3.3	Biomass as a source of energy.	
3.4	Physiology and biochemistry of plants	
3.5	Protection of endangered species and preservation of genetic diversity of living organisms.	
3.6	Ecological balance for sustainable utilisation of biological resources forests, grazing lands and fisheries.	
B. CHEMICAL SCIENCES		
1. Molecular Structure and Dynamics :		
1.1	Recent development in spectroscopy such as two dimensional FNMR, Multi-nuclear solid state HRNMR, FTIR spectroscopy and photoacoustic spectroscopy.	} DAE/TIFR } Min. of Education/UGC } DST/CSIR } IISC/IITs
1.2	Laser chemistry and laser spectroscopy	
1.3	Fast (nano—and pico-second) kinetics involving relaxation and other methods.	
1.4	Gas phase kinetics including molecular beams and plasma chemistry	
2. Solids, Surfaces and Catalysis :		
2.1	Ultra-micro structure of solids.	} DST/CSIR } Min. of Education/UGC } Min. of Petroleum } Min. of Chemicals & Fertilizers } DAE.
2.2	Solid state organic chemistry.	
2.3	Solid State electro-chemistry, Energy conversion & storage.	
2.4	Synthesis and properties of novel materials.	
2.5	Newer techniques of surface characterisation such as electron energy loss spectroscopy, photo-electron spectroscopy, SIMS, Auger Spectroscopy, LEEDS, etc.	
2.6	Heterogeneous and homogenous catalysis including catalyst development and characterisation of phase transfer catalysis.	
2.7	Micelles, Membranes, Reverse osmosis.	
3. Frontiers of Organic Chemistry :		
3.1	Synthesis of organic molecules utilising new and innovative synthetic schemes and techniques.	} DST/CSIR } Min. of Education/UGC } Min. of Petroleum } Min. of Chemicals & Fertilizers } Department of Space } IAE
3.2	Newer reactions and reagents.	
3.3	Mechanism of organic reactions.	
3.4	Polymer synthesis and mechanism of polymerisation.	
3.5	Total synthesis of complex natural products and other exotic molecules	
3.6	Structure of scarce and complex natural products.	

(0)	(1)	(2)
4. <i>Coordination Chemistry and Organo metallic Chemistry:</i>		
4.1 Electron transfer reaction and mechanistic coordination chemistry 4.2 Structure spectroscopy and Photochemistry. 4.3 Activation of molecules and catalytic synthesis including reactions of carbon monoxide. 4.4 Novel organometallics and their applications in organic synthesis	}	DST/CSIR Min. of Education/UGC Min. of Petroleum Min. of Chemicals & Fertilizers.
5. <i>New Interfaces of Chemical Sciences with Biology :</i>		
5.1 Biomimetic Chemistry 5.2 Chemistry of Biopolymers and their constituents 5.3 Membrane and Model Systems 5.4 Metal ion interactions with biomolecules	}	DST/CSIR Min. of Education/UGC Min. of Petroleum Min. of Chemicals & Fertilizers Min. of Health/ICMR
C. PHYSICAL SCIENCES		
1. <i>Energy :</i>		
1.1 <i>New Energy Sources</i>		
(a) Solar energy through thermal and photovoltaic routes; (b) Biological route (e.g. energy plantations, petro-crops), biomass production and bioconversion, biogas; (c) Wind energy development (materials, devices and systems); (d) Energy conservation and efficiency in industry, buildings transportation etc.; (e) Electrical vehicles development; (f) Energy from waste; (g) Ocean; (h) Magnetohydrodynamics (MHD); and (i) Geothermal.	}	DST/CSIR/Deptt. of Environment Min. of Education/UGC/IITs DAE KVIC ICAR Deptt. of Power Min. of Industry/ BHEL
1.2 <i>Coal :</i>		
(i) Gasification and Liquefaction (ii) Beneficiation (iii) Slurry and other transportation of systems	}	DST/CSIR Department of Coal Min. of Industries/EIL/BHEL.
1.3 <i>Oil</i>		
(i) Exploration and production capabilities, particularly offshore (ii) Conservation (iii) Improving efficiencies in consumer sectors	}	Min. of Petroleum/ONGC Min. of Energy Min. of Industries DST/CSIR
1.4 <i>Power :</i>		
(i) Efficiency Improvement in power system materials and devices	}	Min. of Energy Min. of Industries/BHEL IITs
1.5 <i>Nuclear Energy :</i>		
(i) Improving thermal power reactors, (ii) Development of fast breeder power reactors, leading to ultimate thorium utilisation. (iii) Development of capability to move into fusion technology,	}	DAE
2. <i>Earth Sciences :</i>		
2.1 Survey and mapping of the country. 2.2 Mineral resources for copper, chromium, iron, manganese, tungsten, zinc, lead, nickel, phosphorite and magnesite. 2.3 Energy resources including fossil fuels, geothermal and gas, 2.4 Improvement in mining extraction technologies 2.5 Remote sensing technologies, 2.6 Hydrological Resources survey techniques and studies on hydrological cycle. 2.7 Improving the efficiency of water utilisation and studies on recycling of the same. 2.8 Studies on prediction of natural disaster:	}	DST/CSIR; Department of Mines; Deptt. of Environment Min. of Education/UGC Min. of Agriculture & Irrigation/ICAR Department of Space IMD
3. <i>Ocean Sciences :</i>		
3.1 Development of Ocean Science Technology for the survey of living and non-living resources—Enhancement of facilities such as Research Vessels etc.	}	DST/CSIR/M/o Agriculture ICAR/DOS/PRL M/O Education/UGC/IITSSM/O Defence

(0)	(1)	(2)	
	4. Atmospheric Sciences:		
	4.1 Meteorology and National Disaster Warning Techniques. (i) Computer modelling techniques, forecasting etc. (ii) Space meteorology	} IMD Min. of Communication Deptt. of Food & Agriculture DST/CSIR Deptt. of Space Min. of Education/UGC/IITs	
	4.2 Cloud Seeding.		
	4.3 Monsoon Systems.		
	5. Space Sciences :		
	5.1 Basic studies in Astrophysics, Plasma Physics etc.	} Deptt. of Space Deptt. of Electronics Min. of Communication DST/NRSA/CSIR Min. of I&B Deptt. of Agriculture Min. of Defence	
	5.2 Satellite Telecommunication		
	5.3 Satellite Mass Communication Education to Rural Communities (TV etc.)		
	5.4 Remote Sensing—Optical, infrared & microwave technique.		
	5.5 Satellite launching and training capabilities.		
	6. Nuclear Sciences:		
	6.1 High Energy Accelerators	} Deptt. of Atomic Energy Deptt. of Agriculture/ICAR Deptt. of Health/ICMR	
	6.2 Nuclear Radiation Research in Life Sciences & Agriculture.		
	6.3 Nuclear Medicine.		
	7. Electronics:		
	7.1 Equipment, Instruments and Systems—Quality Control, Medical Electronics, mining Electronics, Industrial Electronics, etc.	} Deptt. of Electronics Deptt. of Industry Deptt. of Defence Deptt. of Communication DST/CSIR DAE/ECIL	
	7.2 Components and Devices—LSI, VLSI, etc.		
	7.3 Communication—Fibre optics, Digital techniques, etc.		
	7.4 Telecommunication— —Communication network, Switching Systems, —4 GHz, 6 GHz Microwave systems, etc.		
	7.5 Microprocessors, computers and softwares.	} All Sectors	
	7.6 Information Systems: Computer networks, and other systems.		
	7.7 Laser Research.		
	8. Materials Sciences—Nature of thrust areas to be identified—		
	D. ENGINEERING SCIENCES:		
	1. Aeronautics :	} DST/CSIR Deptt. of Defence Deptt. of Space Deptt. of Electronics	
	1.1 Aerodynamics.		
	1.2 Propulsion studies.		
	1.3 Systems development, control and systems engineering.		
	2. Heavy Engineering :		
	2.1 Building up of indigenous capabilities in plants and equipment for the following (i) Fertilizers (ii) Petroleum refining and petrochemicals (iii) Steel and metallurgy (iv) Mining and ore beneficiation (v) Port and harbour (vi) Sugar (vii) Cement (viii) Paper (ix) Heavy machine tools (x) Electric equipment (xi) Printing (xii) Packaging (xiii) Manufacture of fabrics (xiv) Heavy Pressure Vessels (xv) Heat exchangers.	} Deptt. of Industry Fertilizers/Petrochemicals/Steel/Defence/CSIR/DST	
	2.2 Aluminium		
	3. Steel and Metallurgy :		
	3.1 Direct reduction of iron ores with solid reductants.		
	3.2 Small Steel Plants.		
	3.3 Removal of ash from coking coal, development of formed coke.		
	3.4 Development of high grade steel alloys and super alloys.		
	3.5 Process improvement in the metallurgical industry to effect saving in energy (for example INRED process).		
	3.6 Development of basic oxygen process for making high alloy steels.		
	3.7 Development of alloy powders and their products.		
	3.8 Development of anti-corrosion products to suit Indian climate.		
			} Min. of Steel/Industry DST/CSIR Deptt. of Coal Min. of Defence

(0)	(1)	(2)
4. Machine Tools:		
4.1	Achievement of self-reliance in tools, equipment and machinery particularly in the following areas : (i) Laser Technology (ii) Plant and equipment for processing industry (iii) Chemical processing (iv) Agricultural equipment and machinery (v) Mechanical engineering industry (vi) Electrical and electronics industry (vii) Printing machinery and accessories	Min. of Industry Min. of Agriculture/ICAR DST/CSIR Deptt. of Electronics
4.2	Development of tools, equipment and machinery for the small-scale and unorganised sectors.	DST/CSIR
5. Light Engineering :		
5.1	Improvement of the quality of products, by developing quality control through the use of sophisticated instruments.	Min. of Industry
5.2	Production techniques and equipment	
6. Housing and Construction Technology :		
6.1	Low cost materials	Min. of Works & Housing DST/CSIR Min. of Petroleum Min. of Education/IITs
6.2	Building materials from agro-wastes and community wastes	
6.3	Building materials for energy conservation	
6.4	Offshore structures to exploit marine resources	
6.5	Urbanisation studies	
Transport :		
7.1	Modernisation of various modes of transport	Min. of Shipping & Transport Min. of Railways DST/CSIR Deptt. of Electronics Deptt. of Defence Research & Development.
(a)	Railways :	
(i)	Electronics for signalling communication etc.	
(ii)	Electrification of Railways	
(b)	Inland Transport :	
(i)	Mechanisation of boats.	
(c)	Road Transport :	
(i)	Development of weather proof light transport	
(ii)	Battery operated, light-weight vehicles	
7.2	Improvement in the quality of engines to save energy and to increase speeds.	DST/CSIR
8.	Instrumentation (Thrust Areas to be identified)	
E. OTHER SCIENCES		
1. Agriculture & Food :		
(i)	Creation of higher potentials for yield in pulses and oilseeds	Min. of Agriculture /ICAR/CSIR/DST/Deptt. of Environment
(ii)	Operational research for closing the yield gaps in cereals	
(iii)	Cropping systems	
(iv)	Water management and water use efficiency	
(v)	Agro-energy research including biomass and bio-conversion	
(vi)	Transition from non-renewable industrial inputs to renewable biological inputs through nitrogen fixation and microbiological applications	
(vii)	Soil management and fertility	
(viii)	Post-harvest technology	
(ix)	Modernisation of horticulture for protective foods	
(x)	Energy crops for fuel, fodder and feed	
(xi)	Agricultural management and marketing	
(xii)	Molecular biology and agriculture	
(xiii)	Upgrading and conservation of animal resources	
(xiv)	Scientific and socially relevant mechanisation	

Annexure 19.1—*Concl'd.*

(0)	(1)	(2)
2. <i>Forestry</i> :	(i) Social and Rural Forestry (ii) Energy plantation (iii) Plant-soil-air-water relationship (iv) Intensification of wood science and technology	} Min. of Agriculture/ICAR/DST/CSIR/Deptt. of Environment.
3. <i>Environment & Ecosystem</i> :	(i) Rural and Urban Sanitation (ii) Air and Water pollution Control (iii) Man and Biosphere Research	} Min. of Works & Housing } CSIR } Deptt. of Environment
4. <i>Policy Sciences</i> :	(i) S&T Information Systems (ii) S&T Planning, Monitoring & Evaluation Systems (iii) International Relations in S&T (iv) Technological Forecasting & Technology Assessment	} DST/CSIR } DOE } All other related agencies.

Annexure 19.2

Expenditure on Science & Technology 1974-83

(Rs. in crores)

Agency/Department/ Ministry	1974-75			1975-76			1976-77			1977-78		
	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total	Plan	Non-Plan	Total
A. S & T Agencies												
1 Atomic Energy (R&D)	18.24	23.64	41.88	27.18	28.49	55.67	31.02	30.00	61.02	28.91	32.21	61.12
2 Space	17.26	13.47	30.73	22.48	14.67	37.15	23.80	15.42	39.22	22.75	15.64	38.39
3 DST	3.83	15.10	18.93	8.15	18.63	26.78	13.20	21.02	34.22	15.94	24.45	40.39
4 CSIR	9.76	22.60	32.36	11.90	25.21	37.11	14.02	27.44	41.46	18.49	29.60	48.09
5 NTH	0.02	0.58	0.60	0.14	0.60	0.74	0.14	0.62	0.76	0.20	0.63	0.83
TOTAL 'A'	49.11	75.39	124.50	69.85	87.60	157.45	82.18	94.50	176.68	86.29	102.53	188.82
B. S & T Component under Ministries/Departments												
6 Heavy Industry	0.39	0.50	0.89	1.73	0.50	2.23	2.95	0.50	3.45	7.65	5.06	12.71
7 Industrial Development	0.06	0.22	0.28	0.84	0.12	0.96	1.72	0.43	2.15	2.75	0.56	3.31
8 Commerce	..	..	..	..	..	..	..	..	..	..	..	..
9 Steel	0.22	..	0.22	0.61	..	0.61	0.71	..	0.71	0.97	..	0.97
10 Mines	..	..	..	0.02	..	0.02	0.54	..	0.54	0.48	..	0.48
11 Power	0.40	0.29	0.69	0.47	0.38	0.85	0.84	0.40	1.24	0.70	0.64	1.34
12 Coal	..	..	..	..	..	..	1.25	..	1.25	1.25	..	1.25
13 Petroleum	1.24	0.58	1.82	1.80	0.75	2.55	1.64	1.71	3.35	1.86	1.72	3.58
14 Chemicals and Fertilisers	..	..	..	0.07	..	0.07	0.19	0.25	0.44	0.51	0.26	0.77
15 Electronics	0.74	2.95	3.69	1.29	1.09	2.38	3.27	0.96	4.23	3.80	1.37	5.17
16 Communications	1.78	1.33	3.11	3.09	2.31	5.40	4.17	3.35	7.52	4.93	4.37	9.30
17 Information & Broadcasting	..	0.18	0.18	..	0.19	0.19	0.06	0.24	0.30	0.06	0.25	0.31
18 Shipping & Transport	..	..	..	..	..	..	0.30	..	0.30	0.64	..	0.64
19 TCA-IMD & Instts.	2.05	7.44	9.49	2.98	8.32	11.30	2.23	9.53	11.76	5.76	9.81	15.57
20 Works & Housing	..	..	..	..	..	..	..	..	..	..	..	..
21 Labour	..	..	..	..	..	..	..	..	..	..	..	..
22 Education	2.40	..	2.40	5.36	..	5.36	5.62	..	5.62	5.87	..	5.87
23 Health-ICMR	2.55	..	2.55	3.20	..	3.20	4.26	..	4.26	4.49	..	4.49
24 Social Welfare	..	..	..	..	..	..	..	..	..	..	..	..
25 Rural Reconstruction*	..	..	..	..	..	..	..	..	..	..	..	..
26 Agri-ICAR	14.60	14.15	28.75	22.85	16.20	39.05	29.07	17.30	46.37	39.20	19.98	59.18
Agri-FRI	0.21	..	0.21	0.29	..	0.29	0.37	..	0.37	0.61	..	0.61
27 Food	0.19	0.32	0.51	0.59	0.37	0.96	0.45	0.43	0.88	0.49	0.38	0.87
28 Irrigation	0.27	..	0.27	0.30	..	0.30	0.22	..	0.22	0.38	..	0.38
29 Railways (RDSO)	..	3.78	3.78	..	4.60	4.60	..	4.41	4.41	..	4.47	4.47
TOTAL 'B'	27.10	31.74	58.84	45.49	34.83	80.32	59.86	39.51	99.37	82.40	48.87	131.27
GRAND TOTAL (A+B)	76.21	107.13	183.34	115.34	122.43	237.77	142.04	134.01	276.05	168.69	151.40	320.09

*Upto 1977-78, included under Deptt. of Industrial Development.

Agency/Department/Ministry	1978-79			1979-80 (RE)		
	Plan	Non-Plan	Total	Plan	Non-Plan	Total
A. S&T Agencies						
1 Atomic Energy (R&D)	30.74	34.60	65.34	28.38	41.68	70.06
2 Space	29.09	16.71	45.80	23.38	25.11	48.49
3 DST	17.95	25.94	43.89	16.18	32.04	48.22
4 CSIR	19.14	30.89	50.03	21.79	32.49	54.28
5 NTH	0.16	0.62	0.78	0.19	0.61	0.80
TOTAL 'A'	97.08	108.76	205.84	89.92	131.93	221.85
B. S&T Component under Ministries/Departments						
6 Heavy Industry	7.08	8.91	15.99	9.72	16.12	25.84
7 Industrial Development	2.68	1.15	3.83	1.49	2.65	4.14
8 Commerce*	..	..	..	..	..	..
9 Steel	1.97	..	1.97	4.67	..	4.67
10 Mines	1.84	0.06	1.90	1.15	0.32	1.47
11 Power	0.87	0.73	1.60	1.22	0.96	2.18
12 Coal	1.35	1.62	2.97	2.11	2.37	4.48
13 Petroleum	2.17	2.82	4.99	4.60	3.40	8.00
14 Chemicals & Fertilizers	0.97	0.10	1.07	3.16	0.27	3.43
15 Electronics	5.31	0.81	6.12	8.19	0.77	8.96
16 Communications	5.02	5.07	10.09	5.60	4.72	10.32
17 Information & Broadcasting	0.06	0.25	0.31	0.22	0.30	0.52
18 Shipping & Transport	1.04	0.72	1.76	1.78	0.77	2.55
19 TCA-IMD & Instts.	6.10	9.74	15.84	9.17	11.55	20.72
20 Works & Housing	0.21	0.67	0.88	0.20	0.71	0.91
21 Labour	..	..	..	0.10	..	0.10
22 Education	5.17	0.83	6.00	4.70	1.97	6.67
23 Health—ICMR	1.49	3.81	5.30	2.10	4.05	6.15
24 Social Welfare	..	..	..	..	..	..
25 Rural Reconstruction	0.73	..	0.73	0.88	..	0.88
26 Agri—ICAR	47.65	20.26	67.91	53.07	32.85	85.92
Agri—FRI	0.90	..	0.90	1.25	..	1.25
27 Food	0.47	0.45	0.92	0.91	0.49	1.40
28 Irrigation	0.72	..	0.72	1.00	..	1.00
29 Railways (RDSO)	..	5.75	5.75	..	6.36	6.36
TOTAL 'B'	93.80	63.75	157.55	117.52	90.40	207.92
GRAND TOTAL	190.88	172.51	363.39	207.44	222.33	429.77

NOTE: For 1979-80, data in respect of Part 'A' relates to Actuals and for Part 'B' it relates to R.E.

*For Department of Textiles, included under department of Industrial Development upto 1979-80.

Annexure 19.3
Sixth Plan Outlays Science & Technology

(Rs. crores)

Sl. No.	Agency/Deptt./Ministry	1980—85	1980—85
		(Plan Outlay)	(Estimated non-Plan Outlay)*
(0)	(1)	(2)	(3)
A. S & T Sector—Agencies			
1	Atomic Energy (R & D)	248.98	284.59
2	Space (S & T)	245.80	146.92
3	D S T	134.87	189.55
4	Environment	40.00	13.12
5	CSIR	170.00	218.24
6	NTH (Supply)	8.50	3.56
	SUB-TOTAL 'A'	848.15	855.98
B. Other Sectors—S & T Component under Ministries/Deptts.			
7	Heavy Industry	57.51	100.00
8	Industrial Dev.		
	(i) Large & Medium Industries	8.41	10.00
	(ii) Small Scale Industries	9.29	
9	Commerce—		
	(i) Textiles Research Associations	6.50	8.40
	(ii) Other Programmes	25.00	
10	Steel	41.70	
11	Mines	16.16	
12	Power	53.10	5.00
13	Coal	25.00	15.00
14	Petroleum—		
	(i) Petroleum	39.08	30.00
	(ii) Petro-Chemicals	5.58	
15	Chemicals & Fertilizers	26.03	3.50
16	Electronics	32.34	3.00
17	Communications	62.15	33.00
18	Information & Broadcasting	2.50	2.00
19	Shipping & Transport	12.75	5.00

Annexure 19.3—Contd.

(Rs. crores)

Sl. No.	Agency/Deptt./Ministry	1980—85	
		(Plan Outlay)	(Estimated non-Plan Outlay)*
(0)	(1)	(2)	(3)
20	TCA—		
	(i) IMD & Institutes	45.00	73.00
	(ii) R & D Dte., C. A.	1.50	0.80
21	Works & Housing—CBRI	2.00	3.80
22	Labour	1.06	
23	Education	112.00	30.00
24	Health—ICMR	40.00	26.00
25	Social Welfare	2.00	
26	Rural Reconstruction	10.05	
27	Agriculture—		
	(i) ICAR	340.00	190.00
	(ii) FRI	12.00	
28	Food	8.10	3.30
29	Irrigation	20.45	14.00
30	D.S.T.	54.00@	
31	Railways (RDSO) . . . . .	..	36.00
	SUB-TOTAL—B	1071.26	591.80
	GRAND TOTAL (A+B)	1919.41	1447.78

*Tentative Estimates.

@Rs. 50 crores under energy Sector and Rs. 4 crores under Housing & Urban Development Sector.

ENVIRONMENT

The environment must not be considered as just another sector of national development. It should form a crucial guiding dimension for Plans and programmes in each sector. This becomes clear only if the concern for environmental protection is understood in its proper context.

20.2 Environmental problems in India can be classified into two broad categories.

- (a) Those arising from conditions of poverty and under-development.
- (b) Those arising as negative effects of the very process of development.

The first category has to do with the impact on the health and integrity of our natural resources (land, soil, water, forests, wildlife, etc.) as a result of poverty and the inadequate availability, for a large section of our population, of the means to fulfil basic human needs (food, fuel, shelter, employment, etc.). The second category has to do with the unintended side effects of efforts to achieve rapid economic growth and development. In this latter category would fall the distortions imposed on national resources from poorly planned development projects and programmes, as well as from lack of attention to long term concerns by commercial and vested interests. Thus it is clear that a concern for environment is essentially a desire to see that national development proceeds along rational sustainable lines. Environmental conservation is, in fact, the very basis of all development.

NATURAL RESOURCES AND THE ENVIRONMENT

Land and Water

20.3 It is important to appreciate the inextricably close relationship between land and water management. Water, which is a renewable resource, can in fact be put to good use only if the land on which it falls, and the land to which it is applied, are properly cared for. Land, which is for all purposes a non-renewable and inelastic resource, must be managed in such a manner as to be benefited rather than suffer damage as a result of its contact with water. The key to environmental quality, therefore, lies in scientific land and water management above all else.

20.4 We have paid a good deal of attention to harnessing our resources by way of construction of major, medium and minor irrigation projects and the development of ground water resources. Adequate organisations have also been built up in this field in the shape of Central and State Irrigation Departments, the Central Water Commission and the Central Ground Water Board. However, very little attention has been paid to the proper management of our land and soil resources with the result that they have suffered very serious degradation.

20.5 According to estimates made by the Ministry of Agriculture in March 1980 as much as 175 million hectares (mh) out of the country's total land area of 304 mh for which records exist, are subject to environmental problems. The break-up is at Table 20.1.

Table 20.1
Land Areas with Environmental Problems

Sl. No.	Problem	Area (Million hectares)
(0)	(1)	(2)
1	Serious Water and Wind erosion	150.00
2	Shifting cultivation	3.00
3	Waterlogging	6.00
4	Saline soils	4.50
5	Alkali soils	2.50
6	Diara land	2.40
7	Other culturable wastelands fit for reclamation	6.60
TOTAL		175.00

20.6 The losses which the country is bearing on account of the continuing degradation of its land resources are of staggering dimensions and constitute one of the important threats to our economic progress.

Soil

20.7 In a study made in 1972, it was estimated that on an average, India was losing about 6000 million tonnes of top soil per annum through water erosion and that these represented, in term of major nutrients NPK alone, an annual loss of Rs. 700 crores. The corresponding loss today must be of a much higher order, considering the increase which has since taken place not only in prices of fertilisers but also in the extent and intensity of erosion.

20.8 Again, according to the Reporter of the National Commission on Floods (1980) the losses on account of floods in 1976, 1977 and 1978 were Rs. 889 crores, Rs. 1200 crores and Rs. 1091 crores respectively, which represent an average of over Rs. 1000 crores per year. According to the same source the total area subject to periodic floods which was estimated at 20 million hectares in 1971 now stands at the level of 40 million hectares—an increase of 100 per cent in 10 years.

20.9 Soil erosion also causes the premature siltation of tanks and reservoirs. It is difficult to quantify such losses but there can be no doubt that they are significant, considering that our investment on such projects is of the order of Rs. 10,000 crores. In the case of the big multi-purposes projects, what is at stake is not merely irrigation potential. The threat is of particular seriousness because in most cases alternative sites for storages are just not available even if we can find the large sums of money needed to build new reservoirs in place of those which go out of commission. The choking of estuaries and harbours will be another kind of adverse impact of eroded soil carried to the sea.

20.10 The colossal damage done by the denudation of the Himalayan and other watersheds to our water resources also needs to be properly appreciated. Since the run-off of rainwater from denuded areas is far greater than from well-wooded slopes, a great deal of the water which would otherwise have been retained as sub-soil and ground water is today being lost as surface run-off often causing further erosion and floods in the process. The seriousness of such losses can hardly be over-estimated.

20.11 It also needs to be remembered that fully recharged ground water aquifers play a most significant part in moderating river flows by contributing to river discharges during the lean season. Poor land management thus aggravates the problems of drought and floods.

Forests

20.12 The extent of forest cover is a good indicator of the health of the land. The large scale deforestation in recent decades has rendered the sensitive catchment areas in the Himalaya and other hilly areas particularly vulnerable to soil erosion. The paucity of India's forest cover is apparent from the fact that of the 75 million hectares classed as forest lands, less than half is actually under adequate tree cover, and as much as about 20 million hectares of forest

land is estimated to be affected by erosion. No more than about 12 per cent of the country's land surface is actually under adequate tree cover as against the target of 33 per cent prescribed by the National Forest Policy of 1952. Further, although 13 million hectares are classed as "permanent Pastures", these areas are in fact generally without any vegetation on account of either overgrazing or encroachments.

20.13 Mention must also be made of the damage caused to our agricultural lands in canal irrigated areas by waterlogging and consequent salinisation on account of our failure to provide them with adequate drainage. It is estimated that about 6 million hectares of good lands are affected by varying degrees of salinity. Waterlogging is also caused by obstructions to natural drainage caused by road, rail, canal and flood control embankments which are not adequately provided with cross-drainage works. As waterlogging is second only to erosion as a threat to the soil, it is of the utmost importance that effective steps are taken to provide drainage and other appropriate ameliorative measures.

20.14 The country can hope to achieve a continuous improvement in agricultural productivity only if problems of land degradation are tackled with the utmost vigour. Such an effort, though gigantic by any standards, is, however, inescapable if the country's agricultural future is to be assured. Considering that even if all possible steps are initiated immediately, it will be years before results begin to show, and that further massive damage will unavoidably continue during this period, there is absolutely no room for complacency on this front.

Other Natural Living Resources

20.15 India is endowed with an immense variety of natural living resources in its rich animal and plant heritage, which sustains millions of its people. While the maintenance of the country's basic biological productivity through proper land and water management is of vital ecological concern, the preservation of its genetic diversity and conservation of its species and ecosystems for sustainable utilization is of crucial importance for the future survival and development of our people.

20.16 Disappearing Species and Ecosystems under the relentless pressures of an exploding population, however, and unplanned development of natural environments, the habitats of our species are being rapidly lost or modified. It is estimated that, worldwide, slightly over 1,000 animal species and subspecies known to science are threatened with an extinction rate of one per year, while 20,000 flowering plants are thought to be at risk. The World's stock of all species is now estimated at 10 million of which 8.5 million have still to be identified. In India, five species of mammals and birds are known to have become extinct in the recent past while 103 such species are listed as endangered under the wildlife (Protection) Act, 1972. At the present inadequate level of scientific knowledge in our country, we do not know

how many species of flora and fauna are threatened, endangered or extinct, but the number must be considerable, in view of the very rapid shrinkage of all natural forests and other ecosystems throughout the sub-continent in recent years. The extermination of a unique, unstudied organism or ecosystem involves an irreversible loss to science and sometimes, even a valuable potential resource. For example, tropical rainforests are considered to contain more species than any other biome, estimated at 2 to 5 million species, but most of these have already been lost or are grossly disrupted in the Western Ghats while in the north-eastern region they have been extensively destroyed through a faster cycle of shifting cultivation. No National Park has unfortunately yet been constituted specifically for the preservation of the plant and animal diversity of the tropical rainforest ecosystems of our country.

20.17 Conservation of Genetic Resources and Natural Ecosystems: With the introduction of scientific plant and animal breeding in recent decades, the inestimable value of a number of wild and unutilised relatives of domesticated plants and animals had been recognised. India abounds in such wild and semi-wild relatives whose value is still unknown and they remain untapped resources. The rich variety of citrus, the species to which oranges, limes and lemons belong, in the hills of north-east India, is an example of one such resource. Other species, which are not directly exploited by man, have contributed to his success in evolving high-yielding varieties by serving as model experimental organisms. It is, therefore, evident that the diversity of biological organisms is a vital resource which needs to be carefully protected in natural ecosystems if we are not to close many possible evolutionary options for benefiting future generations. These natural ecosystems are *per se* a vitally important economic resource. They can serve as design models of how artificial ecosystems can be constructed to maximise the productivity of land. They serve as reservoirs of material for improving our managed ecosystems. For example, some primitive varieties of rice collected from Kerala and Mizoram have been found to be donors of genes for resistance to a serious rice pest, the brown plant hopper, which some years ago devastated the high-yielding dwarf varieties of rice in South-East Asia that were susceptible to it. Such varieties are now being widely used internationally and may have done more for the continued productivity of the rice crop than almost any other finding in its improvement history during the last decade. The north-eastern region of India is an important source of valuable genes in several agricultural and horticultural crops.

20.18 The natural ecosystems may represent our only hope for finding the basic material for restoring the health of completely devastated landscapes such as much of the Himalayan hill slopes. The forests under management have, moreover, been treated from the very narrow viewpoint of production of commercial timber and pulpwood so that they have been rapidly converted to stands of teak, pine or eucalyptus with no thought given for even the maintenance

of species producing valuable minor forest produce such as oilseeds. Our wildlife conservation efforts have so far been primarily directed to the maintenance of areas with one or more spectacular animals such as the tiger or the rhino. This has led to a total neglect of many other ecosystems which lack such spectacular animals but are rich in floristic reserves.

Marine Ecosystems

20.19 There is inadequate knowledge and understanding of the country's valuable marine ecosystems, and total absence of protective measures has led to wanton exploitation and destruction of these resources.

- (a) The coral reefs, rich in limestone, have been thoughtlessly plundered for the manufacture of cement in the Gulf of Mannar (Tamil Nadu) and in the Pirotan Islands (Gujarat), and threatened in Lakshadweep and in the Andaman Islands, thus exposing the coastal areas to sea erosion. These rare and unique ecosystems need urgent protection as Marine Reserves.
- (b) Similarly, our coastal mangroves constitute extraordinarily rich ecosystems, which contain many unique species adapted to the unusual habitat and are also key nursery areas for many species of fish and crustaceans which need protection. These mangroves, which form a vital protection against cyclone damage, have already been lost from most of our coastal areas, and now deserve full protection where they still exist in viable area in the Sundarbans (West Bengal), Bhitarkanika Sanctuary (Orissa), Coringa Sanctuary (Andhra Pradesh) and in the Andaman and Nicobar Islands.
- (c) Marine Reserves need to be designated for the protection and scientific management of such endangered marine species as the Cetaceans (which include the whales and porpoises), the Dugong or sea-cows, and the sea-turtles of which five of the World's seven species occur in India.
- (d) Some of the Island ecosystems of the Andaman and Nicobar and Lakshadweep groups are very rich and delicately balanced but vulnerable to intrusions. These islands need to be scientifically surveyed and protected in appropriate reserves under technical management.

20.20 Necessity for Constituting Biosphere Reserves: It will be evident from what has been stated in the preceding paragraphs that there is a compelling conservation need to set aside sufficient representative examples of biotic provinces to extend protection to entire community of species in viable terrestrial and marine eco-systems to be designed as Biosphere Reserves. The concept of such Reserves was evolved under UNESCO's Man and Biosphere (MAB) Programme with the following objectives:

- (a) To save for the present and future human use the diversity and integrity of biotic communities of plants and animals within natural ecosystems, and to safeguard the genetic diversity of species on which their continuing evolution depends.
- (b) To provide areas for ecological and environmental research including, particularly, baseline studies, both within and adjacent to those reserves, such research to be consistent with objective (a) above.
- (c) To provide facilities for education and training. The Biosphere Reserves should comprise not only completely natural ecosystems but also semi-natural established land-use practices. Among such reserves, areas that have outstanding potential for restoration to natural conditions, should also be included. Biosphere Reserves are not meant to substitute established national parks and sanctuaries but may often coincide partly with our national parks and sanctuaries.

20.21 While 19 National Parks and 202 wildlife Sanctuaries have been set up in the country covering an area of 75,763 sq. kms. (representing 2.3 per cent of the geographical area), most of these inadequately cover the ecological diversity of threatened habitats or even the endangered species of the country and most of them suffer from lack of scientific or any other kind of effective management. The first step, therefore, towards the preservation of the biological diversity of our country would require a detailed survey and classification of the conservation and ecosystem types to ensure the conservation of as many representative examples of each as possible. In view of the virtual disappearance of many genuinely natural ecosystems in the country, those that remain in such natural or near-natural condition need to be identified for full protection as Biosphere Reserves with the greatest urgency. Other man-modified ecosystems, which retain their natural diversity should also be protected. Such Biosphere Reserves can be thought of as national laboratories in which the functioning of natural and man-modified ecosystems will be investigated to ensure the optimum use of our biological wealth for the future welfare of our people.

ENVIRONMENT POLLUTION

20.22 Pollution refers essentially to a process by which a resource (natural or man-made) is rendered unfit for some beneficial use due to physical, chemical or biological factors. Of the various kinds of pollution (air, water, land, noise, radiation and odour) that affect the quality of life in India, water pollution is by far the most serious in its implications for the health and well-being of our citizens.

Water Pollution

20.23 The 14 major rivers in India carry, among themselves, 85 per cent of the surface run off, cover 83 per cent of the country within their drainage basins and house about 80 per cent of the population in their basin area. Together with other medium and minor rivers, lakes, tanks, etc., they provide for our fresh water needs. For India's large and growing population, water courses must satisfy various domestic demands besides those for agriculture, industry, fisheries, navigation and power generation as well as be a receptacle for community, industrial and agricultural wastes. There is now a wealth of documented evidence of the adverse effects of water pollution from all over the country. These range from the transmittal of waterborne diseases like cholera, jaundice, typhoid and dysentery to fish kills and loss of agricultural productivity through the use of polluted water. From the Dal Lake in the North, to the Periyar and Chaliyar rivers in the South, from the Damodar and Hooghly in the East to the Thana Creek in the West, the picture of water pollution is uniformly gloomy. Even our large perennial rivers like the Ganga are today heavily polluted.

20.24 Investigations by the Central and State Boards for the Prevention and Control of Water Pollution show that the major sources of pollution of our natural water courses including coastal waters are the discharge of community wastes from human settlements. Most of the community and industrial waste waters go straight into water courses rendering them unfit for most uses, least of all as drinking water sources. According to the Central Board for Water Pollution only 8 cities in India are provided with complete sewerage and sewage treatment facilities. They are Ahmedabad, Bangalore, Bijapur, Sangli, Nanded, Nasik, Thana and Durgapur. In a report* on a detailed study of the seriousness of water pollution in the Yamuna caused by the discharge of Delhi's waste, the Board states:

"What is depicted in this report is a replica of what may be seen at Ludhiana in Punjab, Srinagar in Jammu and Kashmir, Varanasi in UP, Patna in Bihar, Calcutta in West Bengal, Gauhati in Assam, Cuttack in Orissa, Visakhapatnam in Andhra, Indore in Madhya Pradesh and Madras in Tamil Nadu. The daily discharge of waste water... is threatening the natural water bodies like rivers, estuaries and coastal waters."

20.25 The Water Pollution Boards in the Central and States have not yet been given adequate support to tackle these massive problems. Far greater priority than hitherto must be given to this special sector.

Air Pollution

20.26 Air Pollution is usually associated with industrial growth and urbanisation. However, in many towns and cities of India domestic sources which burn coal,

†Annual Report 1978-79, Central Board for the Prevention and Control of Water Pollution.

*Control of Urban Pollution Series, CUPS/1/78/79, Union Territory of Delhi, Central Board for the Prevention and Control of Water Pollution.

cowdung, firewood or trash can be a significant source of pollution particularly under conditions of stagnant air in winter months. Fortunately, Indian coal is low in sulphur content, the number of automobiles is relatively small and the rainy season is an effective scrubber for mitigating air pollution. Despite these advantages, problems of air pollution are becoming severe in major cities like Calcutta, Bombay and Delhi. A high background dust level during certain times of the year aggravates the problem. Studies conducted by the National Environmental Engineering Research Institute (NEERI) confirm that levels of sulphur dioxide and particulate matter in certain major cities exceed permissible limits set by organisations like WHO. The high incidence of problems such as asthma, bronchitis, cough, breathlessness, sneezing and nasal blocks among people living in the Chembur area in Bombay is attributed to constant exposure to the high levels of air pollutants. Studies by the Banaras Hindu University and the Tamil Nadu Agriculture University have established the adverse impact of industrial and transportation emissions on crop productivity. Fears have been expressed about the effect of power plant and refinery emissions on targets ranging from human lungs to ancient monuments. With the Air Pollution Control Legislation soon to be enacted a strong and well-equipped enforcement authority will be required if the problem is to be checked in its relatively early stages.

Land Pollution

20.27 Pollution of Land results largely from the insanitary disposal of solid wastes. In India open dumping of such wastes (of municipal and industrial origin) on low lying land is a common phenomenon. This serves as a breeding ground for pests and disease carrying vectors.

Noise

20.28 Noise in our major cities and towns is a growing menace. Studies by the National physical Laboratory, the All India Institute of Medical Sciences, the National Institute of Occupational Health, and the Madras Medical College have indicated the growing threat to our physiological and mental well-being from community noise (religious and cultural) traffic noise, and noise in the occupational environment. While there are disparate bits of legislation (municipal bye-laws) that attempt to control noise, these have proved inadequate and there is now a clear need for a comprehensive legislation to curb noise pollution.

20.29 Among large sections of our population there is an inadequate perception of the extent of, and potential hazards from, pollution problems in India. This sometimes leads to statements about pollution being primarily a problem of the advanced nations and therefore of no consequence to India. Such trends must be countered vigorously through appropriate methods of environmental education before the magnitude of our response to the challenge of pollution in India can bear a reasonable relationship to what is warranted by its actual dimensions.

Human Settlements and the Environment

20.30 It is within the framework of human settlements (both rural and urban) that the basic human needs for our vast population must be provided in a manner that does not irreversibly damage our natural environment and cultural heritage. We have more than 579,000 human settlements (1971 census) of which nearly 3,000 are urban. More than three fourths of our population lives in rural settlements.

Rural

20.31 Rural life styles have close links with nature and its resources. Thus the environmental problems that manifest in rural areas are largely due to over-use or misuse of natural resources mostly because of sheer poverty and lack of alternatives. The denudation of vegetative cover due to indiscriminate collection for firewood, and the over-grazing by cattle and other livestock and consequent soil erosion are two common examples of the impoverishment of environmental resources. Again, the non-availability of systems for disposal of community wastes in rural areas has led to the contamination of water courses and creation of insanitary living conditions. This, in turn, has had major impacts on the health of the population especially where unprotected sources of water have, of necessity to be used by the rural population. Despite all efforts so far about 2 lakh villages with a population of some 160 million are yet to be provided with potable water supply facilities while sewerage systems in the villages are non-existent. This has been a cause of water-borne diseases like jaundice, typhoid, cholera etc. The chronic unemployment and under-employment in these areas have led to the migration into towns and cities that have added to the already severe environmental problems in urban settlements.

Urban

20.32 According to the 1971 census nearly 20 per cent of our urban population lived in 8 metropolitan cities and another 30 per cent lived in 143 cities with a population more than 100,000. The phenomenal increase in urban population both as a result of natural growth as well as immigration, has led to the mushroom growth of slums and squatter settlements. The pressures on urban land have often resulted in an indiscriminate mixture of land uses resulting in a steady deterioration of already strained urban services and environmental quality. In order to provide additional land, ill-conceived reclamation has been carried out on water bodies and marsh lands which have crucial ecological roles to play in safeguarding coastal towns and cities. Major instances of such coastal reclamation are to be found in Bombay, Cochin and Calcutta.

20.33 Since Independence several new towns have been built and practically every city has been extended often at the expense of fertile agricultural land. When extensions of old cities have been made there have been inadequate assessments of the capacities

of existing urban infrastructure to cater to the larger combined populations. Thus roads, water supply, drainage, sewerage services become over-loaded with the consequent frequent break-downs leading to unsatisfactory environmental conditions.

20.34 These trends will only intensify in the future as increase in population density lowers per capita availability of resources both natural and man-made—thus generating additional problems related to environmental health. So far attempts at environmental improvement in human settlements have come in a disjointed and piecemeal fashion with attention focussed on one particular function or the other (transportation, water supply, power generation, etc.) rather than treating settlements and their activities as a dynamic and organic whole. Vigorous and coordinated steps are now required for environmentally sound planning and development of human settlements.

ENVIRONMENTAL IMPACT FROM DEVELOPMENT PROJECTS

20.35 The unintended environmental impacts resulting from the execution of development projects like those involving thermal or hydro-power generation, mining industry, agriculture, human settlements, etc. manifest themselves through one or more of the environmental problems discussed in the preceding sections. For instance, mining operations in India have often led to serious problems of water and air pollution, land subsidence and scarring of large tracts of land. Indiscriminate discharge of wastes by industries has caused a whole variety of pollution problems including those due to heavy metals and other 'exotic' chemicals that are inimical to all life forms. The unplanned, intensive use of agricultural chemicals have led to cases of water pollution and appearance of pesticide residues in food and food products.

20.36 There are other serious and more insidious consequences for human health arising through poorly planned developmental activities. In particular, there is the whole range of tropical, communicable diseases such as malaria, filariasis, dengue, guinea worm, Japanese encephalitis etc. that are becoming more wide spread due to the creation of favourable environmental conditions for the pathogens. The majority of the breeding places of these disease-vectors are created by man in the form of stagnant ponds, burrow pits and ditches. Whilst it is recognised that provision of water for agriculture and for human use is a major developmental activity and a vital necessity, it must be ensured that conditions favourable for the breeding of vectors of human and animal diseases are not encouraged. Unplanned urbanisation has changed the ecological conditions in favour of the spread of filariasis. Kala-azar has now come back in an unprecedented form. Studies have shown that the construction of large reservoirs can result in the elevation of sub-soil water in the vicinity with consequent changes in the levels of fluoride, calcium, trace metals, etc. in soil sediments. This in turn results in the emergence of diseases, such as fluorosis, in people

who are forced to use the contaminated water. For instance, the National Institute of Nutrition in Hyderabad has conclusively revealed the seriousness of fluorosis in areas adjacent to the Nagarjunasagar Dam. Skin infections, trachoma, guinea worm and schistosomiasis are other diseases transmitted by water. The price for the lack of recognition and control of these environment related diseases, is paid not only in terms of human health but also in terms of costs of pest control and medical care.

20.37 It is now recognised that most of these impacts can be minimised or even completely avoided by adequate pre-planning, through use of techniques like environmental impact analysis for which the interdisciplinary expertise will need to be built up. Environmental considerations must form an integral part of all planning for development and be supplemented by mechanisms to ensure that environmental safeguards proposals are implemented and that there is systematic monitoring to assess their effectiveness.

ADMINISTRATIVE AND LEGISLATIVE ARRANGEMENTS FOR ENVIRONMENTAL PROTECTION

20.38 Plans and programmes in fields of soil conservation, public health, forest and wildlife protection, industrial hygiene etc. have been in existence in India for many decades. However the first formal recognition of the need for integrated environmental planning was made when the Government of India constituted the National Committee on Environmental Planning and Coordination (NCEPC) in 1972.

20.39 In the past eight years the NCEPC, a high level advisory body of the Government of India, with technical staff support from the Department of Science and Technology has done valuable work in a number of areas related to environmental planning. These include environmental appraisal of projects from selected sectors, surveys of wetlands and aquatic weeds, human settlement planning and spread of environmental awareness. At the instance of the NCEPC, high level Environment Boards have been constituted in various States and Union Territories.

20.40 There are several laws that directly or indirectly relate to the protection of environmental resources. Among the more recent ones are the Insecticides Act, 1968, Wild Life Protection Act 1972, the Water (Prevention and Control of Pollution) Act 1974, the Water Pollution Cess Act, 1978 and the forthcoming legislation on Air Pollution. Some of the older laws like the Indian Forest Act, 1927, are presently under review. However, many of the existing environmental laws dealing with various sectors have become outdated and are poorly implemented. There is also need for new legislation to take account of the special problems arising from the objective of rapid economic development with social justice.

20.41 In recognition of the need for a fresh, comprehensive look at the administrative and legislative aspects of environmental protection, the Government

of India constituted a High Power Committee under the Chairmanship of the Deputy Chairman of the Planning Commission. The Committee which submitted its report to the Prime Minister in September, 1980, made a number of recommendations in this regard. The Committee expressed the need for creating a Department of the Environment (DOE) at the Centre to provide explicit recognition to the pivotal role that environmental conservation must play for sustainable national development. The functions of the Department of the Environment were identified as:

- (a) 'Nodal' agency for environmental protection and eco-development in the country.
- (b) Carrying out of environmental appraisal of development projects through other ministries/agencies as well as directly.
- (c) Administrative responsibility for
 - (i) Pollution monitoring and regulation.
 - (ii) Conservation of critical eco-systems designated as Biosphere Reserves.
 - (iii) Conservation of Marine Eco-systems.

20.42 Thus the DOE would play an important co-ordinating role for environment related programmes in all sectors which would be implemented by the relevant ministries/agencies of the Central and State Governments. This 'nodal' function would therefore be in addition to those for which the DOE would have direct administrative responsibility.

PROGRAMMES

20.43 As has been stressed earlier in this Chapter, it is the successful control of population growth and the satisfaction of basic human needs that will ultimately protect environmental health and hence the quality of life of our people. In that sense the entire plan for national development could be termed 'environmental'. However specific programmes for environmental protection would also be necessary to correct various local and regional stresses on environmental resources arising as a result of the conditions of poverty and underdevelopment and the unintended side-effects of programmes for national development.

20.44 The plan will adopt an integrated approach to find and implement, methods of redressing existing environmental problems and build up the capability for preventing or mitigating those that could arise in the future. In the following paragraphs an indication has been given of some of the main programmes to be carried out by the Department of the Environment (DOE) either directly or through other Ministries/agencies/institutions.

20.45 A strong programme of *Environmental Research and Development* will be supported to generate the kind of information and data required for the formulation of environmental policy. Standards and criteria for environmental quality relevant to Indian conditions particularly in the field of human settlement planning have to be worked out through care-

fully planned research schemes. Low cost methods for environmental protection, methods for energy, water and other resources conservation, recycling and re-use in all sectors of the economy, are some of the other objectives to be pursued through programmes of environmental R&D. Gaps in existing knowledge, expertise and infrastructure will be identified on a continuing basis so that appropriate action may be taken.

20.46 In order to ensure that plans for development in all sectors are in harmony with the goal of maintaining the health of life-sustaining eco-systems and other environmental resources the process of *Environmental Impact Assessment (EIA)* will be made an integral part of the entire planning process. The cost of pre-project studies related to EIA will be built into regular project costs. Special case studies relating to environmental impact from the execution of projects in various sectors (industry, mining, irrigation, power, forestry, settlements etc.) will be carried out to generate information and guidelines (standards, safeguards) required for routine EIA. A system to monitor the compliance of project authorities with stipulations made at the time of conducting the EIA is to be established with the help of other agencies at the Central and State level.

20.47 *Monitoring of Environmental Quality* is a critical function of accurate information on the success or otherwise of programmes for environmental protection is to be available. It will also enable optimal deployment of scarce resources and determination of areas in which urgent action is required. Environmental quality will be monitored through a number of carefully chosen indicators (physical, chemical, biological, socio-economic etc.) in various fields such as agriculture, forestry, mining, rural and urban settlements etc. Programmes for the development of infrastructure required in this regard (hardware, expertise etc.) will be strengthened or where necessary initiated afresh. This work will be co-ordinated by the Department of Environment but will be carried out in their respective sectors by various other Departments/Ministries/agencies of the Central and State Governments.

20.48 The Plan envisages the setting up of an Environmental Information System for the collection, processing and dissemination of environmental information that will aid planners, decision makers and researchers. In order to avoid duplication of effort (particularly in fields like natural resource management, in which a number of agencies are already serving as repositories of information) the system will work on a distributed data-base concept. As a part of the activity, a *Documentation and Publication* centre will regularly bring out status reports, research monographs, case studies and other relevant material to serve the information needs of the general public.

20.49 Programmes to increase *Public Awareness* about environmental issues and to stimulate public participation in activities for environmental protection will form a key component of this plan. Particular emphasis will be given for communication programmes for target groups such as village panchayats, district and municipal authorities, State and Central

legislators and administrators. Apart from the use of non-formal means (mass media, performing arts, etc.) for public education, formal environmental education will be considerably strengthened at the primary, secondary and tertiary levels through inputs into the relevant curriculae, sponsoring of publications and training workshop.

20.50 In response to the identified need for strong research development and training support to programmes for environmental protection it is proposed to set up a number of Centres/Institutions for Studies/Training in Environmental Science, Technology and Management. This would be accomplished both by strengthening institutions already working in this area and setting up a small number of new institutions. Using a network of existing institutions it is proposed to set up a Centre for Himalayan Studies and a Centre for Western Ghats Studies. The latter would lay emphasis on the study of tropical rain forests. The new institutions would include an Institute for Environmental Management, a Wildlife Research and Training Institute and a Centre for North-East India Studies. The last mentioned institution is of high priority in view of the rich genetic resources of the region and the rapid rate at which developmental changes are expected in the near and medium-term future.

20.51 The Department of the Environment will sponsor a number of *Field Action Programmes*. These will include demonstration projects that illustrate successful tools, techniques and methodologies for environmental protection in fields such as land reclamation low-cost pollution control, recycling/reuse of waste materials, mass communication of 'environmental messages'. Collaborative programmes with other governmental bodies, municipalities, forest departments, voluntary agencies will attempt to directly accomplish clearly defined objectives of 'eco-development' in local or regional contexts. Such projects would include tree planting, weed eradication, community waste collection and reuse, "cleaning" of water bodies, involvement of communities in areas surrounding Biosphere Reserves and National Parks in protection of wildlife etc. Emphasis is to be given for projects involving youth in eco-development activities through summer camps. Thus particular emphasis will be given to the involvement of voluntary social organisations, groups of scientists or individuals in various facets of environmental protection at the field level. A provision is being made for grants-in-aid to such groups who can be of great assistance to Government in carrying out activities that mould public opinion and elicit cooperation in favour of programmes to conserve the wisely managed environmental resources.

20.52 In order to accelerate the process of repairing the damage already done to fragile hill eco-systems, an Eco-development Force consisting of ex-servicemen will be set up. Such a force will consist of discrete units which will be deployed to begin with in the upper catchment areas of major Himalayan

river systems. The various units of the Eco-development Force will take up a massive afforestation and soil conservation programme and also assist in harnessing rain water for subsequent use both for domestic and agricultural purposes. The Force together with the local community will take steps not only to develop hill eco-systems and forests but also to produce the needed quantities of fuel and fodder without damage to forests.

20.53 Another step which will be initiated by the Department of Environment will be the organisation of Eco-development Camps consisting of students from the different Universities in the country. Each Eco-development Camp will have a specific goal such as the repair of a damaged eco-system setting up of a marine or desert national park, bio-sphere reserves, organisation of village fuel wood plantations, etc. For each camp, selected groups of students drawn from a mixture of Universities will be trained in relevant tasks before the work of the camp is started. The necessary material for implementing the programme will have to be kept ready in advance, so that the students participating in such camps are able to complete the tasks assigned to them within a well defined time frame. Thus this programme will be so designed as to foster team work among students drawn from different parts of the country in executing a developmental task of both ecological and educational value.

20.54 The role of the State Governments in ensuring a coordinated approach to environmental protection has been recognised to be crucial. The DOE will play a selective role in *strengthening of capabilities of State Governments in carrying out environmental planning protection and review*. This will be through joint participation in studies, assistance, development of expertise and infrastructure, 'seed money for carrying out studies and research programmes etc.

20.55 An important structural/organisational innovation to ensure flow of information and expertise required for environmentally sound development at the field level will be the constitution of *Rural Environmental Cells*. The cells will be set up with the cooperation of the relevant State and District authorities. They will act as local level mechanisms to identify and implement opportunities for optimal use of environmental resources, and prevent their misuse. The cells would function in close coordination with local units of public health, forestry, water and soil management, agricultural services, educational institutions and voluntary agencies working in the field of environment protection. The proposed cells would be 'clustered around Regional Environmental Centres (REC). The REC's would have specialisation in environmental problems of the region and would act in cooperation with State Governments as agencies to transfer information of the DOE and in the reverse direction also. The Rural Environmental Cells and Regional Environmental Cells would serve as the eyes and ears of the DOE at the Centre to facilitate the coordination and 'nodal' functions. A beginning would be made in a few key blocks in every State where eco-catastrophies are relatively frequent.

20.56 Apart from its work in regulating and co-ordinating the work of pollution monitoring and control the DOE will be directly responsible for the major programmes of: (a) Creation and Management of Biosphere Researves (b) *Monitoring and Conservation of Marine Eco-systems*. A separate cadre of specialists is to be constituted for management of the Biosphere Reserves which are to be set up under Central control. Considerable preliminary work has already been done to identify potential areas of value to be designated as Biosphere Reserves.

20.57 It is proposed to identify an agency to be entrusted with the task of monitoring and planning for the conservation of the nation's valuable marine eco-systems. The agency will be adequately strengthened to carry out comprehensive research, design and development related to prevention of marine pollution, rational exploitation marine resources and protection of particularly valuable areas and species of marine life.

20.58 A comprehensive programme to make an *Inventory of Ecological Resources* of the country is to be undertaken. This will be done in coordination with the Environmental Quality Monitoring and Environmental Information Systems programme described earlier. The work will be done in phases by using existing institutions such as Survey of India, Botanical and Zoological Survey of India, National Remote Sensing Agency etc. besides other Ministries and agencies of the Central and State Governments. Data gathered from satellite imagery, aerial photography

and field surveys will be processed and collated in selected institutions throughout the country and will be available to planners and decision makers.

OUTLAYS

20.59 There is a provision of Rs. 40 crores in the Central Plan for these programmes in the Science and Technology sector. The break-up of outlays is as follows.

Table 20.1

Outlays on Environment

	Rs. crores
1 Environment Planning & Coordination (R & D Programmes, field action/demonstration, environmental information system, monitoring network and support to State Environmental Committees)	15.00
2 Eco-Development Programmes (Biosphere reserves, eco-development zones, eco-development camps)	10.00
3 Ecology & Environment Education/Training Programmes (training schemes, centres of excellence, environment management institutions)	5.00
4 Botanical Survey of India	5.00
5 Zoological Survey of India	5.00
TOTAL	40.00

EDUCATION

Education, broadly perceived as a seamless continuum of life long learning, is essential for human resource development at every age level. In a package of developmental inputs available to the community, education should form an effective means to improve the status and character of living patterns of the people, help intellectual, social and emotional development of the individuals and to enable them to meet their basic needs of daily life. The long range goal of educational planning is then to make available diverse net-works of facilities and programmes for education, combining formal and non-formal modes of learning. It should enable all citizens to acquire literacy, numeracy, computational skills, basic understanding of the surrounding world and functional skills of relevance to daily life and to local environment. The emphasis in our planning efforts would thus shift from provision of inputs and expansion of facilities in general terms to results to be achieved and tasks to be performed with specific reference to target groups of population, particularly the socially disadvantaged.

21.2 Programmes of human resource development have a four-fold perspective; (i) to prepare individuals for assuming their role as responsible citizens; (ii) to develop in them scientific outlook, awareness of their rights and responsibilities as well as a consciousness of the processes of development, (iii) to sensitise them to ethical, social and cultural values which go to make an enlightened nation; and (iv) to impart to them knowledge, skills and attitudes which would enable them to contribute to the productive programmes in the national development. In the realisation of this, educational system and programmes have to be directed towards a set of goals and tasks. Among these would be the following:

- (i) to guarantee to all equality of opportunity for education for improving the quality of life and their participation in the tasks of promoting the general well-being of the society;
- (ii) to afford to all young people and adults, irrespective of age, the means for ample self-fulfilment within the framework of harmonious development which reflects the

needs of the community to which they belong;

- (iii) to provide for a continuous process of life-long education for physical, intellectual and cultural development of people and for inculcating in them capabilities to cope with and influence social change;
- (iv) to establish dynamic and beneficial linkages between education, employment and development with due regard for the economic and social aims of the community;
- (v) to promote respect for, and belief in values of national integration, secularism, democracy and dignity of labour;
- (vi) to sensitise academic communities to the problems of poverty, illiteracy and environmental degradation through extension services and organised participation in poverty reduction and environment improvement programmes;
- (vii) to facilitate development, mobilisation, organisation and utilisation of the youth to involve and participate in the process of national development; and
- (viii) to support the growth of arts, music, poetry, dance, and drama, including folk art, as instruments of culture, education and national integration.

21.3 The approach to achieve these objectives will be characterised by flexibility and diversity to suit varying needs and circumstances and by a stress on coordination of efforts, resources and programmes of the different sectors and agencies. The need to maintain high quality of education, aiming at academic excellence, and its relevance to national development objectives would be articulated throughout the system.

REVIEW

21.4 Despite a network of over 6.5 lakhs schools and colleges, the employment of over 3 million teachers and an annual budget of the order of Rs. 3000

crores, it has not been possible so far for the education system to achieve the goal of universal education of all children upto the age of 14 years as enshrined in the Directive Principles of the Constitution. The total enrolment in elementary education has increased from 223 lakhs in classes I-VIII in 1950-51 to around 905 lakhs during 1979-80. Nevertheless, for every three children enrolled in primary and middle schools, one other eligible child is left behind. Over 80 per cent of the children not enrolled so far are confined to a dozen States who have not been in a position to allocate the necessary economic resources to achieve the goal of universalisation according to the present system of elementary education.

21.5 There are also socially disadvantaged groups, such as the economically poor, scheduled castes and scheduled tribes, whose children are on the periphery of the schooling system. About 38 per cent of the scheduled caste children (20 per cent of the boys and 56 per cent of the girls) and 56 per cent of the scheduled tribe children (49 per cent of the boys and 70 per cent of the girls) are yet to receive elementary education. As revealed by the Fourth Educational Survey, the non-availability of schools is not a major constraint in this regard. But socio-economic compulsions in families, particularly in rural areas and among the weaker sections, not-too-relevant nature of curricular programmes and lack of essential facilities in schools seem to be some of the more important factors contributing to the slow progress. Even the existing facilities for elementary education are not optimally utilised, overaged and underaged children account for around 20 per cent of the enrolment and nearly 64 per cent of the children who are enrolled in class I, drop out by the time they complete class V. This represents economic loss in resource utilisation, educational inefficiency and low productivity, not to mention the long-term social loss to the individual child and the family on account of the incomplete development of the former's educational career.

21.6 In the areas of secondary and higher education, facilities have been expanded during the last three decades. Nonetheless, the reforms for qualitative improvement and system reorganisation, as envisaged in the National Policy on Education (1968), are yet to be completed effectively. This is particularly so for the integration of practical aspects in the educational programmes and for planned growth of programmes directed towards gainful employment to be implemented in close cooperation with all the developmental agencies. Inter-sectoral linkages are yet to be brought about and coordination established between work places, schools and development activities for fostering appropriate manpower development programmes.

This has resulted, among other things, in an undesirable growth of facilities for general higher education, specially at the under-graduate stage in arts, commerce and humanities, and in the consequent increase in incidence of unemployment among the educated. It has also not been possible to evolve systems approach to educational planning and development

aiming, *inter-alia*, at flexibility and mobility among different types and levels of education and at maximisation of benefits from educational investment for rapid progress in the different sectors of national economy. This has undermined the role and capability of the higher education system to promote and maintain excellence and high standards in academic programmes, encourage pure scholarship and extend the frontiers of knowledge as well as to participate in national S&T activities and develop national scientific and technical manpower.

APPROACH

21.7 It may, no doubt, be necessary to create additional infrastructure to ensure the future growth of the educational system but this would have to be appropriate to the needs of, and based on a careful scrutiny in, specific areas and sectors and for identified target groups, particularly those which are in the danger of getting left behind because of their special circumstances. The existing institutions and programmes need to be consolidated and put to optimum use to serve the goals of development in the community as a whole. Provision of suitable educational facilities in backward areas and for the deprived groups and promotion of non-formal programmes at all levels incorporating plurality of models and diversity of patterns are equally important. The organisation of new facilities must also be linked to the actual needs and made relevant to local environment and learning requirements, taking note of the specific characteristics of the prospective beneficiaries.

21.8 The importance of educational planning and management at all levels has to be emphasised in this context and capabilities built for these tasks. Educational planning must effectively be coordinated with manpower planning at all stages and aspects of skill development. Adequate attention has to be given to optimisation of benefits from the existing investments and facilities. The failure to achieve a larger measure of equalisation of educational opportunities, both in regard to access and achievement, is an aspect which requires closer attention. Concerted efforts are called for to reach the socially handicapped and economically weaker sections of the society such as, women, scheduled castes, scheduled tribes, landless labourers etc. The imbalances which have developed in the system between the rich and urban level on the one hand and the poor and rural level on the other have to be rectified so that enrolment rates in elementary education of the socially deprived groups and the general population are brought on par at least by the end of the Sixth Plan. It is essential also to transform the system of education qualitatively in terms of its value content, standards and relevance to life. The role of education to promote humanistic outlook, sense of brotherhood and a commitment to ethical and cultural values needs to be re-emphasised.

21.9 The importance of educational technology has to be adequately provided for greater efficiency and effectiveness and wider reach of the educational

programmes. This would be made possible with the launching of the INSAT. The possibility of using modern technology to take education, especially at the elementary stage, to all sections of population in a shorter frame of time has to be capitalised for achieving minimum basic education of all people within a decade. All these will require the strengthening, reorientation and integration of non-formal and formal programmes of educational development and bringing about inter-sectoral and inter-agency co-ordination at different levels for furtherance of specific aims of human resource development.

PROGRAMMES

Early Childhood Education

20.10 From the stand point of priorities within the field of education, importance should be attached, in terms of coverage, to the young child, children in the school going age-groups and those among the socially under-privileged groups. Attention should be paid to all young children during their crucial development years upto 5 years. This early childhood stage is the period of maximum learning and intellectual development of the child and hence of great potential educational significance. The present pre-school child care programmes are limited to the distribution of food supplements and routine health cover; these contribute very little to the personality development of the child, especially to its intellectual, social and emotional growth. The concept of learning and development through play and joyful activities should be articulated, across age-group, through an all round programme which should be comprehensive in scope, integrated in nature and reinforced over long-time. Organisation of a creche for children in the 0—3 age-group and/or a halwadi for 3—6 age group, with provision for educational toys, play equipment, learning materials and books for children's reading etc., would be appropriate for this purpose. The educational component of such a package of services would no doubt be significant.

20.11 The approach in the Sixth Plan is characterised by a concern for the all round development of children, especially those from underprivileged sections and poverty groups who may suffer serious consequences in the future because of negligence at the present stage of life. Such a preparatory programme would, additionally, contribute towards universalisation of enrolment and retention of children in elementary education in due course. The programme is envisaged initially to serve the needs of children in the rural and the urban slum areas, based on economic means and social and educational backwardness of the population groups. The target for the Sixth Plan would be at least one early childhood education centre in every community development block. It would be advantageous to develop these centres as adjuncts to village primary schools wherever possible. The resources and inputs of programmes under health, nutrition, social welfare, integrated rural development and education, which are presently devoted to child, family and community welfare would be coordi-

nated for this purpose, with flexibility and freedom built in by allowing various agencies to undertake programmes within a common framework. The services of suitable persons from the community, especially women and the educated unemployed youth, could be used to support them. Necessary pre-deployment training of the workers in the field would be arranged on a selective basis through existing teacher training institutions. The approach at this stage of education would be entirely non-formal and stress laid on the inculcation of sense perceptions among the children, through innovative use of locally available resources in the community and the environment. The National Council of Educational Research and Training, in collaboration with similar agencies in the States would help in developing the learning materials and aids both for teacher training and for programme implementation.

Elementary Education

21.12 It is proposed that the programme of universalisation of elementary education would be given serious consideration, especially in the educationally backward States and for reaching the socially disadvantaged who constitute the bulk of the non-attending children and of the drop-outs. The Sixth Plan assigns the highest priority to this programme which would continue to be a part of the minimum needs programme. While many States have reached 100 per cent enrolment of boys at the primary stage (classes I-V), some are lagging in respect of boys and many in regard to girls. Although the objective is to attain the universalisation upto the age of 14, operationally a strategy needs to be worked out to achieve this in two distinct stages over a ten year period. Accordingly, the approach in the Sixth Plan is for all the States, which are yet to universalise the primary education, to reach universalisation of primary education (classes I-V), upto the age of 11 years, in the next five years, and, in case of other States, to achieve a substantial increase in the enrolment at the middle stage (classes VI-VIII of children upto 14 years so as to move towards the goal as fast as possible.

21.13 The approach to universalisation of elementary education will cover (i) intensified use of existing facilities, including the adjustment of schooling hours, which would not be more than 3 hours a day, according to local conditions, (ii) provision of new facilities which would be economically viable and educationally relevant, and (iii) promotion of non-formal system of learning. Programmes for non-formal learning would be organised and oriented towards target groups and decentralised in regard to their contents, course duration, place and hours of learning and pattern of instructions. However, there would be a basic minimum package of inputs identified by the public educational authorities which would have correspondence to the formal system of education. In both formal and non-formal systems, the emphasis would be on the retention of students and effective delivery of services to children. It is also essential to ensure appropriate incentives like free midday

meals, supply of uniforms and learning materials, and compensation to the families of scheduled caste girls towards the opportunity cost involved. Efforts should be made by the State Governments to introduce measures with a view to eliminate wastage and reduce drop-out in elementary education.

21.14 As part of the efforts to retain children and promote the internal efficiency of the system as well as achieve equalisation of educational opportunities, measures for improvement in the quality of education becomes very important. The curriculum would be developed with the goal of imparting necessary levels of literacy, numeracy, comprehension and functional skills related to local socio-economic factors and environment needs. It would suit flexible models, with provision of diversification and dextrous balance between common basic goal and varying methodology. The basic objective would stress curriculum as an instrument for inculcating humanistic values, capacity for tolerance, promotion of national integration, scientific attitude and temper and individual capability for learning from the surrounding world.

21.15 Keeping in view the progress already made in the different States in expanding elementary education and the feasibility limits of accelerated growth in the educationally backward States, it is proposed to lay down specific targets Statewise for the Sixth Plan. It is estimated that universalisation of the primary stage of education would imply additional enrolment of about 170 lakh children in classes I-V over the next five years or an average annual rate of enrolment of 34 lakh children. In recent years, however, the rate of enrolment has approximately been of 20 lakhs annually and if the above targets are to be achieved, the educationally backward States of Assam, Bihar, Madhya Pradesh, Rajasthan, Uttar Pradesh and West Bengal would have to step up their present rates of enrolment considerably, in some cases more than double if not three-fold. It is, therefore, proposed that the additional targets should be projected realistically in individual States and Union Territories consistent with the ultimate object of completing the universalisation programme by 1990.

21.16 In the middle stage of elementary education for children in the age-group 11—14, the population to be covered to achieve a target of 50 per cent in the Sixth Plan would be about 63 lakh or an annual enrolment of 13 lakh on an average. The achievements so far has been at the rate of 7 lakhs per annum. Those States which have already attained 100 per cent enrolment in the primary classes would have to endeavour in the Sixth Plan to reach higher rates of enrolment in the 11—14 years age groups but, even then, it would require the doubling of the present enrolment rates. This, however, needs to be accepted as a desirable objective and challenge during the Sixth Plan, without which the goal of universal elementary education cannot be attained even by the end of the century.

21.17 Taking the proposals for primary and middle stages together, the additional enrolment in full time

elementary education during 1980—85 is projected as hereunder:

Table 21.1
Targets of Expansion of Full-time Elementary Education—1980—85

Age Group/ Classes	Enrolment (in lakhs)		Percentage of population in the age-group	
	1979-80	1984-85 (Target)	1979-80	1984-85 (Target)
(1)	(2)	(3)	(4)	(5)
6—11/I-V				
Boys	438	485	100.2	108.1
Girls	272	342	65.9	81.5
TOTAL	710	827	83.6	95.2
11—14, VI-VIII				
Boys	130	166	52.0	63.1
Girls	65	92	27.7	36.8
TOTAL	195	258	40.2	50.3
6—14, I-VIII				
Boys	568	651	82.3	91.7
Girls	337	434	52.2	65.0
TOTAL	905	1085	67.8	78.8

The Statewise projections are given in Annexures.

21.18 Non-formal education programmes have been initiated in the States recently and these would need to be developed and expanded, in the light of experience gained, to cover all those children who would require, and benefit only by, such modes of learning. It would be unrealistic to lay down any specific target for this purpose but it is expected that about 80 lakh children would be covered during the Sixth Plan.

21.19 The provision of non-formal education requires considerable imagination and innovation. The State Institutes of Education, in collaboration with the National Council of Educational Research and Training, would draw up feasible programmes for this purpose outlining the curriculum, syllabus and reading material for these courses and for the training of teaching personnel. The Centrally sponsored scheme to help the educationally backward States with financial assistance for programmes of non-formal elementary education would be continued.

21.20 It is proposed to establish special monitoring arrangements at the Centre and the State level to review progress of elementary education, particularly of the target groups, which are yet to be provided with universal elementary education. Their educational needs would be looked into according to a larger perspective of the families socio-economic conditions and problems and, wherever necessary,

family approach would be adopted in conjunction with welfare schemes of other sectors and agencies. Apart from providing schooling facilities, they would be supplied with mid-day meals, free books, uniforms and stationery as well as attendance scholarships, as incentives, which would be coordinated and extended with a focus on their human resource development including education. These children would also be given remedial coaching programmes to enable them to overcome their environmental handicaps and educational backwardness. Programmes such as those designed to promote learning while earning, would also be promoted to overcome economic reasons hampering their educational development. It would be the specific responsibility of educational administration and planning to ensure that these groups are brought into the fold of national educational apparatus as soon as possible through appropriately designed strategies and disaggregated and relevant programmes.

21.21 Provision is made for construction of satisfactory primary and middle school buildings and classrooms, supply of physical facilities and kits, enhancing the teachers' competence and for the updating and extensive use of educational technique for higher efficiency and greater effectiveness. Keeping in view, however, the large magnitude of the problem of school buildings, the Plan provides only a modest outlay in the State Sector; it envisages continuous efforts to achieve economy in construction costs, among other things, by increasing use of locally available building materials and functionally suitable designs.

Adult Education

21.22 The Sixth Plan lays emphasis on minimum essential education to all citizens, irrespective of their age, sex and residence. The approach to achieve this objective would be characterised by flexibility, inter-sectoral cooperation and inter-agency coordination. Techniracy would be adopted as the major instrument for the spread of literacy, numeracy and practical skills relevant to the economic activities of the people concerned. It would be supported by post-literacy, continuing education through a network of rural libraries as well as instructional programmes through mass communication media, particularly after the INSAT is launched to its orbit.

21.23 Non-formal education for adults, particularly in the productive age-group 15—35 years, would receive priority in the Sixth Plan, in view of its potential for immediate impact in raising the level of productivity in the economy. The programmes of adult education, which had been initiated in the previous Plans and which form part of the minimum needs programme of elementary education would be made more effective and extended in cooperation with the other developmental activities and the employment agencies. The programmes would aim at extending appropriate educational support to the concerned groups of individuals and development departments through carefully designed group-specific and

work-based curricula which would be integrated as part of development activity. They would also take advantage of the cultural and other group characteristics in the process of involving the learner groups to participate in, and benefit from, adult education programmes.

21.24 While designing this programme, the lot of the weaker sections like women, scheduled castes, scheduled tribes and agricultural labourers as well as slum dwellers would be given priority. The strategy in these cases would be the development of methods and contents suited to the varied needs and situations, thus promoting flexibility in the programme and in the means of delivery of education. It would also help to involve voluntary agencies of established repute; such agencies have shown a great capacity to innovate effectively and their involvement will be useful where culture-specific improvisations are required.

Secondary Education

21.25 Secondary and higher secondary education are important terminal stages in the system of general education and provide a first stage for linking education with the world of work. It is at this point that options are exercised by the youth to enter the world of employment or to go for technical training or to pursue higher education. With the expansion of the base of education at the elementary stage, increasing number of students, including a large number of first generation learners, would reach secondary education. Facilities have to be provided for their education since such education is the only means of social mobility and economic independence, particularly among the socially disadvantaged. Care has to be taken to ensure that secondary education also prepares them for a long-term career as part of the stock of national man power. Keeping these in view, facilities for secondary education would have to be extended to rural and backward areas and access provided to the weaker and more backward sections of the people, particularly the first generation learners.

21.26 The importance of secondary education to prepare man power for economic development would stress the need to pay special attention to the quality of education at this stage. This would cover, apart from improving the internal efficiency of the system and enhancing the employability of its products, updating the curriculum and syllabus, production of better text-books and instructional material and creating in the young generation an awareness of the emerging development perspective and associated technologies in fields such as, energy conservation, population stabilisation and environment protection. At the same time, they should not be alienated emotionally or culturally from the society.

21.27 Science teaching would be strengthened and laboratory equipment provided, both for experimentation and demonstration. The programme for supply of science kits at the primary and middle stages would be expanded and an appropriate kit for secondary

education designed, produced and supplied to high and higher secondary schools. The curriculum in science and mathematics would continue to be reviewed and upgraded and pre-service as well as in-service training of teachers in all subjects promoted on an extensive scale. The educational system would also recognise the needs of the exceptionally talented children in the society and give them opportunities for taking up special courses or programmes of studies suited to their talent and thus nurture the valuable latent talent as a national resource.

21.28 One of the important links between education and development is provided by manpower development through vocationalisation of secondary education related to employment. This has to be carefully designed, based on detailed surveys of existing and potential work opportunities and of available educational and training facilities. It should also keep in view the specific roles and responsibilities of the different agencies and ensure coordination at the operational level between the developmental programmes and the educational system. Such a differentiation would normally commence after the secondary stage and may cover varying periods depending upon the vocational area, groups of occupations and the nature and level of skills needed. It envisages deepening of practical bias in the school education to be supplemented by appropriate apprenticeship in actual field, farm or factory situations. It is not necessary to follow a rigid sequence in the order of acquiring the several skills and it should be possible to supplement exclusive vocational training courses with necessary educational component. In this way, suitable linkages need to be established within a system for occupational mobility and career development over one's employment/working life. For the provision of relevant practical skills, agencies like Krishi Udyog and Van Vikas Kendras and other vocational training centres would be utilised, particularly for learning by doing. Similarly, experienced craftsmen and practitioners of the arts would be used for imparting operational skills without undue insistence on pedagogic certificates. Wherever new facilities are to be created, they would be located, to the maximum extent possible, in the rural areas.

Higher Education

21.29 Extensive and widespread facilities have already been created for higher education and the main thrust in the Sixth Plan would be to coordinate them and maximise their utilisation. There is sufficient scope for and possibility of, greater use of the infra-structural physical facilities and resources which might need minimum additional support to make them critically viable. The existing imbalances in the level of development of universities among themselves as well as in relation to colleges would have to be examined for suitable remedial programmes and selective support in keeping with their requirements, potential and scope. The problem of non-viable institutions, with low enrolments and inadequate provision of facilities, as well as proliferation of such institutions offering general academic courses, would need to be tackled with determination, both in order to avoid increasing

unemployment among the graduates as well as to make better use of the available economic resources for educational development. At the same time, the problems of first generation learners, particularly the socially disadvantaged sections, for whom higher education provides a transition, opportunity and challenge in terms of life perspectives and socio-economic aspirations of the community would need to be harmonized into the academic pattern. Personalised guidance and higher education would be required for them keeping in view their emphasis on human resource development as well as in order to enable them to avail of employment opportunities specifically earmarked in the several sectors.

21.30 The improvement of quality of higher education would receive special consideration. The redesigning of under-graduate courses and their restructuring to improve employment orientation would be extended during the Sixth Plan. In the area of post-graduate education and research emphasis would be placed on promoting the research and development capability of the university system and on inter-disciplinary studies, particularly in new emerging areas of knowledge, relevant to national development objectives. Research within the university system would be coordinated with the national science and technology efforts, according to which areas to which research funds are to be channelised would be clearly identified and close collaboration realised on a structured basis among universities, national laboratories and other research organisations. The necessary infrastructural facilities such as sophisticated instrumentation services, computers and libraries would be made available to the universities on a regional basis.

21.31 The institutions of higher learning would be encouraged and enabled to involve themselves with the development activities in the community and provide requisite support through extension services of students and faculties. Such extension work would be considered as part of the normal academic work of the students and teachers, and not as social service. Universities would not only extend frontiers of knowledge but also supply such knowledge to solve problems of the community on whom they depend.

21.32 The Sixth Plan realises the importance of education to development and envisages concerted effort to forge beneficial links among education, employment and economic development. A committee of experts has already been set up by Planning Commission to examine the several aspects of the issues involved in detail. According to them, it is necessary that educational programmes are related to manpower profiles, existing and needed, in the development and occupational areas/sectors and provide for adequate levels and scope of pre-employment knowledge and skills, as also for continuing education for those who are already employed. The entire educational system must, in fact, respond to this important aspect of human resource development as one of the major purposes of education is to prepare the students for a gainful working life with a capability of learning to match new job requirements. There are, no doubt, deeper reasons for unemployment among the educated but, to some extent, the mis-match between education

and employment is due to the kind of education and training which students get in traditional courses. The introduction of work experience and deepening of practical bias in secondary schools, as proposed, are no doubt, programmes in the desired direction. The higher education has also a major responsibility in this regard which would require (a) restructuring of under-graduate courses to make them purposeful and also terminal for those who would seek employment, (b) provision for vocational courses leading to employment and structured for certificate or diploma, rather than an academic degree and (c) promotion at post-graduate level research on practical problems of local and regional relevance as well as on fundamental research. The minimum objective of such a programme would be to make the first degree courses more relevant and responsive to the development needs of the community and link education with work/field/practical experience and productivity by introducing students to relevant application areas of the subjects of their study. These will have the advantage of achieving a greater sensitisation of the academic community to the problem of poverty, illiteracy and environmental degradation.

21.33 It would be necessary to formulate specific work plans to develop these programme areas and guidelines are being prepared for this purpose by the above committee of experts. These would be considered for implementation in the Sixth Plan by the universities and other appropriate authorities and necessary modifications made in their statutes to enable them do so.

21.34 To ensure effective linkages as envisaged, it would be necessary to set up an institutional framework within the university system. One of the ways to achieve this would be the establishment, in every university, of a statutory authority, say, a research (or education) and development council with representation from the university, community and users. Such a council would plan relevant activities and monitor them; it could also be effective for contact and communication with Government Departments, public sector undertakings, and trade and industry. The guidance and counselling services to facilitate proper selection of subjects at the time of entry and of remedial courses would be provided, particularly for the benefit of the first generation learners from weaker and socially handicapped sections of the society. To meet the special needs of women, who may have interruption in their studies; universities would ensure that facilities are provided to enable them to continue their education at the stage they left and complete the same for the final academic awards.

21.35 The various innovative educational programmes which are intended to aid developmental activities would require close coordination and joint action between the educational system and the developmental departments and sectors. For example, the work experience programme would require the secondment of students to places of work which come within the purview of agencies other than educational. The vocationalisation programmes at the higher secondary stage require coordinated action of all educational and training facilities and the services of

developmental agencies for suitable placement for apprenticeship and/or employment of students. It is expected that the district level employment generation councils and district development centres, envisaged in the Sixth Plan, would provide a suitable forum to channelise the requirements of the minimum needs programme and the health for all schemes towards the capabilities and facilities of the universities and the higher education system. By virtue of its far reaching social significance, this should deserve to be taken up for implementation jointly by educational institutions and the concerned agencies.

21.36 Beyond the district and sub-regional levels, it would be conducive for the forging of effective linkage if, at the State level, an appropriate forum is set up to ensure close coordination among education, planning and executive efforts. It would be desirable also to set up an inter-university council or board to bring together all the universities located within a State and the governmental agencies to involve them collectively in respect of programmes which could be planned and activated in a complementary manner. There is also a need for continuous feed back from the users of the products of the university system, particularly regarding results of research, relevance and matching of manpower skills and knowledge in actual field conditions and context. Such an interaction would enable the university system to acquire the necessary information and data base about the needs of the community, public undertakings, trade and industry, and the governmental agencies. Problem-oriented research and investigations of immediate application to social progress could be tackled through such cooperative endeavours. Inter-sectoral coordination between education and related sectors of health, food and nutrition, employment, housing and environment is indeed necessary. As stated earlier, education in respect of health and other basic needs of society should become an integral part of the general education system and all forms of formal, incidental and non-formal learning should support these programmes according to a scientific system.

Youth Development

21.37 Youth in the country constitutes a vast human resource which is characterised by idealism and zeal, active habits, positive attitude towards service to others, an urge to be self-reliant and a willingness to explore newer and non-conformist approaches to societal problems. If properly harnessed and utilised, the youth could therefore be a powerful instrument of social, cultural and economic change. There are four major aspects of the youth to be considered in a co-ordinated manner, viz., development, mobilisation, organisation and utilisation, to promote their involvement and participation in the nation building activities. The general approach to, and details of, an integrated strategy for youth programmes need to be considered in a wider perspective than the educational system because the problems of youth relate to more profound and broader issues like personality development, transition from childhood into adulthood, gainful employment, suitable development of their spirit for adventure and opportunities for community service.

21.38 It is, no doubt, important that the several programmes, which are in operation under the different agencies, need to be coordinated among themselves and at different levels into an integrated conceptual framework. This would help ensuring better coverage, enlargement of targets, and a multiplier effect of the ongoing programmes. It is also important that the tasks to be assigned to the youth are made discreet and tangible and the youth given appropriate training in selected institutions before they are deployed on these tasks. The details of these aspects would need to be gone into, harmonised and a strategy evolved in the form of a National Youth Policy. The guiding principles in this regard should be (a) to provide greater equality of opportunity to all among the youth, (b) to liberate their talent which is now lost to the society, (c) to ensure a higher average level of relevant basic skills and education through work and service, (d) to enable a smooth transition of the youth from childhood through adolescence to adulthood, as well from schools to the world of work and service, and (e) to channelise their energies, idealism and healthy aspirations towards developmental tasks, projects and programmes.

21.39 Insofar as the programmes of educational agencies are concerned, they need to be strengthened and extended in scope and operation. Institutions like the Nehru Yuvak Kendras, Yuvak Mandals and similar bodies linked to the Gram Sabhas would be utilised as the base of operations at the district level and provided with professional inputs and support for the tasks to be done. They would also have an in-built mechanism for feed back, assimilation of new concepts and ideas and to extend activities in keeping with the changing area development perspectives. The National Service Scheme for the student youth would be reviewed in order to make provision for real participation of students in development programmes, availing of the proposed non-formal manning structures envisaged in the Sixth Plan. These would also be coalesced with programmes of other departments and agencies and the progress monitored with reference to specific benefits and targets pertaining to the participating youth. There is also a need to decentralise the efforts and to set them in the context of local environmental conditions and needs as perceived by, and acceptable to, the community in general and the youth in particular.

Sports

21.40 The objectives of development of sports, games including indigenous games and physical education would be to enlarge the mass base for improving national physical well-being and to promote excellence in competitive events. These will require suitable programme for augmenting physical facilities, training of personnel, and spotting and nurturing of talent. The existing programmes for training of coaches and physical education teachers would be strengthened to improve the sources available with educational institutions, sports federations and others. It is necessary also to strengthen the existing schemes of spotting promising talent in different sports disciplines at a very young age for nurturing it into levels

of excellence. For this purpose consideration would be given to the creation of special facilities in selected institutions for promoting sports talent alongwith normal requirement of general education. At the village and rural area level, full utilisation would be made of existing facilities and institutions and indigenous games supported with a view to build up sporting attitude qualities and talent starting with the village children. Full use would be made of the mass media for the promotion of physical fitness which is so fundamental for the well-being of the nation as a whole.

Technical Education

21.41 The Sixth Plan takes into account the extensive infra-structure of facilities that has been created for technical education at diploma, degree and post-graduate levels as well as for supporting services like teacher education and curriculum development. The emphasis during the Plan will be on (a) consolidation and optimum utilisation of these facilities, (b) identification of critical areas and creation of necessary facilities for education in emerging technologies in the light of proper assessment of future technological manpower requirements, (c) improvement of quality of technical education at all levels and (d) furtherance of national efforts to develop and apply science and technology as an instrument of the country's socio-economic progress.

21.42 Efforts towards consolidation would seek to ensure that the development schemes initiated in the earlier Plans would be completed in all their aspects and the facilities would be modernised in keeping with the state of art in the technology area as incorporated in the national economic sectors. These would help increase the efficiency of the system, reduce the wastage and bring up the present courses beyond the critical level for optimum utilisation. The present approach to develop technical education facilities according to a manpower requirement approach would be continued in the Sixth Plan. These requirements would be assessed for the next ten years, separately for States and type of specialisation, so that, taking into account the lead time involved, educational efforts required to be initiated immediately could be specified and taken up. Suitable mechanism for this purpose would need to be established for the collection, storage, updating and processing of manpower and related data to assist technical education planning.

21.43 In the light of studies already made, facilities would be developed for manpower training in areas like computer science, product development, maintenance engineering instrumentation, and bio-sciences. Centres for advance studies and research would also be set up in selected institutions in emerging technologies like bio-conversion, laser technology, micro-processors development and application, fibre optics and optical communication remote sensing technology, energy systems, reliability engineering and atmospheric sciences.

21.44 The programmes of improvement of quality of teaching and of maintenance of standards would be

continued and strengthened. Wherever possible engineering projects and contracts at the campuses of engineering colleges would be undertaken by the students and the faculties themselves and suitable stipends paid for this work which would supplement practical learning. The development of an institutional network between well-established institutions/departments and the developing ones, through an internal technical assistance programme, would be given necessary support. Structured linkages would be evolved for industry|institutional interaction. The facilities of technical institutions in the form of faculty, students and laboratories|workshops would be fully utilised to assist the spread of science and technology to the neighbourhood areas and, through effective and productive interaction, to evolve solutions of societal development problems of immediate and future relevance.

Culture

21.45 The Sixth Plan seeks to initiate serious efforts to recognise culture as a basic concept to be integrated with all activities of development and, particularly, the educational efforts at all levels. They would aim at democratising culture and making it part of the programme of human resource development. Proposals have been made in the Sixth Plan to incorporate cultural elements at all levels and into formal and non-formal systems of education, because such an integration of culture elements may be the best means of making education relevant and meaningful. It would also enable the educational system to draw upon the valuable sources available in the community for personality development and help the pupils develop attitudes without getting alienated from their socio-cultural environment. The process would ultimately make culture a way of life for the people and identify their role in the promotion of our national value system.

21.46 Planning for the integration of culture elements would, no doubt, take into account the cultural diversity and pluralism in the country and the need to promote a national outlook and integration. The linking of educational institutions at all levels with various specialised institutions and agencies which have come up in the area of cultural activities and the rich sources of heritage which have considerable educational value would be a very significant aspect of educational development in the Sixth Plan. Besides, the schemes for the preservation of cultural heritage such as, monuments, manuscripts, oral traditions, folk arts, ancient form of arts and crafts etc. would be strengthened. The growth of arts, music, poetry, dance and drama would be supported as instruments of culture, education and national integration. The main objective would be to promote national pride and cultural identity and foster greater understanding between and among the different groups and people of India.

NON-MONETARY INPUTS TO QUALITY IMPROVEMENT

21.47 The emphasis in the development of education in the Sixth Plan is on the optimum utilisation of

existing facilities, qualitative improvement of system and making available the educational services to the socially deprived sections of the community. While financial outlays are important and necessary to create additional infrastructure, it is equally important to bring about changes and improvements in the system through increased attention to non-monetary inputs. These refer to an environment conducive to growth and development of education, participatory management techniques involving the teachers and the students alike, development of a relevant academic ethos, opportunities for learning by doing and appropriate consideration to the problems of education of the first generation learners.

21.48 Many of the complex problems in the field of education would require, for their solution, a proper blend of professional skill and political will. Such an environment needs to be evolved at all levels through cooperation among all relevant agencies and organisations. This would also help the educational institutions to make progress according to their genius and potential. In respect of management practices, there is no gainsaying the fact that it holds the key to get the best return out of the available resources and investments. Good management leading to promoting harmony among the participants in the system, would produce more durable and sustained results which would exceed the sum total of the individual inputs. For this purpose, there should be an appropriate system of communication among faculty members themselves and between them and the students as well as with parents and local community at large. Development of these programmes is accorded high priority in keeping with the emphasis in the Sixth plan on enhancement of the productivity level in the economy. Teaching and learning as part of the educational process have become specialised in character, and this needs to be articulated by the academic community both in curricular and extra curricular activities so that the general academic ethos could be related, in a variety of ways to the different levels of the heterogeneous groups of students entering the system and makes a distinct impact on the value system of the faculty and students.

21.49 A common reason for the inability to promote learning through work and service is the absence of adequate facilities in educational institutions for practical training. Improvisations and innovative approaches are seldom promoted. The Sixth Plan envisages that practical training would be organised in real life situations, wherever possible under the several development departments and projects as well as in the natural environment surrounding the educational institutions. This would need a new approach to learning by doing apart from promoting programmes designed for learning while earning. The main programme thrust in the development of education, particularly of higher education, is to provide for the human resource development of those belonging to the

socially disadvantaged sections and poverty groups, most of whom would be first generation learners. The socio-economic and cultural constraints, handicaps and strengths of the first generation learners would be analysed and understood so as to formulate measures aimed at overcoming the deficiencies. In practical implementation of these measures it may be necessary to evolve different forms and variations of educational programmes to differentiate the structured system of course combination from a more flexible system suited to the learning needs of these students.

OUTLAYS

21.50 The Sixth Plan provides an outlay of Rs. 2524 crores for development of education and culture. Its distribution among the Centre and State Plans as well as among the several sub-heads is shown in table 21.2. This is apart from provisions made separately for Hill Area Development Plan as well as under the relevant sectors of Agriculture, for education in agriculture and allied sciences, and Health for education in medicine and related fields.

Table 21.2
Sixth Plan Outlay for Education and Culture

(Rs. in crores)				
Sl. No.	Sub-Head	States and Union Territories	Centre	Total
(0)	(1)	(2)	(3)	(4)
1	Early childhood and Elementary Education	851.07	54.30	905.37
2	Secondary Education	370.00	28.01	398.01
3	Teacher Education	22.00	*	22.00
4	University & Higher Education	197.00	288.75	485.75
5	Adult Education	68.00	60.00	128.00
6	Physical Education, Sports and Games and Youth Welfare	69.00	24.54	93.54
7	Other Programmes	69.41	60.15	129.56
	Sub-total General Education	1646.48	515.75	2162.23
8	Art & Culture	32.90	51.00	83.90
9	Technical Education	109.61	168.00	277.61
	TOTAL	1788.99	734.75	2523.74

*Included under Secondary Education.

Annexure A1.1

subject : Enrolment in Classes I -V—1979-80

Sl. No.	States/U.Ts.	Enrolment (in 000's)			Enrolment as % of age-group 6-11		
		Boys	Girls	Total	Boys	Girls	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. States							
1	Andhra Pradesh]	3057	2125	5182	93.8	67.7	81.0
2	Assam*	1013	718	1731	90.0	67.1	78.8
3	Bihar	4632	1980	6612	104.2	47.4	76.7
4	Gujarat	2486	1658	4138	118.7	84.6	102.2
5	Haryana	783	381	1164	91.0	48.8	71.0
6	Himachal Pradesh	298	214	512	126.8	85.6	105.6
7	Jammu & Kashmir	333	185	518	93.3	51.7	72.4
8	Karnataka	2076	1612	3688	89.1	73.3	81.4
9	Kerala	1664	1564	3228	103.4	102.2	102.8
10	Madhya Pradesh	3234	1529	4763	84.9	43.2	64.8
11	Maharashtra	4587	3502	8189	124.4	97.5	111.4
12	Manipur	85	66	151	97.7	73.3	85.3
13	Meghalaya	99	96	195	120.7	115.7	118.2
14	Nagaland	55	46	101	137.5	117.9	127.8
15	Orissa	1622	1058	2680	96.5	66.9	82.2
16	Punjab	1157	963	2120	118.1	107.6	113.0
17	Rajasthan	2059	663	2722	88.0	30.4	60.2
18	Sikkim	24	16	40	150.0	100.0	125.0
19	Tamil Nadu	3428	2800	6228	121.1	103.3	112.2
20	Tripura	126	91	217	94.7	66.9	80.7
21	Uttar Pradesh	6372	2945	9317	91.0	45.1	68.9
22	West Bengal	3903	2496	6399	104.4	69.7	87.4
	Total (States)	43187	26708	69895	100.2	65.6	83.4
B. Union Territories							
23	A & N Islands	14	12	26	140.0	120.0	130.0
24	Arunachal Pradesh	37	18	55	102.8	51.4	77.5
25	Chandigarh	23	17	40	95.8	73.9	85.1
26	Dadra & Nagar Haveli	10	6	16	166.6	100.0	133.3
27	Delhi	346	298	644	104.8	91.7	98.3
28	Goa, Daman & Diu	67	58	125	104.7	90.6	97.7
29	Lakshadweep	4	3	7	154.6	128.6	141.9
30	Mizoram	34	31	65	90.0	89.9	90.0
31	Pondicherry	41	35	76	120.6	100.0	110.1
	Total (UTs)	576	478	1054	108.5	91.2	99.0
	Total (States & UTs)	43763	27186	70949	100.2	65.9	83.6

*Classes I—IV

Annexure 21.2

Subject : Enrolment targets for 1984-85—Class: I—V

Sl. No.	States/U.Ts.	Enrolment (000's)			Enrolment as % of age group 6—11		
		Boys	Girls	Total	Boys	Girls	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. States							
1	Andhra Pradesh	3463	2672	6135	108.2	88.8	98.8
2	Assam	1288	993	2281	100.0	82.7	91.2
3	Bihar	5070	3174	8244	109.9	73.5	92.1
4	Gujarat	2497	2153	4850	114.3	105.3	109.9
5	Haryana	803	605	1408	93.4	74.7	84.3
6	Himachal Pradesh	325	240	565	141.3	92.3	115.3
7	Jammu & Kashmir	463	300	763	125.1	80.2	102.6
8	Karnataka	2069	1716	3785	86.2	75.9	81.2
9	Kerala	1679	1579	3258	101.1	101.2	101.2
10	Madhya Pradesh	4016	1898	5914	102.2	52.1	78.1
11	Maharashtra	5200	3900	9100	142.1	113.4	128.2
12	Manipur	108	109	217	108.0	107.9	103.3
13	Meghalaya	132	128	260	143.5	137.6	140.5
14	Nagaland	61	53	114	132.6	117.8	125.3
15	Orissa	2083	1310	3393	117.7	79.4	99.2
16	Punjab	1064	907	1971	109.7	100.2	105.1
17	Rajasthan	2349	1023	3372	94.3	43.2	69.4
18	Sikkim	30	26	56	166.7	144.4	155.5
19	Tamil Nadu	3528	3200	6728	130.7	126.0	128.4
20	Tripura	149	108	257	102.8	73.5	88.0
21	Uttar Pradesh	7092	4025	11117	97.0	58.4	78.3
22	West Bengal	4313	3417	7730	107.6	91.1	99.6
	Total (States)	47782	33536	81318	108.0	81.1	95.0
B. Union Territories							
23	A & N Islands	21	18	39	156.1	131.8	144.2
24	Arunachal Pradesh	49	24	73	122.5	61.5	92.4
25	Chandigarh	34	29	63	113.3	93.5	103.3
26	Dadra & Nagar Haveli	7	6	13	140.0	100.0	118.2
27	Delhi	3187	410	797	107.5	107.9	107.7
28	Goa, Daman and Diu	85	70	155	130.8	107.7	119.2
29	Lakshadweep	4	3	7	200.0	150.0	175.0
30	Mizoram	46	40	86	106.0	104.0	105.0
31	Pondicherry	42	40	82	123.5	114.3	118.8
	Total (UTs)	675	640	1315	117.4	107.4	112.3
	Total (States & UTs)	48457	34176	82633	108.1	81.5	95.2

Annexure 21.3

Subject : Enrolment in Classes VI—VIII—1979-80

Sl. No.	States/U.Ts.	Enrolment (in 000's)			Enrolment as % age of age group 11—14		
		Boys	Girls	Total	Boys	Girls	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. States							
1	Andhra Pradesh	537	275	812	27.8	14.8	21.4
2	Assam*	368	240	608	48.6	32.7	40.7
3	Bihar	1019	321	1340	41.0	13.8	27.8
4	Gujarat	699	403	1102	57.9	35.4	45.9
5	Haryana	320	110	430	62.7	24.4	44.8
6	Himachal Pradesh	122	54	176	87.8	37.8	62.4
7	Jammu & Kashmir	113	54	167	57.0	27.4	42.2
8	Karnataka	731	441	1172	55.2	34.7	45.2
9	Kerala	839	752	1591	91.8	85.3	88.6
10	Madhya Pradesh	937	299	1236	45.0	15.5	30.8
11	Maharashtra	1316	727	2043	58.8	33.7	46.5
12	Manipur	21	12	33	44.7	23.1	33.3
13	Meghalaya	19	17	36	44.2	36.9	40.4
14	Nagaland	23	18	41	100.0	78.3	89.1
15	Orissa	371	172	543	39.0	18.9	29.2
16	Punjab	407	254	661	68.4	48.4	59.0
17	Rajasthan	579	135	714	44.5	11.4	28.7
18	Sikkim	4	2	6	44.4	22.2	33.3
19	Tamil Nadu	1100	667	1767	64.9	41.2	53.3
20	Tripura	32	32	64	45.1	39.0	41.8
21	Uttar Pradesh	2120	672	2792	53.3	18.7	36.8
22	West Bengal	1010	674	1684	49.4	33.8	41.7
	TOTAL (States)	12687	6331	19018	51.5	27.2	39.7
B. Union Territories							
23	A & N Islands	5	3	8	90.9	51.7	70.8
24	Arunachal Pradesh	6	2	8	35.3	11.8	23.5
25	Chandigarh	11	8	19	73.3	61.5	67.8
26	Dadra & Nagar Haveli	1.2	0.6	1.8	40.0	17.1	27.7
27	Delhi	175	128	303	90.7	67.4	79.1
28	Goa, Daman and Diu	38	29	67	97.4	70.7	83.7
29	Lakshadweep	1.5	0.9	2.4	125.0	75.0	100.0
30	Mizoram	13	11	24	76.4	61.1	68.5
31	Pondicherry	18	14	32	90.0	66.7	78.0
	TOTAL (UTs)	268	197	465	82.2	63.5	74.7
	TOTAL (States & UTs)	12955	6528	19483	52.0	27.7	40.2

*The break up between boys and girls estimated.

Annexure 21.4

Subject : Enrolment Targets for 1984-85—Classes VI—VIII

Sl. No.	States-U.Ts.	Enrolment (in 000's)			Enrolment as percentage of age group 11-14		
		Boys	Girls	Total	Boys	Girls	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. States							
1	Andhra Pradesh	390	470	1260	40.7	25.5	33.3
2	Assam	493	365	858	58.7	43.9	51.3
3	Bihar	1319	521	1840	49.7	20.4	35.3
4	Gujarat	1050	663	1713	83.3	54.3	69.1
5	Haryana	380	170	550	75.2	36.4	56.6
6	Himachal Pradesh	150	80	230	107.9	56.3	81.8
7	Jammu & Kashmir	150	99	249	74.3	47.6	60.7
8	Karnataka	911	565	1476	64.6	42.5	53.9
9	Kerala	894	797	1691	89.4	85.7	87.6
10	Madhya Pradesh	1261	387	1648	54.8	18.1	37.1
11	Maharashtra	1600	880	2480	71.7	41.5	57.0
12	Manipur	40	43	83	72.7	72.9	72.8
13	Meghalaya	41	37	78	84.5	72.5	78.8
14	Nagaland	32	25	57	118.5	92.6	105.5
15	Orissa	507	271	778	50.2	28.5	39.7
16	Punjab	561	349	910	96.7	36.7	81.8
17	Rajasthan	804	235	1039	57.4	17.9	38.3
18	Sikkim	9	5	14	90.0	55.6	73.7
19	Tamil Nadu	1350	917	2267	79.4	57.7	68.9
20	Tripura	44	36	80	50.6	40.0	45.2
21	Uttar Pradesh	2540	1132	3672	60.9	28.8	45.3
22	West Bengal	1350	900	2250	58.3	41.1	49.9
	TOTAL (States)	16276	8947	25223	62.6	36.3	49.8
B. Union Territories							
23	A & N Islands	8	6	14	109.9	100.0	105.6
24	Arunachal Pradesh	9	6	15	45.0	30.0	37.5
25	Chandigarh	17	15	32	94.4	83.3	88.8
26	Dadra & Nagar Haveli	2.5	1.5	4.0	83.3	50.0	66.6
27	Delhi	214	155	369	97.3	70.8	84.0
28	Goa, Daman and Diu	51	36	87	127.5	87.8	107.4
29	Lakshadweep	1.5	0.9	2.4	150.0	90.0	120.0
30	Mizoram	23	20	43	102.0	98.0	100.0
31	Pondicherry	23	23	46	109.5	104.5	118.6
	TOTAL (UTs)	349	263	612	100.5	75.1	87.8
	TOTAL (States & UTs)	16625	9210	25835	63.1	36.8	50.3

HEALTH, FAMILY PLANNING AND NUTRITION

Sustained efforts towards promotion of health care services during the last 30 years have resulted in significant improvement in the health status of the country. The mortality rate has declined from 27.4 in 1941-51 to an estimated 14.2 in 1978. The life expectancy at birth has gone up from about 32 years as per 1951 Census to about 52 years during 1976-81. The infant mortality rate has come down from 146 during the fifties to 129 in 1976. The health infrastructure has been strengthened. The country has about 50,000 sub-centres, 5,400 primary health centres including 340 upgraded primary health centres with 30 bedded hospital, 106 medical colleges with admission capacity of 11,000 per annum and about 5 lakh hospital beds. The per capita expenditure on health incurred by the State has gone up from about Rs. 1.50 in 1955-56 to about Rs. 12 in 1976-77. The doctor population ratio though satisfactory on an average in the country (1977), varies widely from 1 doctor for 8333 in Meghalaya to 1 doctor for 1400 in Delhi. The bed population ratio has also improved but varies widely in urban and rural areas.

22.2 The country was declared free from smallpox in April, 1977. The National Malaria Eradication Programme initiated in 1958 had brought down the incidence of the disease to about 1 lakh cases with no deaths in 1965 although there has been a slippage in the subsequent years. The National Programme for Control of Leprosy, Tuberculosis, Filaria and Blindness have also helped to reduce mortality/morbidity.

22.3 National Programmes have also been initiated for promotion of maternity and child care such as immunization of expectant mothers against Tetanus and children against Tetanus, Whooping Cough, Diphtheria, Tuberculosis, Polio etc., besides prophylaxis against Vitamin 'A' and iron deficiencies. Programmes of improving the nutrition of mothers and children have also been taken up.

22.4 In the field of curative services some of the State Hospitals have built up specialised sophisticated services comparable with facilities available in some of the advanced countries for cardiac diseases, cancer and neurological, nephrological disorders.

HEALTH

Review

22.5 The programmes initiated in the earlier plans for control/eradication of major communicable diseases and for providing curative, preventive and promotive health services backed by training of adequate number of medical and para-medical personnel were strengthened further in the Fifth Plan, and in the subsequent annual plans. Provision of minimum health services in the rural areas was integrated with family planning and nutrition for vulnerable groups of population—children, pregnant women and lactating mothers. The programmes were aimed at:—

- (i) Increasing the accessibility of health services to rural areas.
- (ii) Correcting regional imbalances.
- (iii) Further development of referral services by removal of deficiencies in District/Sub-divisional hospitals;
- (iv) Intensification of the control/eradication of communicable diseases especially Malaria and Smallpox;
- (v) Qualitative improvement in the education and training of health personnel; and
- (vi) Development of referral services by providing specialist attention to common diseases in rural areas.

22.6 The Minimum Needs Programme was the main instrument through which health infrastructure in the rural areas was expanded and further strengthened to ensure primary health care to the rural population. The outlays earmarked for this programme were considered almost a prior charge on the Plan budget for medical and public health of the States. The facilities available in selected rural dispensaries were expanded to provide preventive and promotive health care facilities by adding the necessary health components. These functioned as subsidiary health centres. The following table shows the number of sub-centres, primary health centres and upgraded primary health centres with a 30 bed-

ded hospital set up by 31st March, 1980 *vis-a-vis* targets set for 1974-79 Plan:—

Table 22.1

(Nos.)

Programme	At the beginning of Fifth Plan 1973-74	Target set for 1974-79 Plan (cumulative)	Likely achievement by 31-3-1980 (cumulative)
Sub-Centres	33509	43836	50000
Primary Health Centres	5250	5351	5400
Subsidiary Health Centres	Nil	Nil	1000
Upgraded Primary Health Centres	Nil	Nil	340

22.7 The programme of conversion of health workers serving in vertical public health programmes like malaria control, TB control, smallpox etc., into multipurpose health workers through reorientation training was assigned a high priority. This programme initiated in about 183 districts out of 400 districts in the country was completed by 31st March, 1980.

22.8 In accordance with the recommendations of the Study Group on Medical Education and Support Manpower, (1975) two Centrally Sponsored Schemes *viz.*, (i) Community Health Volunteers and (ii) Re-orientation of Medical Education were initiated in 1977. The community health volunteers programme initiated in October 1977 had the objective of providing a trained community health volunteer selected by the community itself for every village or a population of 1000. Under the scheme of re-orientation of Medical Education, each medical college in the country was to adopt 3 primary health centres in the first phase with the twin objectives of providing a rural bias to medical education and also curative health care and referral facilities to the rural population covered.

22.9 In spite of several significant achievements, the health care system obtaining in the country suffers from some weaknesses and deficiencies. There has been pre-occupation with the promotion of curative and clinical services through city based hospitals which have by and large catered to certain sections of the urban population. The infra-structure of sub-centres, primary health centres and rural hospitals built up in the rural areas touches only a fraction of the rural population. The concept of health in its totality with preventive and promotive health care services in addition to the curative, is still to be made operational. Doctors and para-medicals are reluctant to serve in the rural areas. They are generally city oriented and their training is not adequately adapted to the needs of the rural areas particularly in the field of preventive and promotive

health. There has been over dependence on the States for health care measures and voluntary and local effort has not been able to take up responsibility in any significant measure. The involvement of the people in solving their health problems has been almost non-existent.

22.10 The incidence of malaria has shown an upward trend since 1965. There have also been reported cases of malaria caused by *Plasmodium falciparum* parasite accounting for some deaths. This type of malaria is also spreading from the North Eastern region where it originally occurred to other States. Resistance of this parasite to specific drugs has been reported. The vector mosquitos have also developed resistance to DDT and BHC in certain areas of Gujarat and Maharashtra. There has been incidence of Japanese Encephalitis in certain pockets.

22.11 Of an estimated 3.2 million leprosy patients in the country, 20 per cent are infectious and another 20 per cent suffer from various deformities. Curative and rehabilitative services for these are necessary.

22.12 Nearly 2 per cent of the total population in the country is estimated to suffer from radiologically active lesion of which 25 per cent are sputum positive and infectious cases. The control measures adopted under the T.B. control programme do not appear to have made any appreciable dent on the dimensions of the problem and the incidence of TB continues to be high.

22.13 According to the survey conducted by the Indian Council of Medical Research, out of an estimated 9 million blind persons in the country, about 5 million could be cured by proper surgical interference. In addition, 45 million persons were reported to be otherwise visually impaired. It was also observed that the existing backlog of 5 million cataract cases was likely to go up by another million new cases every year.

22.14 Maternal and infant mortality rates are still on a higher plateau compared to advanced and some developing countries. The decline in the sex ratio (females per 1000 males) from 946 in 1951 to 930 in 1971 indicates the need for greater attention to maternal and child health care. There are also considerable inter-State and regional disparities in health and medical care standards. The general position of the Scheduled Castes/ Scheduled Tribes and other backward classes is comparatively more unsatisfactory.

Policies and Strategy of Health Care Programme

22.15 An investment on health is investment on man and on improving the quality of his life. It is, therefore, well recognised that health has to be viewed in its totality, as a part of the strategy of human resources development. Horizontal and vertical

linkages have to be established among all the inter-related programmes like protected water supply, environmental sanitation and hygiene, nutrition, education, family planning and maternity & child welfare. Only with such linkages can the benefits of various programmes be optimised. An attack on the problem of diseases cannot be entirely successful unless it is accompanied by an attack on poverty itself which is the main cause of it. For this reason the Sixth Plan assigns a high priority to programmes of promotion of gainful employment, eradication of poverty, population control and meeting the basic human needs as integral components of the Human Resources Development Programme.

22.16 The country has adopted the policy of 'Health for all by 2000 AD' enunciated in Alma Ata Declaration in 1977. Alongwith this the long term objective of population stabilisation by reducing Net Reproduction Rate (NRR) to 1 by 1995 is to be achieved. The health care system in the country has to be restructured and re-oriented towards these policy objectives. The strategy to be followed over a period of 20 years upto 2000 AD, based on the recommendation of the Working Group on Health, will be as follows:

- (i) Emphasis would be shifted from development of city based curative services and super-specialities to tackling rural health problems. A rural health care system based on a combination of preventive, promotive and curative health care services would be built up starting from the village as the base.
- (ii) The infra-structure for rural health care would consist of primary health centres each serving a population of 30,000 and sub-centres each serving a population of 5,000. These norms would be relaxed in hilly and tribal areas. The village or a population of 1000 would form the base unit where there will be a trained health volunteer chosen by the community.
- (iii) Facilities for treatment in basic specialities would be provided at community health centres at the block level for a population of 1 lakh with a 30 bedded hospital attached and a system of referral of cases from the community health centre to the district hospital/medical college hospitals will be introduced.
- (iv) Various programmes under education, water supply and sanitation, control of communicable diseases, family planning, maternal and child health care, nutrition and school health implemented by different departments/agencies would be properly coordinated for optimal results.

(v) Adequate medical and para-medical manpower would be trained for meeting the requirements of a programme of this order and all education and training programmes will be given suitable orientation towards rural health care.

(vi) The people would be involved in tackling their health problems and community participation in the health programmes would be encouraged. They would be entitled to supervise and manage their own health programmes eventually.

The crucial indicators as at present and those desirable by 2000 AD are shown below:—

Table 22.2

Index	Present level	2000 AD Target
Infant Mortality Rate (per 1000 live birth)	129 (1976)	Below 60
Crude Death Rate (per 1000 population)	14.2 (1978)	9.0
<i>Life Expectancy at birth (in years)</i>		
Male	52.6 (1976—81)	64
Female	51.6 (1976—81)	64
Crude Birth Rate (per 1000 population)	33.3 (1978)	21.0
Net Reproduction Rate (NRR)	1.51 (1980—81)	1.0

In substance, a reduction of 5.2 points in the death rate and 12.3 points in the birth rate by 2000 AD would be the target for achievement. The rate of infant mortality is also to be reduced by more than 50 per cent and life expectancy raised to 64 years.

22.17 The expanded immunization programme and the programme of prophylaxis against iron and Vitamin 'A' deficiencies would be strengthened. The targets envisaged for Sixth Plan are indicated in Annexure 22.6. All the national public health schemes like Malaria control, Leprosy control, TB control etc., would be monitored towards the specific goal of adequate health care for all envisaged for the period 1980—2000 AD.

Rural Health Programme

22.18 The minimum needs programme in the State Sector would continue to be the main instrument for development of the rural health care delivery system. It will be supplemented by Centrally Sponsored Programme for training of medical and para-medical workers.

22.19 Minimum Needs Programme: Primary health centres at the rate of one for each community development block had been established by the end of Fifth Plan. It was also proposed to have one sub-centre for 10,000 population and upgrade one out of every four selected primary health centres to a 30 bedded rural hospital to serve as a first link in the chain of referral services. Full coverage of the backlog of primary health centres and sub-centres buildings were also contemplated in the Fifth Plan. Although the progress of setting up of primary health centres has been satisfactory, many of them are not having necessary buildings and other facilities. The sub-centre programme has been proceeding very slow. These programmes would, therefore, be accelerated over the successive plan periods to achieve by 2000 AD the objective of establishing one primary health centre for every 30,000 population or 20,000 in tribal and hilly areas and one sub-centre for every 5,000 population. As against the earlier policy of setting up a 30 bedded rural hospital by upgrading one out of 4 primary health centres, a community health centre will be established for a coverage of 1 lakh population with 30 beds and specialised medical care services in gynaecology, paediatrics, surgery and medicine.

22.20 Keeping in view the training capacity of ANMs and other para-medicals and the constraint of financial resources, it is proposed to establish 40,000 additional sub-centres during 1980—85 Plan raising the number of centres to an estimated 90,000 against the total requirement of about 1,22,000 centres *i.e.* 74 per cent coverage on the basis of Mid 1984 estimated population. 600 additional primary health centres will be set up in areas where mostly the existing primary health centres cater to a relatively larger population on present norms. Out of these, over 100 primary health centres are expected to be located in tribal and hill areas. In addition, 1000 out of the existing rural dispensaries will be converted into subsidiary health centres to accelerate the promotion of promotive and preventive health care facilities. These will be eventually converted into primary health centres. There will thus be 6000 primary health centres and 2000 subsidiary health centres (1000 existing+1000 new proposed) by 1984-85 against the total requirement of about 18,560 centres. Coverage of backlog construction works of sub-centres, primary health centres buildings and staff quarters, besides construction works of new units to the extent possible within the available resources will be aimed at during the Plan period. 174 primary health centres will be upgraded to Community Health Centres with 30 bedded hospital in addition to completion of construction works of upgraded primary health centres already taken up. These will be converted into community health centres, emphasising the public health aspects.

22.21 Centrally Sponsored Schemes: The minimum needs programme will be supported by the Centrally Sponsored Schemes of Community Health Volun-

teers, Employment and Training of Multi-purpose Workers and Re-orientation of Medical Education which are all continuing schemes.

22.22 The community health volunteers scheme is yet to be evaluated fully, although two quick evaluations have been made. There are about 1.40 lakh community health volunteers in field as on 1st April, 1980. It is proposed to extend the programme further during the 1980—85 Plan to add another estimated 2.20 lakh community health volunteers raising the total number to 3.60 lakhs by 1985, with a view to cover the whole country. The States of Jammu & Kashmir, Kerala, Tamil Nadu and the Union Territories of Arunachal Pradesh and Lakshadweep Islands are implementing alternative schemes of health care at the grass roots level. An in-depth evaluation of the Centrally Sponsored Community Health Volunteers Scheme as well as these alternative schemes will be made to develop, if necessary, a modified scheme to promote health consciousness among the rural people and provide a link between them and the primary health centres.

Training of Multi-purpose workers is expected to be completed by 1983.

22.23 The Re-orientation of Medical Education Scheme was initiated with the twin objective of providing curative health care facilities to the rural people and giving a rural bias to medical education. The 106 medical colleges in the country were provided each with three mobile clinics obtained from the UK Government for the purpose. The scheme provides for one-time assistance to the medical colleges for meeting a part of the recurring and non-recurring costs, the State Governments meeting the required additional non-recurring and recurring costs. The scheme will be continued in the Plan and each medical College would cover a whole district in due course.

22.24 Schemes to train public health and para-medical workers will be taken up in the Plan since at present there is dearth of trained workers in various fields and the present training courses and curricula are also not standardised in some cases. The requirements of various categories of personnel would be identified and training programmes mounted for the required number. Full advantage would be taken of the 10+2 system and para-medical courses would be introduced in that system to the extent possible.

Control of Communicable Diseases

22.25 Next to rural health, the control of communicable diseases will be given priority.

22.26 Diseases like TB, Gastro-intestinal infections, malaria, filaria, infectious hepatitis, rabbies and hook worm are inter-related to environment.

They accounted for 17.2 per cent of morbidity and 20.8 per cent of mortality in 1970. Other preventable diseases like diphtheria, whooping cough, polio and tetanus accounted for 1.0 per cent of morbidity and 0.4 per cent of mortality. Improvement of environmental sanitation and expanded immunization programmes coupled with improved preventive and promotive facilities through the network of hospitals, community health centres and sub-centres would be the main strategy for control/eradication of the communicable diseases.

22.27 The ongoing programmes of control/eradication of communicable diseases like malaria, filaria, leprosy, TB would be further intensified and fully integrated with other health care programmes to ensure effective reach of these services through a network of multi-purpose health workers under the supervision of medical officers at the primary health centres. Efforts would also be made for involvement and participation of the community in the programmes. Research and training components of these programmes would be stepped up towards the objective of developing more effective alternate approaches to control of these diseases.

22.28 The details of the programmes are briefly indicated below:—

(i) *Malaria*: Keeping in view the current status of malaria as discussed earlier, the modified operational plan of control initiated in 1977 will be implemented vigorously. The salient features of the Plan are:—

- Re-organisation of malaria units to conform to geographical boundaries of the district for better supervision by the Chief Medical Officer of the District entrusted with the responsibility to implement the programme;
- Linking residual insecticidal spray with incidence by continuing spraying in areas with an annual parasite index (API) of 2 or more per 1000 population;
- Full surveillance including focal spraying in areas with an API less than 2;
- Priority attention to *P. falciparum* infection;
- Assured supply of required quantity of anti-malarial drugs through community health volunteers, sub-centres, primary health centres, panchayat agencies, school teachers etc.
- Multi-media publicity to arouse public awareness and participation; and
- A step up in research effort both in the laboratory and field.

A large allocation of over Rs. 400 crores has been made in the Plan for control of malaria. Research on immunological and therapeutical aspects of Japanese

Encephalitis and *P. falciparum* infection would be intensified.

(ii) *Filaria Control*: Experimental studies have been initiated in the selected pockets of the country for evolving an effective strategy to control the disease in rural areas. These studies will be further intensified so as to evolve a suitable strategy by 1985 to protect the rural population susceptible to Bancrofti filariasis. Filaria and malaria control measures would be integrated into a composite programme for maximum utilisation of available resources and effective implementation in urban areas.

(iii) *Leprosy*: The leprosy control programme will be intensified in the Plan towards the objective of its eradication as early as possible. The programme will be directed towards the following objectives:

- (a) To cover the entire endemic population of the country to the extent of 90 per cent by 1985 and 100 per cent by 1990 with a corresponding step up in disease arrested cases from present level of 20 per cent to 40 per cent in 1985 and 60 per cent in 1990.
- (b) To introduce newer drugs, multi-drug therapy and specially supervised treatment of infectious cases and epidemiological surveillance by a network of early detection measures.
- (c) To provide medico-surgical facilities to leprosy patients for rehabilitation through reconstructive surgery, physiotherapy, occupational therapy, jobs and tools adoption etc.
- (d) To improve and extend training facilities in leprosy through training centres. Regional Leprosy Training-cum-Referral Institutes and workshops.
- (e) Encourage the participation of voluntary agencies through financial support. Public education and mass publicity will be stepped up to remove the social stigma attached to the disease.

(iv) *Control of Visual Impairment and Blindness*: Among the major causes responsible for visual impairment and blindness, cataract accounts for 55-58 per cent followed by trachoma and other eye infections 20-22 per cent. The balance is due to injuries, malnutrition and other causes. Under the Centrally Sponsored Scheme, Ophthalmic treatment facilities in primary health centres, rural hospitals and District hospitals will be improved. Provision will be made for mobile units and strengthening of ophthalmic departments in selected medical colleges and regional ophthalmic institutes. Comprehensive eye health care facilities through the strengthened infrastructure should help reduce blindness in the country from the present 1.4 per cent to about 1 per cent by 1985.

(v) *Control of other diseases*: Measures for control and prevention of TB and Cholera, and maintenance

of zero incidence of small-pox would be continued. The Centrally Sponsored Scheme concerning Sexually Transmitted Diseases programme will be integrated with general health care facilities provided through the State Plans with effect from 1981-82. Goitre is one of the deficiency diseases which will be tackled in the identified endemic pockets. Attention will be paid to vector borne diseases which are gaining in importance in the areas covered by major irrigation projects.

Hospitals and Dispensaries

22.29 Except in the national capital and selected centres like Chandigarh and Pondicherry, E.S.I. and Central Government Health Service Scheme, hospitals and dispensaries are under the control of the State Governments/Union Territory Administrations. The facilities in the hospitals of the medical colleges/district levels have in the past been improved and upgraded systematically to cater to the requirements of curative services. In selected hospitals and institutions, super-specialities have also been set up. These facilities are expected to provide curative facilities to the rural population on an increasing scale under the scheme of referral services. Further development of these hospitals would be with reference to felt needs of the region. Measures will be taken for efficient management of the hospitals through consolidation of existing facilities and proper maintenance of equipment and establishment of convalescent homes, poly-clinics and Dharamshalas in the vicinity of hospitals to help reduce pressure on hospital beds would be encouraged.

22.30 Super-specialities will be developed only to the limited extent necessary to meet the regional requirements and to fill in critical gaps.

22.31 The rural dispensaries set up by the State Governments will be gradually oriented towards total health care instead of providing curative facilities only. A good number of them are being converted into subsidiary health centres in the Sixth Plan as already discussed under the minimum needs programme.

Medical Education

22.32 *Under-graduate Medical Education:* From the 106 medical colleges existing at present in the country, an estimated 11,000 doctors pass out every year. In view of the increasing unemployment of medical graduates and also the imbalance in the ratio of doctors to para-medical workers, the policy of the Government is not to increase the number of medical colleges or the intake capacity. The emphasis would be on bringing about qualitative improvement in medical education and training. Despite the high yearly outturn of medical graduates and growing unemployment among them, in several States there are no doctors available to serve in the rural primary health centres/hospitals. This phenomenon can be explained only by the fact that many of the young medical graduates, by their background, training and career ambitions find themselves out of place in a rural set up.

22.33 It will, therefore, be necessary in the years ahead to reorient medical education to meet the requirements of rural areas. The Centrally Sponsored Scheme of Re-orientation of Medical Education would be continued and the present deficiencies noted in the implementation of the schemes set right. The Medical Council of India has also prescribed service in rural medical institutions for six months as part of the compulsory internship. In addition, reforms in other directions like modification of the curriculum, training of medical under-graduates in certain fields relevant to the problems of rural health care, community orientation etc., would be necessary. These would be given adequate attention in the Sixth Plan.

22.34 Besides providing incentives to government doctors to serve in rural areas, it would also be necessary to encourage private practitioners to settle in the rural areas so that their services could supplement the efforts of Government in the field of rural health. This would also correct the situation where almost every medical graduate, who comes out, looks up to Government to provide him with a job. In fact, it is precisely this situation that has contributed to growing unemployment amongst doctors in some States and not lack of opportunities for service. The nationalised banks have already a scheme for providing financial assistance to professionally qualified people for self-employment including doctors. Efforts would be made to ensure that adequate number of medical graduates are enabled to avail of this assistance. The Government of Andhra Pradesh have initiated a scheme under which some allowance is provided to medical practitioners who settle down in a village where there is no doctor and provide part-time service at the nearest sub-centre. The Tamil Nadu Government have taken up the Mini-health Centre Scheme under which financial assistance is provided to voluntary organisations which provides medical care facilities at the village level through doctors employed on part-time basis. Based on the experience gained from such schemes, suitable steps can be taken to promote the settling of doctors in rural areas.

22.35 *Post-Graduate Education:* Post-graduate Medical Education would be rationalised to effect a balance between the national requirements of specialities and advanced opportunities for medical graduates.

22.36 The National Academy of Medical Sciences will be strengthened and assisted to fulfil the objective of improving the quality of post-graduate level medical education.

22.37 *Improvement of Skills:* Continuing education and inservice training facilities will be promoted to help updating the knowledge of service doctors, improve the skills of teaching doctors and familiarise them with modern advances in medical sciences.

22.38 *Improvement of facilities:* Deficiencies in terms of equipment, "teaching beds", buildings, laboratory staff etc., in the existing medical college hospitals would be assessed and steps taken to overcome these deficiencies under a phased programme within the available resources.

Medical Research

22.39 The current health status of the country discussed earlier calls for vigorous research efforts in several problem areas. Research on Bio-medical and public health problems, particularly communicable diseases call for a high priority. There are also areas such as economic aspects of health administration and management, contraceptive methods and family planning which need attention.

22.40 Task oriented research programmes in the following fields would be initiated towards the above objectives:

- (i) Promotion of research on epidemiological, microbiological and immunological approaches towards control of communicable diseases accounting for major causes of morbidity and mortality.
- (ii) Research in curative practices like rehydration towards the control of diarrhoeal diseases especially among children.
- (iii) Research in the field of nutrition, metabolic problems, food production, processing, preservation and distribution.
- (iv) Research in the field of drugs for various non-communicable diseases, keeping in view the aspects of quality, safety, toxic effects etc.
- (v) Close and continuous studies in the area of information support, manpower development, appropriate technology, management and community involvement to ensure the reach of benefits of primary health care programmes to the rural population.

22.41 Besides the Indian Council of Medical Research which would play a pivotal and coordinating role in medical research, other institutions such as the All India Institute of Medical Sciences, New Delhi; Post-Graduate Institute, Chandigarh; National Institute of Communicable Diseases, Delhi; A.I.I.H. & P.H. Calcutta; JIPMER, Pondicherry under the control of the Health Ministry would also continue to be engaged in relevant research work. Adequate funds for research have been earmarked for the activities of the Indian Council of Medical Research and other institutions under the control of the Health Ministry.

22.42 Cancer research and treatment facilities will continue to be developed through a net-work of early detection centres, cobalt units and development of selected regional research and training centres.

Traditional Systems of Medicine and Homoeopathy

22.43 In recent years some attention has been paid to development and popularisation of traditional systems of medicine like Ayurveda, Siddha, Unani and Homoeopathy. There are certain States where each individual system enjoys prestige and popularity such as Ayurveda in Kerala and Siddha in Tamil Nadu.

22.44 Each of these systems has now a Central Council and an attached Research Council. Centrally Sponsored Schemes were initiated in the past for providing grants-in-aid to States for promotion of post-graduate education and establishment of pharmacies with Government of India providing 100 per cent financial assistance. These will be continued.

22.45 The State Governments have also schemes for development of medical education, setting up hospitals and dispensaries under these systems.

22.46 There is need for coordinated efforts for further research for providing drugs for communicable diseases like Malaria, T.B. etc. as also for such other diseases like cancer, diabetes etc. The traditional system can also contribute to the national effort for finding effective methods of contraception.

22.47 It would be necessary to take steps in the following directions:

- (i) Prevention of the growth of sub-standard teaching institutions under these systems.
- (ii) Adequate financial support to existing recognised institutions for improving the quality of teaching and research.
- (iii) Introducing modern and scientific methods of investigation and equipping students with adequate knowledge of subjects like physiology, pathology, anatomy etc.
- (iv) Developing curative facilities under these systems through hospitals and dispensaries and involving them in public health activities also.
- (v) Co-ordinating all research efforts to ensure purposive and fruitful research.
- (vi) Standardising the pharmacopoeia and production of quality drugs.

Drug Control and Prevention of Food Adulteration

22.48 Effective measures will be taken for balancing demand and supply of essential and life saving drugs. Vaccine production units will be strengthened to meet the requirements of the country. The pattern of drug production/import and distribution system would be rationalised towards the objective of promoting primary health care and to overcome the short supply of inexpensive anti-infective drugs like Sulphenimides, anti-TB drugs, anti-leprosy drugs like Depsone etc. Measures like cheap packing, marketing by generic-names in preference to brand names and transfer of advantage of exemption from customs/excise duty on drugs to the consumers etc., would be pursued. The infrastructure for testing drugs would be strengthened to ensure that public health is not endangered by spurious/harmful drugs.

22.49 The problems of drug addiction particularly among the student community is causing concern. The problem will be tackled through psychiatry departments of medical colleges in the country and through

deaddiction centres in problem pockets of urban areas for which a new scheme has been included in the Plan.

Prevention of Food Adulteration

22.50 Although the Prevention of Food Adulteration Act has been on the Statute Book from 1954, its enforcement had many shortcomings. There was lack of adequate number of trained inspectors and laboratory facilities for analysis. The administrative machinery was weak. By and large, the municipalities were discharging this responsibility. In recent years, some States have shown greater interest in implementing the Act vigorously by establishing separate Departments for Food and Drug Administration, while others have established a separate Food Wing under the Directorate of Health Services. Under a Centrally Sponsored Scheme, the States were assisted for strengthening their Combined Food and Drug Testing Laboratories and training of Analysts and Food Inspectors. The scheme is now being continued in the States Sector and the State Plans include provision for strengthening of these laboratories, setting up of new laboratories, training and appointment of additional staff, etc. There are four regional laboratories under the Central Government located at Calcutta, Ghaziabad, Mysore and Pune to serve as referral laboratories.

22.51 Since consumption of adulterated and sub-standard food is a major health hazard, stringent measures for implementation of the Act will be taken. This will be facilitated by the expanded testing facilities and inspectorate staff provided under the States/Union Territories Plans. The Central Government would continue to lay down the standards for various items of food in consultation with the Central Committee for Food Standards headed by the Director General of Health Services. The Central Laboratories would be adequately strengthened.

Health Education

22.52 Since education has an important role in promoting concepts of health and prevention of diseases health education would be included in the curriculum of school education. It would also be made part of informal systems of education such as workers' education programme, farmers' education programme, etc. Education Bureau in States and at the Centre would effectively coordinate health education promotion activities.

22.53 The school health programme for periodical check up of school going children and attention to their deficiencies and diseases is an important programme which has to be integrated with the programme of nutrition. These programmes have been included in the State Sector to the extent resources permit.

Health Information Systems

22.54 It is necessary that health care facilities are supported by an improved health information system. The machinery in States and at the Centre would be adequately streamlined to ensure a systematic review and evaluation of the on-going programmes.

22.55 The system of collection of statistical data on health at the Central and States levels will be improved so that reliable data base for proper health planning is available. The States are also to strengthen their official machinery for recording and maintaining vital statistics under the Registration of Births and Deaths Act, 1969.

22.56 Physical targets envisaged under the rural health programme and major schemes of control of communicable diseases are given in Annexures 22.3 and 22.4 respectively.

Outlays

22.57 Resources allocated for different schemes vis-a-vis the corresponding outlays provided in the Fifth Five Year Plan (1974—79) are indicated in Annexure 22.1.

The outlays for the States and Union Territories Plan under the Health Sector are shown in Annexure 22.2, which include provision for the States' share of Centrally Sponsored Schemes also.

FAMILY PLANNING

22.58 According to the estimates of the Expert Committee on Population Projections, the population of the country as on 1st March, 1980 stood at 659 million recording a growth of 83 per cent over the 1951 Census figures. The growth rate of population was 1.9 per cent during 1978 alone. This large addition to the population has been the result of a sharp decline in the death rate coupled with a much slower decline in the birth rate. The death rate in the country declined from 27.4 per thousand population in the forties to 14.2 per thousand population in 1978, while the birth rate declined at a much slower rate from 41.2 per thousand population in the sixties to 33.3 per thousand population in 1978. The birth rate is still as high as 40.4 per thousand population in Uttar Pradesh while it is 25.2 per thousand population in Kerala which is the lowest for the States in the country. Uttar Pradesh has also the highest death rate of 20.2 per thousand population while Kerala has a death rate of 7 per thousand population establishing the close inter-relation between fertility and mortality rate. An analysis of the position in respect of other States also by and large supports the nexus between low mortality rate and low birth rates. The other important socio-economic factors influencing fertility rates are higher level of literacy and education, more particularly female education, better status enjoyed by women and greater availability of employment opportunities to them.

Review

22.59 Although the official Family Planning Programme was introduced in the First Five Year Plan in 1952, it gathered momentum only in 1966-67 when the programme was made target-oriented and time bound. Since then, the objective of stabilising the growth of population over a reasonable period of time

has been accorded a high priority in the Plans. The strategy proved to be successful as judged from the fact that there was a reduction of 8 to 9 points in the birth rate between 1966 to 1978. Unfortunately the Family Planning Programme received a set back in recent years. The Fifth Plan objective of reducing the birth rate from 35 per thousand population at the beginning of the Plan to 30 per thousand population by 1978-79 could not be achieved. In fact, the level of effective family planning couple protection has come down from 23.9 per cent in 1976-77 to 22.5 per cent in March, 1980. This trend needs to be arrested and reversed especially in the background of an increase in the population in the reproductive age-group.

22.60 (The non-attainment of the birth rate targets adopted in the Plans is largely on account of our inability to carry forward the programme throughout the country with the active involvement of the people.) Public enthusiasm and community participation in the programme which is necessary for its success has not been generated in adequate measure. This programme is still viewed by the public as a routine governmental activity. Some voluntary organisations have no doubt done creditable work in the field of family planning, but their out-reach is mostly confined to the urban areas. There is need for projecting the programme as a peoples' programme backed by support from governmental and non-governmental agencies. Inadequacy in infrastructure available for implementation of the programme has also been partly responsible for the slow progress of the programme. In some cases, even the infrastructure available had not been put to effective use or properly maintained. There were shortages of trained manpower under the schemes of appointment of multi-purpose workers and maternal and child health which are so important to the programme. The performance of the family planning staff in motivational work on the basis of well-maintained and updated eligible couple registers, left much to be desired.

22.61 Apart from the constraints on the supply side, the generation of necessary acceptance in favour of the small family norm proved to be a far more elusive problem. Quite a large segment of the population is steeped in poverty, bound by traditional value systems. Certain sections have no doubt adopted the small family norm, but their number is small. A large majority of the population has not been adequately motivated and made aware of the benefits of a small family. The communication channels, both formal and informal including the educational system, have by and large not succeeded entirely in imparting the knowledge and information which the community needs.

22.62 The prevalent high rates of mortality in general and very high infant mortality in particular is inhibiting acceptance of family planning and creating a psychological barrier against the programme. The estimates of infant mortality for 1976 available from the Sample Registration Scheme (SRS) of the Registrar General of India shows that this rate is still as high as 139 in rural areas, 80 in urban areas and 129

for the country as a whole. The pre-school death rate among 0-4 age group is also around 51 per thousand population.

Objectives of the Sixth Plan

22.63 The Working Group on Population Policy set up by the Planning Commission has recommended the adoption of the long-term demographic goal of reducing the net reproduction rate (NRR) to one by 1996 for the country as a whole and by 2001 in all the States from the present level of 1.67. The implications of this are as follows:—

- (i) The average size of the family would be reduced from 4.2 children to 2.3 children.
- (ii) The birth rate per thousand population would be reduced from the level of 33 in 1978 to 21.
- (iii) The death rate per thousand population would be reduced from about 14 in 1978 to 9 and the infant mortality rate would be reduced from 129 to 60 or less.
- (iv) As against 22 per cent of the eligible couples protected with family planning at present 60 per cent would be protected.
- (v) The population of India will be around 900 million by the turn of century and will stabilise at 1200 million by the year 2050 AD.

22.64 Keeping in view the long-term demographic goal of reducing NRR to 1 by 1995 as approved by the National Development Council, the following targets have been envisaged for the Sixth Plan keeping in view the past performance, present capacity and future potential:—

Table 22.3

Year	Family Planning Expectations/ Levels of Achievement		Percentage of couples protected		
	(in million) Sterilisation	IUD	Eq. C.C. and oral pill users	Currently	Effectively
(1)	(2)	(3)	(4)	(5)	(6)
1980-81	3.00	0.80	5.50	27.21	24.74
1981-82	4.00	1.10	5.50	29.07	26.63
1982-83	4.50	1.50	7.00	32.51	29.46
1983-84	5.00	2.00	9.00	36.72	33.69
1984-85	5.50	2.50	11.00	41.20	36.56
Total for Sixth Plan	22.00	7.90			

22.65 The number of sterilisations which were around 1.74 million in the base year (1979-80) will go up to 5.50 millions in the terminal year of the Plan. The number of IUD insertions will go up from 0.62 million in 1979-80 to 2.50 million in 1985. The percentage of effective couple protection envisaged by 1985 is 36.56 against the present 22.5. This calls for a tremendous motivational effort backed by adequate infrastructural facilities which have to be taken care of in the Plan. It needs mention in this context that a total of 15.5 million sterilisations will be required during the Plan period 1980—85 for maintaining the birth rate at the existing level, assuming present levels of IUD and CC Users. This is because the proportion of women in the reproductive age will be rising. Even if, age-specific fertility rates are held constant, the birth rates will rise unless matched by vigorous family planning promotional efforts.

Strategy and Programme

22.66 It is almost axiomatic that economic development can in the long run bring about a fall in fertility rate. However, developing countries with large populations cannot afford to wait for development to bring about a change in the attitudes of couple to limit the size of families as the process of development itself is stifled by population growth. An important facet of the present demographic situation in the country, is the young age structure of the present population. Nearly 40 per cent of the people are below the age of 14 years, denoting a high dependency ratio which is a heavy burden on the bread winner. It also means a high potential for rising trends in growth of population in future. Limiting the growth of population is, therefore, one of the main objectives of the Sixth Plan. This has to be achieved through persuasion of people to adopt the small family norm voluntarily backed by appropriate programmes of supplies and services for contraception. The Family Planning Programme has also to be made a part of the total national effort for providing a better life to the people. The Plan seeks to make a massive attack on the problem of unemployment and poverty through specific programmes directed towards the target groups such as small and marginal farmers, rural artisans, landless labourers, women, scheduled castes and scheduled tribes etc. A National Rural Employment Programme is being initiated to promote gainful employment to landless labourers and marginal farmers families. Under these programmes the household will remain the basic unit of poverty eradication. Economic emancipation will enable for children from poor families to attend school to receive adequate nutrition and develop into useful citizens. Special attention will be paid to the education and employment of women and to liberate them from dependence and insecurity and improve their social status.

Involvement of all Ministries/Departments

22.67 Family Planning Programme must rise above all controversies and should be accepted as a national programme by all sections of the population. A

national consensus on this subject has therefore to be developed.

22.68 Family Planning cannot be the sole responsibility of any one Department but of Government as a whole. The areas of useful activity in each Ministry/Department in relation to family planning will have to be identified, spelt out in precise terms and responsibility for these activities squarely fixed on the Ministries/Departments concerned.

Integrated approach and co-ordination of activities

22.69 An integrated approach to the problems of public health and proper coordination of activities of different departments having a bearing on family planning such as maternal and child care are necessary. The Minimum Needs Programme under Health, in particular offers a good infrastructure for promoting the family planning work through proper co-ordination. At the District level, the Collector could be made responsible for effecting the linkages and ensuring co-ordination at the district and lower formations.

Role of Education

22.70 The role of education, specially female education, in reducing fertility is evidenced in our own country by the example of Kerala. Stress has, therefore, to be laid in increasing the enrolment in the high schools and minimising dropouts. At the high school stage a proper syllabus on health and reproductive biology should be introduced. The high school curriculum has to be suitably revised to incorporate this. Considerable work has already been done by NCERT in this regard; this has to be followed up. Education on health and biology of reproduction has to be imparted through all channels of formal and informal education including technical education, professional education, adult education, workers education and farmers education.

Extension Education and Motivation and Involvement of Officials and Voluntary Agencies

22.71 Given its limitations the official extension machinery alone cannot be expected to meet fully the requirements of a programme of mass contact and motivation like family planning. Besides the official extension agencies, all channels of communication available including youth organisations, mahila mandals, voluntary organisations etc., should be fully exploited. The schemes of community health volunteers and training of opinion leaders offers a good potential for communication. The services of the village "Dai" who is in constant touch with rural women, could also be usefully availed of and training programmes for them could be strengthened. The Panchayati Raj Organisations and other local bodies and cooperatives which have a democratic base also offer a useful channel for motivation and for reducing the gap between awareness and acceptance of family planning, as also the gap between acceptance and actual services provided.

The role of the mass media in propagating family planning is crucial. The potential of the mass media such as Radio, TV, Cinema and newspapers will be fully exploited.

Incentives

22.72 The scheme of providing financial assistance to acceptors of sterilisation and IUD by way of compensation for loss of wages will be continued during the Plan period.

Delivery of Services

22.73 The promotion of family planning has to be viewed as an essential component of the total package of health delivery system which includes Health, Family Planning and Maternity & Child Health. The Health & Family Planning infrastructure has to be strengthened towards realisation of these objectives. The Working Group on Health for the Sixth Plan 1980—85 has identified the infrastructure that will be required for the purpose by 2000 AD which has been discussed under Health. In the past, the States have been slow in setting up the sub-centres which are very crucial for the Family Planning Programme, since services like IUD and supplies could be provided to the rural population from these sub-centres. In order to give an impetus to the Family Planning Programme, new sub-centres to be set up in the Sixth Plan would be financed from the budget of Department of Family Planning at the Centre. Keeping in view the importance of rural health infrastructure for the Family Planning, concerted efforts would be made to build up Sub-centres, Primary Health Centres and the Community Health Centres under the Minimum Needs Programme.

Maternity and Child Health Care

22.74 High morbidity and mortality rates among infants and mothers are generally believed to be responsible for the desire for more children. The aim would be to bring down these rates through improvement of health and nutrition status and through various extension programmes of immunisation, prophylaxis, supplementary nutrition and health care services. Diarrhoeal and respiratory diseases being largely responsible for infant morbidity and mortality, ensuring protected water supply to every village and town and also improvement of personal hygiene and environmental sanitation will receive high priority. The school health programme will be strengthened to cover all school going children in due course.

Choice of Methods

22.75 Facilities for all methods of family planning will have to be made available on a wider scale and at all levels. Apart from sterilisation, the non-terminal methods like IUD, CC and Oral Pills have to be popularised, since a large number of young couples will prefer these methods. While the choice of methods would be left to the couples avoiding any form

of coercion, it has to be ensured that facilities and supplies under different methods are made available on an adequate scale. There is also need to remove any misapprehension in the minds of the people about safety in accepting any particular method. Proper follow up of the women accepting different methods like IUD and oral pills is important for timely intervention in case of any complications. Adequate follow up of sterilisation cases also is necessary since any accidental mishap may give a set-back to the programme. Continuous contact of family planning staff with the couples in their area is necessary. An arrangement similar to the Training and Visit System in agricultural extension may be usefully adopted by the family planning staff.

Research Programmes

22.76 No major break-through in contraceptive technology is expected in the immediate future. However, bio-medical research in family planning is important and has to be continued and intensified. In identifying areas of bio-medical research, indigenous methods and practices which have been and are still in vogue have to be examined and evaluated under the research programmes. Socio-economic research relevant to family planning promoting/family planning hampering factors has also to be undertaken. Research in the field of communication and development of the information system for identification of weak spots in the programme has also to be organised.

Staff Motivation

22.77 The staff engaged in family planning work has been generally found to be lacking in enthusiasm. Their job is rather a difficult one as they have to bring about almost a revolution in the thinking and outlook of the people. Their motivation needs to be improved by systematising their work and improving their efficiency by proper training, close guidance and supervision. They could be rewarded for good work. They should also be given the status of permanent government servants as their temporary position creates a sense of insecurity. The present wastage of trained manpower, more particularly ANMs, should be avoided.

Legal provisions

22.78 The Medical Termination of Pregnancy (MTP) Act, which is in force now, is in the nature of health measure and family planning is not one of its objectives. However, MTP, can be resorted to as a corrective method for failure of contraceptives. The existence of this Act and the benefits that can be derived are still not fully known. This needs widest publicity.

22.79 One powerful means of achieving planned parenthood is delayed marriages. Apart from enforcing the law relating to the minimum marriage age for girls and boys, social pressure of the community against early marriages should be built up by appropriate means.

Outlays

22.80 The annual financial allocations and expenditure during 1974-80 and outlays by major items for the Sixth Plan are given in Annexure 22.5. The States would continue to get financial assistance from the Government of India on 100 percent basis.

22.81 Besides continuation and strengthening of the existing activities, provision has been made in the Sixth Plan for completion of incomplete buildings and construction of 1100 new buildings for Rural Family Planning Centres, establishment of 51 Rural Family Planning Centres, 40,000 new sub-centres along with 10,000 female health supervisors, 800 urban family planning centres, 30 post-partum centres at district level and 300 post-partum centres at sub-divisional/taluka level hospitals and procurement of 700 additional vehicles. Certain geographical areas where family planning was lagging behind have been identified for mounting of special health and family planning efforts under the 'Area Projects' which will cover 12 States and 46 districts. New schemes of involvement of voluntary organisations in family planning work and expansion of the capacity of Hindustan Latex Ltd., have also been included in the Plan.

22.82 The expanded programme of immunisation against Polio, Tuberculosis, Typhoid and Measles will be continued and further strengthened. Programmes of immunisation and prophylaxis of mothers and children will also be continued. The training of local birth attendants (Dais) for ensuring safe deliveries will be completed to have one trained 'Dai' for 1000 population. The training programme of ANMs will also be strengthened to meet the requirements of ANMs for the expansion of the sub-centre programme.

22.83 Performance figures and targets in regard to Family Planning and MCH programme are given in Annexure 22.6.

NUTRITION

22.84 The problem of malnutrition is widely prevalent across the various socio-economic groups, particularly among those below the poverty line, landless agricultural labourers, people in slum and remote tribal areas and those who are affected by constant calamities like drought are more vulnerable to this phenomenon. Children, pregnant women and nursing mothers are seriously affected by malnutrition and the damage they sustain would be irreversible. However, not all children below the poverty line with lower energy intakes and body weights are necessarily mal-nourished. Lack of employment opportunities, illiteracy, safe drinking water, health facilities and unhealthy environments further lower the quality of life and aggravate the morbidity patterns. Inequality of incomes, weak public distribution system, insufficient clothing and housing aggravate these conditions further. Therefore hunger, malnutrition and the associated disorders are closely linked with these aspects.

22.85 In spite of considerable expansion of public health and medical facilities all over the country, infant mortality rate continues to be very high and the morbidity pattern persists. Infant mortality rate varies widely between rural and urban areas, male and female children and across different areas and socio-economic strata. Nearly 60 per cent of infant deaths take place at neo-natal stage. Besides, causes peculiar to infancy, fevers, respiratory and digestive disorders are mainly responsible for high infant mortality. Socio-economic imbalances in the distribution of incomes, low purchasing power, mal-distribution of essential food commodities, inadequacy of calories, proteins and other micro nutrients in average diets, limited access to medical and public health facilities, lack of knowledge about the balanced nutrition and hygiene, lack of safe drinking water and sanitation are some of the reasons responsible for high mortality rate and morbidity patterns that are prevailing in the country.

22.86 The estimates of the percentage of population whose calorie-intake is below that of recommended level vary considerably due to the differences in methodology and the adoption of different norms for the levels of intakes. Some of the studies show that the average energy intake is less than that of the recommended level in about 50 per cent of the population. Others have pointed out that all those who consume less than the suggested norms need not necessarily be mal-nourished. The extent of malnutrition, according to these studies, would be in the range of 15 to 30 per cent. People do not get the minimum amount of cereals and pulses that are necessary to meet their normal requirements. The most seriously affected groups in this regard are pre-school children, specially 0-3 age-group, pregnant women and nursing mothers of the lower socio-economic strata and families belonging to landless agricultural labourers, small and marginal farmers particularly living in the drought prone areas.

22.87 Nutritional deficiencies are wide spread due to social, cultural and economic imbalances and inadequate intake of food. Recent studies in India have shown that the chief cause of malnutrition is inadequacy of total calorie intake rather, than inadequacy of proteins. Many groups, particularly, children, pregnant women and nursing mothers have poor stores of Vitamin 'A' and iron. Kwashiorkor and marasmus are the two clinical forms of PEM which lead to both mental and physical growth retardation and impairment of immuno-competance among children. Lack of Vitamin 'A' leads to Xerophthalmia and severe forms of this deficiency may cause permanent blindness. Low levels of Vitamin 'A' among pregnant mothers lead to delivery of babies with poor stores of this Vitamin and low birth weight. Iron deficiency anaemia is an important health problem. Goitre is prevalent in the hill belts of the country. Vitamin 'A' and iron deficiencies are widely seen amongst school children, young

girls, pregnant women and nursing mothers. Diarrhoea is a major public health problem among infants and young children. They are susceptible to this due to preparation of supplementary Foods in unclean utensils and contaminated water.

Review

22.88 The problems of malnutrition, morbidity and mortality have been recognised since the Second Plan and a number of schemes have been introduced for combating them. However, during the first three Plans nutrition as such was not singled out for specific plan programmes but formed one of the components of the health sector. In the Fourth Plan an Integrated Nutrition Programme with an outlay of Rs. 45.18 crores was introduced. It was observed that production of 'more food' was needed to solve the problems of malnutrition and to improve the nutritional status of the population. Stress was laid on the development of agriculture along with animal husbandry and fisheries as the base of all effort for the improvement of nutrition. The Applied Nutrition Programme (ANP) was first introduced in 1960 in Orissa and Andhra Pradesh. It was extended thereafter to Tamil Nadu in 1961 and Uttar Pradesh in 1962. During 1973, the programme was extended to all the States. This programme was introduced to spread the concept of balanced diet, production and consumption of protective foods and proper techniques of cooking. The Special Nutrition Programme (SNP) was introduced in 1970-71 as a crash scheme to provide 300 calories with 10-12 grams of protein for the age group 0-6 years for 300 days in a year. It also provides 500 calories with 25 grams of protein for pregnant women and nursing mothers for 300 days. The mid-day meal programme which was initiated in 1962-63 was extended in subsequent years. It provides supplementary nutrition of 300 calories with 8-12 grams of protein to children in the age group of 6-11 years.

22.89 By the end of the Fourth Plan, the Special Nutrition Programme covered about 3.8 million beneficiaries. The figure rose to 8.2 million children and pregnant women and nursing mothers by the end of March, 1980. Under the mid-day meals programmes, the coverage increased from 4.2 million in 1962-63 to 13.2 million beneficiaries by the end of March, 1980.

22.90 Even though the Special Nutrition Programme has not been evaluated on a representative scale, several studies were conducted in different parts of the country on its cost effectiveness and impact on the beneficiaries. They have pointed out that the target beneficiaries were not selected on the basis of nutritional deficiencies. Besides, the programme lacked continuity and same children were not ensured feeding for the required number of days in a year. It was observed that community involvement was conspicuously absent. The community had a feeling that the beneficiaries were not selected on the basis of the eligibility rules laid down by the scheme. In a

majority of cases, the food was shared by non-beneficiary members of the family. High overhead administrative expenses and pilferage have hampered programme implementation. Besides, the food supplied at the centres did not supplement the deficiencies of the diet particularly among children of the age group 1-3 years. The programme has not served the more important target group i.e. 0-3 years due to difficulty of bringing these children to the feeding centres. It catered primarily to the 3-6 years age group.

22.91 Several studies were conducted to assess the impact of mid-day meal programme as (i) the enrolment of children from the poorer sections and (ii) the nutritional status.

22.92. Only one or two studies with small sample sizes have shown improvement of nutritional status of children in areas where programmes were implemented effectively. But most of the studies failed to reveal any significant increase in the levels of enrolment commensurate with the investments made on the schemes. They have pointed out that some of the important reasons for its low impact are lack of continuity in the supply of food materials to the feeding centres, pilferage in the channels of distribution, non-adherence to the minimum number of feeding days and absence of other services like health. The Mid-day Meal has been often noticed to replace a meal at home and is not generally regarded as supplementary to what is consumed at home. Inadequate cooking and storage facilities at the schools and lack of local community involvement have also contributed to its poor performances.

22.93 The two feeding programmes in the last 10 years have relied heavily on short-term strategies based on narrowly identified target groups. This has resulted in the neglect of initiation of durable long term measures required for solving the problem of malnutrition. Targets have been laid down by the implementing authorities leaving little scope for local variations and experimentations. Adequate infrastructure for coordination, implementation and monitoring has not been developed at the field and district levels. Therefore, the programme lacked effective supervision. In practice, they have become ineffective exercises in offering food to selected groups as charity.

22.94 Applied Nutrition Programme has also been evaluated. The studies show that the programme has not generated the desired awareness for production and consumption of protective foods. Community kitchens and school gardens could not be taken up or completed due to lack of suitable land, irrigational facilities and low financial investments. The schemes for setting up of poultry units and pisciculture did not make much headway due to inadequate health cover and management failure. Moreover, participation by Panchayati Raj institutions and Mahila Mandals was poor as they were not fully involved. Criteria for selecting the blocks, villages and beneficiaries were not taken into account at the time of selection of blocks.

22.95 The production of *balahar*, a low cost protein-rich food, was about 1.29 lakh tonnes during 1974—78 for utilisation in the feeding programmes for children. The production of *miltone*, a product based on milk and vegetable protein isolate was about 49 lakh litres during 1974—78. Another project for production of a vegetable protein based beverage named 'chaisathi' was developed at *Baroda Dairy*. By March, 1980 a target of 27251 MT of *balahar* was reached while the production of *miltone* was 29.51 lakh litres. The tea enricher plant at Baroda was producing 6,000 litres of 'chaisathi' per day against a target of 5,000 litres.

22.96 Thirty-one mobile extension units were also set up to undertake intensive coverage of rural areas to popularise local low cost indigenous foods, to promote suitable dietary habits, disseminate scientific methods of cooking to spread the message of home science, techniques of preservation of Fruits and vegetables and to propagate knowledge of nutrition, hygiene and sanitation. They had a very limited impact.

22.97 Nutrition programmes introduced in the past did not succeed as their implementation was not closely linked with other programmes like provision of employment, health, safe drinking water and improvement of environmental sanitation and hygiene. Besides, these programmes which were implemented as ameliorative measures did not produce any lasting impact on the community. Since the programmes to provide employment, safe drinking water, health services, clothing, housing and public distribution system were not integrated with nutrition schemes, supplementary feeding programmes in isolation did not make any dent to improve the nutrition status of the communities. In the absence of their linkages with developmental activities, these schemes were reduced to mere 'charity' or 'dole' without making contribution to the improvement of nutritional status.

Objectives

22.98 Nutrition planning would aim at improving the physical capacity of the population, enhancement of the span of working life and increased longevity by enhancing the levels of nutrition, health and quality of environmental sanitation and hygiene. Improvement of functional efficiency of different segments of the population would contribute to the human resource development which would add to the increased productivity of the nation. Besides, the policy-frame would have to be concerned with correcting some of the widely prevalent nutritional deficiencies leading to blindness, kwashiorkor and marasmus, goitre and anaemia. The objective of nutrition policy thus would be to reduce mortality and morbidity and to improve functional efficiency and productivity at all levels.

Strategy

22.99 The problem of malnutrition is closely linked with that of poverty, large family size, unemployment, illiteracy, lack of environmental sanitation and

hygiene and safe drinking water. Intervention programmes will achieve limited results if this problem is addressed only at individuals in the households like children, mothers and the aged. Therefore, the strategy would have to be framed for the alleviation of hunger and malnutrition in all sections of the society through family centred poverty alleviation measures.

22.100 Nutritional improvement depends mainly upon the awareness, knowledge and income of the family. The nutritional status of the child or other vulnerable members of the family depends more upon the productive capacity of the economically active members of the family, their consciousness of the need of Nutrition and their ability to ensure it. This consciousness certainly improves with knowledge, education, dissemination of information and access to State or public welfare services. But the essential prerequisite for the improvement of nutritional status of the family is employment and income for the persons of working age in the household. Employment is the best and cheapest guarantee to enhance the nutritional status of the families. Subsidiary occupations and income generating projects like small scale production units and the training facilities would be expanded for the generation of additional employment opportunities. The available evidence indicates that children in the age of 0-6 years are highly vulnerable. If children are not adequately nourished before they grow up to enter the active labour force, they may remain physically and mentally so undeveloped that their productivity when in employment will for ever remain below the normal standards and there is a serious danger of long-term biological defects. Besides nutrition, it would be necessary to give psycho-social stimulation to children through story teaching, role play and other forms of non-formal education.

22.101 Education at the formal, primary and middle level for the young and the functional literacy for adults would be given greater attention. Lessons on nutrition, health and population education would have to be introduced through formal and non-formal education. Mass media and other interpersonal instructions would have to be fully utilised for providing non-formal education. The educational content would be focussed on the relationships between nutrition and health, pregnancy, birth rate, immunisation, drinking water, environmental and personal hygiene, eradication of helminths and other intestinal parasites.

22.102 It has been well recognised that polluted water supply especially for drinking purposes is the cause of diarrhoea, dysentery, gastro enteritis and other intestinal disorders and hepatitis. These infections constitute the single biggest killer of infants and children or even adults in many regions. The provision of safe potable water supply along with the provision of drainage facilities would be accorded high priority in the Plan. Improvement of environmental sanitation could be attempted by involving families and village communities. Families would be encouraged to provide in their houses soak pits and

low cost drainage system. It would be possible to expand to other regions low cost community and private latrines, which have been adopted with success in many places. An effort to link them with bio-gas plants will be made. Construction of pit latrines and compost pits would be encouraged in rural areas. Efforts would also have to be made to extend coverage of immunization. One of the major causes of infant mortality is respiratory disease. The reduction of exposure through housing and clothing and immunisation would have to be given greater emphasis.

22.103 Food production and its conservation through improved post-harvest technology including processing and storage and rapid extension of the rationing and fair price shops and its net work to cover the entire country would be given higher priority. Essential consumer goods would be supplied through the consumer cooperatives and stress would be laid on the expansion of decentralised public distribution system. The agricultural policy would be oriented to provide a balance between the production of cereals, legumes, pulses, oils and other cash crops.

22.104 To reduce the cost of nutrition delivery and to maximise the certainty of the delivery system, strong local level community organisations would be developed. Development of these organisations alone with arrangements for coordination of various activities at the village level with provisions for adaptation to meet the local requirements would alone make the programmes successful. Through active involvement of community organisations and effective coordination at various levels, the programme efficiency could be maximised. In this attempt schools, dispensaries and community halls would be used as focal points for integration of various schemes. Youth clubs, mahila mandals and voluntary organisations would have an important role to play in this endeavour. An integrated strategy with a package of services would have to be offered to improve the nutritional status of the families. Thus, several schemes would need to be taken up for implementation in a coordinated manner. These include : (1) employment and income generation, creation of capital assets for the nation through conversion of human labour; (2) family limitation; (3) community organisation and its participation, (4) education with special stress on nutrition and health, (5) equitable food distribution through expansion of public distribution system and production of nutritious foods and ensuring balanced production between the cereals, pulses, vegetables and animal products, (6) provision of safe drinking water supply, (7) awareness of public health and personal hygiene, (8) control of communicable diseases and intestinal disorders and (9) provision of housing and clothing for poorer sections would be taken up for implementation in a co-ordinated manner.

22.105 Since it will take quite some time before the objectives of full employment, reasonable standards of living, adequate health care etc. are achieved, special attention has to be paid to those

who are malnourished. The direct nutrition intervention programmes will still, therefore, be necessary to cater to certain specially vulnerable age, sex groups who are prone to malnutrition and nutritional disorders. The governmental efforts would have to be substantial but selective to benefit children and mothers living in the most backward rural, tribal and disaster-prone areas and urban slums. Ongoing intervention programmes would have to be restructured to make them effective. However, it is important to reduce the costs of nutrition delivery and to improve the certainty of the delivery system. Community organisation and coordination at the village level which can share the success of the nutrition movement would have to be strengthened. The nutrition feeding centres would have to be located either in the schools, dispensaries or community halls, the schools being perhaps the most desirable and various services would have to be provided at that level in an integrated manner under community supervision. The Government machinery at the point of delivery of services to the beneficiaries should be made to work in a coordinated manner through improved managerial systems so as to reduce overhead administrative costs.

22.106 The food for work component of the new National Rural Employment Programme has the largest potential for the long term nutritional improvement of the people provided the main aim of rural employment and higher incomes for the landless working population is suitably woven with programmes in the priority areas mentioned above. An area-based programme with as half of projects for creation of durable assets for utilisation of human resources during lean months would be used as a main strategy for the improvement of nutritional status.

22.107 Employment programmes under various sectors of development would be expanded to provide larger avenues of employment to the poorer sections of the society. Community organisations particularly mahila mandals, youth clubs and others would be involved in the programme implementation. Universities, research organisations and voluntary agencies would be stimulated to assume a larger role in the formulation and implementation of schemes. Control of food adulteration would be given greater attention. Enforcement of labour laws for providing permanent and mobile creches, MCH and medical clinics and canteens in organised sector would be strictly implemented.

Programmes

22.108 *Special Nutrition Programmes:* The Special Nutrition Programme which provides supplementary nutrition to pre-school children, pregnant women and nursing mothers would be extended to cover 600 ICDS projects from 200 projects at the beginning of the Plan. The scheme would cover about 5 million beneficiaries at the beginning of the Plan. In the ICDS projects, integration of nutrition with health, sanitation, hygiene, water supply, education etc., would be improved.

22.109 SNP outside ICDS projects will also be restructured by providing health and welfare inputs and building it around an activity like socio-economic centre, mahila mandals, pre-school etc., and by providing supervision and monitoring. It will be linked with the projects of economic activity, particularly in areas of women's employment so as to meet the felt needs of the women from poorer sections. Expansion of SNP outside ICDS will be discouraged. The number of beneficiaries at the beginning of Plan are about 5.73 million outside the Plan and about 1.15 million under Plan.

22.110 *Mid-day Meals Programme*: This scheme caters to the school children of the age group 6—11 years. About 15.1 million children are covered in the non-Plan and 2.3 million under Plan, i.e. a total of 17.4 million. The existing programme would be reviewed and reorganised to provide health inputs and safe drinking water and to encourage development of kitchen and horticultural gardens in the schools, before further expansion is undertaken.

22.111 *Production and Processing Schemes*: Recent studies have pointed out that local foods should be utilised for imparting nutrition education and reducing transport and administrative costs. The production of foods processed by Government agencies such as balahar, whose per unit cost at the targetted beneficiary level is higher than the cost of locally cooked food will be reviewed.

22.112 *Processed and Fortified Foods*: The ongoing programme of miltone units would be completed and its further expansion will be reviewed in the light of its evaluation. Its expansion by commercial concerns would also be considered. The emphasis will be placed on the consumption of local foods. Local processing of foods will be encouraged to facilitate employment of women. After completion of the field trials for the fortification of salt with iron, it is proposed to promote its commercial production. Distribution of iodised salt in goitre endemic areas would need to be improved.

22.113 *Nutrition Education*: An integrated programme for imparting education on health, environmental and personal hygiene, nutrition, child welfare and other subjects would be taken up in collaboration with the Ministries of Social Welfare, Health, Education, Food and Rural Reconstruction, instead of taking up nutrition education in an isolated manner. An effort will be made to make such feeding centre

under SNP and MDM as the nucleus of nutrition education.

Research and Evaluation

22.114 Universities and research organisations would be encouraged to undertake investigations with a common research design so that their findings could be utilised for reformulation or improvement of the schemes. Adequate outlays for in-built evaluation particularly in SNP and MDM would be provided in the Plan for this purpose. Research on production of cereals, pulses and oil seeds, their processing and distribution policy with the object of providing a balanced diet and its availability would be expanded. Research on community education, inter-personal contacts and mass media for dissemination of information on nutritional contents of local foods, their reinforcement or supplementation and modes of preparation would be stepped up. The consumer patterns and consumer acceptability would be studied more intensively. Identification, development and formulation of recipes for different target groups would be encouraged. Information on the prevention of nutrition leakages by augmentation of drinking water supply, drainage and sewerage disposal is rather scanty. This area needs to be further investigated. Augmentation of funds for assessing socio-economic determinants of malnutrition, specially intra-community variations, family planning and evaluation of ongoing programmes would be further accelerated. Research by specialised institutions and voluntary organisations for developing materials for imparting education through mass-media and inter-personnel communication would be intensified.

Coordination

22.115 Nutrition programmes are being implemented at the Centre and State levels under different agencies. The existing mechanisms for coordination would be reviewed and remedial measures initiated for effective functioning at beneficiary level. A Coordination Committee at a high level would be set up so as to facilitate inter-Ministerial interaction in the process of decision making and fixing responsibilities for programme performance.

Outlays

22.116 In Central Sector, the provision is Rs. 14.95 crores vide Annexure 22.7. The provision for direct nutrition programmes in the State Sector is Rs. 223 crores vide details in Annexure 22.8.

Annexure 22.1

Sixth Plan Outlays—Health Sector

(Rs. crores)

Sl. No.	Programme	1974—79			1980—85		
		States and U.Ts.	Centre	Total	States and U.Ts.	Centre	Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)
1	Minimum Needs Programmes for Rural Health						
	(a) Centrally Sponsored Schemes	—	—	—	102.62	168.50	271.12
	(b) Other schemes	120.30	—	120.30	305.84	—	305.84
	Total	120.30	—	120.30	408.46	168.50	576.96
2	Control of Communicable Diseases	—	268.17	268.17	235.00*	289.00	524.00
3	Hospitals and Dispensaries					45.00	
4	Medical Education and Research	225.53	67.66	293.19	576.59	62.00	720.09
5	Traditional Systems of medicine and Homoeopathy					29.00	
6	Others					7.50	
	Total	345.83	335.83	681.66	1220.05*	601.00	1821.05

*This includes Rs.—195.30 crores towards 50% State share for Malaria Control Programme.

Annexure 22.2

Sixth Plan—States/UT-wise Distribution of outlay for Health Sector

(Rs. in Crores)

Sl. No.	States	Total	MNP including CHV and MPW Schemes	Remaining Programmes
(0)	(1)	(2)	(3)	(4)
1	Andhra Pradesh	65.00	24.39	40.61
2	Assam	32.00	12.00	20.00
3	Bihar	82.40	36.27	46.13
4	Gujarat	70.00	20.09	49.91
5	Haryana	48.00	8.53	39.47
6	Himachal Pradesh	16.18	5.00	11.18
7	Jammu & Kashmir	48.00	9.03	38.97
8	Karnataka	65.53	20.03	45.50
9	Kerala	36.55	9.54	27.01
10	Madhya Pradesh	94.00	36.07	57.93
11	Maharashtra	89.45	30.00	59.46
12	Manipur	9.70	5.27	4.43
13	Meghalaya	7.10	4.43	2.67
14	Nagaland	8.00	2.97	5.03
15	Orissa	29.60	16.00	13.60
16	Punjab	49.00	13.77	35.23
17	Rajasthan	40.98	17.43	23.55
18	Sikkim	4.35	1.39	2.96
19	Tamil Nadu	67.80	21.82	45.98
20	Tripura	8.56	3.36	5.20
21	Uttar Pradesh	134.98	74.89	60.09
22	West Bengal	84.00	25.88	58.12
	Total States	1091.19	398.16	693.03
Union Territories				
23	A & N Islands	1.85	0.44	1.41
24	Arunachal Pradesh	8.05	4.00	4.05
25	Chandigarh	6.10	0.85	5.25
26	Dadra & Nagar Haveli	0.65	0.37	0.28
27	Delhi	87.66	0.12	87.54
28	Goa, Daman & Diu	14.00	0.55	13.45
29	Lakshadweep	0.55	0.22	0.33
30	Mizoram	7.00	3.26	3.74
31	Pondicherry	3.00	0.49	2.51
	Total UTs	128.86*	10.30*	118.56*
	Total States & UTs.	1220.05	408.46	811.59

*Excluding outlay on Centrally Sponsored Schemes borne on the budget of the Health Ministry.

Annexure 22.3

Statement showing Physical Targets and Achievements under Rural Health Programme

Sl. No.	Programme	Norm	Unit	Position obtaining as on 1-4-1980	1980—85	
					Target (Additional)	Likely position by 31-3-1985
(0)	(1)	(2)	(3)	(4)	(5)	(6)
1	Community Health Volunteers	1 for every village of a population of 1000.	Lakh	1.40	2.20	3.60
2	Sub-centres	1: 5000 population in plains and 1:3000 in tribal and hilly areas.	Nos.	50,000	40,000	90,000
3	Primary Health Centres	1:30,000	Nos.	5,400 (in addition 1000 subsidiary health centres were also set up).	600 additional primary health centres + up-gradation of 1000 dispensaries into subsidiary health centres.	6,000
4	Upgraded Primary Health Centres to be converted to Community Health Centres.	1:1,00,000 or 1 per CD Block.	Nos.	340	174	514

Annexure 22.4

Major Schemes under Control of Communicable Diseases Programme

Sl. No.	Name of the Scheme	Index	Present level	Target set for 1980-85 Plan
(0)	(1)	(2)	(3)	(4)
1	Malaria Control Programme	(a) Annual Parasite Index.	4.6	2.7
		(b) Deaths recorded and verified	300	Nil
2	National Leprosy Control Programme	(a) Total No. of cases detected as % of total estimated cases.	60%	90%
		(b) Disease arrested cases out of (a) above.	29%	40%
3	Control of Blindness	(a) % of Blindness	1.4%	1%
4	TB Control Programme	(a) Total No. of cases detected as % to total estimated cases.	30%	50%
		(b) Disease arrested cases.	60%	75%
5	Filaria Control Programme	Micro-Filaria carriers.	25 millions	35 millions

Annexure 22.5

Family Planning—Annual Allocation and Expenditure during 1974--80 and Outlay for the Sixth Plan

A. Annual Allocation and Expenditure during 1974--80		(Rs. crores)	
Year	Allocation	Expenditure	
(1)	(2)	(3)	
1974-75	54.14	62.05	
1975-76	63.20	80.61	
1976-77	70.14	172.98	
1977-78	98.61	93.34	
1978-79	111.81	107.55	
1979-80	116.19	118.51*	

*Provisional

B. Sixth Plan Outlay: Family Planning		(Rs. crores)
Sl. No.	Major Items	Sixth Plan Outlay
(0)	(1)	(2)
1	Services and Supplies	687.70
2	Training	8.80
3	Research and Evaluation	11.50
4	Mass Media and Education	32.00
5	Maternity and Child Health	250.30
6	Organisation	19.50
7	India Population Project	0.20
	Total	1010.00

Annexure 22.6

Performance of Family Planning Methods and MCH during 1974-75 to 1979-80 and targets for the Sixth Plan (1980-85)

(in million)

Sl. No.	Item	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80*	Sixth Plan targets 1980-85 Total
(0)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
I. Family Planning Methods								
(1)	Sterilisation	1.35	2.67	8.26	0.95	1.48	1.74	} 22.00
	(a) Vasectomy	0.61	1.44	8.20	0.19	0.39	0.46	
	(b) Tubectomy	0.74	1.23	0.06	0.76	1.09	1.28	
(2)	IUD Insertions	0.43	0.61	0.58	0.33	0.55	0.62	7.90
(3)	Eq. CC Users (including Oral Pill Users)	2.52	3.53	3.69	3.25	3.60	2.99	11.00 (1984-85)
(4)	% of couples effectively protected	15.1	17.2	23.9	22.8	22.8	22.5	36.56
II. MCH Beneficiaries								
(1)	Immunisation							
	(a) TT for							
	(i) Expectant mothers	0.74	1.45	2.14	3.51	3.61	4.16	48.00
	(ii) Children							25.00
	(b) DPT for pre-school children }	1.72	2.41	4.02	7.81	6.77	5.94@	68.50
	(c) DT for school children		1.23	2.72	6.54	7.24	6.47	63.00
(2)	Prophylaxis against nutritional anaemia among							
	(a) Mothers	6.63	3.70	3.29	3.38	9.80	10.08	60.00
	(b) Children		3.52	3.05	6.85	9.03	13.43	60.00
(3)	Prophylaxis against blindness due to Vit. 'A' deficiency	3.89	4.48	7.00	10.33 (first dose)	13.57 (first dose)	14.95	125.00
III. Expanded Programme of Immunisation								
(a)	Polio.							15.50
(b)	BCG							75.00
(c)	Typhoid							56.00
(d)	Measles }							Not yet Fixed
(e)	Smallpox }							

*Figures provisional.

@ Includes 3 doses as against 2 doses earlier.

Annexure 22.7
Sixth Plan Outlays Nutrition—Central Sector

(Rs. in crores)

Programme	Plan Outlay
(1)	(2)
A. Central Sector	
<i>Nutrition Programmes of the Department of Food (Central Schemes)</i>	
I. Diet Surveys and Nutrition Planning	
(a) Diet and Nutrition Surveys	0.05
(b) Nutrition Planning	1.10
II. Nutrition Education and Extension	
(a) Mobile Food and Nutrition Extension Units	1.00
(b) Mass Media Communication and Extension	0.75
III. Production of Nutritious Beverages	0.60
IV. Production of Nutritious Foods	
(a) Balahar	3.50
(b) Extruded foods	0.20
V. Fortification of Foods	
(a) Fortifications of Salt	4.00
(b) Fortification of milk	1.00
(c) Fortification of other foods	0.10
VI. Research and Development activities and evaluation etc.	0.50
VII. Directional charges	0.15
SUB TOTAL	12.95
VIII. Scheme for imparting integrated education in Nutrition, Health, Hygiene and Sanitation etc.	1.00
TOTAL	13.95
B. Applied Nutrition Programme of the Department of Rural Reconstruction (Centrally Sponsored Scheme)	1.00
GRAND TOTAL	14.95

Annexure 22.8
Sixth Plan Outlays—Nutrition States/UTs.

(Rs. in lakhs)

Sl. No.	States/UTs	Plan Outlay	
		1974—79	1980—85
(0)	(1)	(2)	(3)
1	Andhra Pradesh	759	1100
2	Assam	178	270
3	Bihar	460	1000
4	Gujarat	544	1650
5	Haryana	17	400
6	Himachal Pradesh	129	242
7	Jammu and Kashmir	23	120
8	Karnataka	796	2258
9	Kerala	624	1700
10	Madhya Pradesh	1100	2000
11	Maharashtra	802	2600
12	Manipur	24	110
13	Neghalaya	65	125
14	Nagaland	84	130
15	Orissa	796	650
16	Punjab	59	80
17	Rajasthan	107	327
18	Sikkim	44	130
19	Tamil Nadu	654	2600
20	Tripura	56	580
21	Uttar Pradesh	590	883
22	West Bengal	583	2500
	TOTAL STATES	8494	21455
	<i>Union Territories</i>		
23	Andaman & Nicobar Islands	13.00	15.00
24	Arunachal Pradesh	21.00	50.00
25	Chandigarh	31.92	125.00
26	Dadra & Nagar Haveli	12.69	20.00
27	Delhi	151.00	450.00
28	Goa, Daman & Diu	16.21	40.00
29	Lakshadweep	5.20	5.00
30	Mizoram	43.00	50.00
31	Pondicherry	30.08	109.00
	TOTAL UTs	324.10	864.00
	GRAND TOTAL	8818.10	22319.00

Note : The MNP component is Rs. 21874 lakhs.

HOUSING, URBAN DEVELOPMENT AND WATER SUPPLY

The urban population of India is small as a proportion of the total population of the country, estimated to be only about 21.8 per cent of the total in 1980. However, the absolute size of more than 109 million people (in 1971) living in urban areas is large by any standards. Urban development, therefore, requires serious attention in its own right, though in the context of overall development planning. In a country still largely rural and agricultural in character, it is natural that programmes for agricultural and rural development should receive the greatest emphasis; in particular those for rural employment creation and assistance to the rural poor. Urban development should, however, be seen as complementary to rural development and policies affecting the process of urbanisation should be such as to strengthen the links between towns and cities and their hinterland. Urban areas of all sizes operate as market centres for agricultural output and provide a variety of service functions in addition to operating as centres of manufacturing activity. These functions should be strengthened such that towns and cities serve the rural areas more effectively. The process of urbanisation should then be seen as aiding employment and income generation in rural areas rather than as a competitive process. Larger towns serve as distribution centres for seed, fertilisers and credit for farmers as well as serving as organised markets for their produce. The bigger cities provide services and facilities to both the smaller towns as well as rural areas in their hinterland. Thus, national policy on Urban Development should view the whole range of urban settlements as having a role to play in the national development process.

23.2 That having been said, it is also important to view the provision of services in rural areas in an integrated manner. Availability of shelter, a safe water supply and facilities for hygienic sanitation are as necessary in the rural areas as in the urban. Owing to different residential densities, however, different technologies can be used in different sizes of settlements in providing these services. The Sixth Plan, therefore, addresses the problems of the spatial distribution of population, housing, water supply and sanitation in an integrated manner. Given the resource constraints, public intervention in these fields has to be highly selective and centred on the areas of greatest need. The thrust of planning measures

must inevitably be toward the assistance of the poor—in rural as well as in urban areas. Priority is being given to providing sites to the rural landless along with construction assistance wherever possible. Similarly, priority is attached to providing at least one source of safe water supply in every problem village.

23.3 The provision of safe drinking water and of sanitation is essential for all settlements whether large or small. Higher residential densities necessitate greater care in providing for efficient and timely disposal of human wastes. The current methods of excreta disposal are a serious health hazard and until these are improved, the benefits derived from other programmes will be vitiated on account of the propagation of stomach-related infections caused by the existing environmental conditions in the poor areas of our towns and cities. In particular, the health benefits derived from the provision of safe drinking water are nullified unless accompanied by appropriate sanitation measures. The Sixth Plan, therefore, views the problems of shelter and urban development as being inexorably connected with the provision of safe water supply and adequate sanitation. It is only through purposive public programmes providing essential services like water and sewerage along with low cost shelter programmes like sites and services that the urban landscape of the country can be improved to enable the urban population to function more efficiently. Particular attention must be paid to the functioning of the small, medium and intermediate cities in order to aid them in their role as market centres and as suppliers of goods and services for agriculture. The environmental and infrastructural conditions in some of these towns and cities have been neglected so long that their efficient functioning is beginning to be hampered.

23.4 As in the past, the bulk of housing for the higher income groups will continue to be provided by the private sector. In addition, in view of the constraints on public resources, there should be greater encouragement of the private sector to step up its activities in the construction of housing for low and middle income groups. Imaginative schemes of improved facilities for financial intermediation in this sector will have to be investigated in order to achieve this objective.

HOUSING

Review

23.5 Housing is an activity that is typically labour intensive and, therefore, fits in well with the pattern of development envisaged in this Plan. The provision of shelter is a basic need which must be met. Housing construction also creates much-needed employment for the unskilled and, therefore, income for the relatively poor.

23.6 Over the last three decades, public investments in housing through the Plans have been of the order of Rs. 1253 crores. In addition, investments by public sector enterprises, departmental undertakings and grants-in-aid institutions were about Rs. 1800 crores. Investment by the private sector during the corresponding period has been estimated to amount to about Rs. 12740 crores. It is difficult to compile adequate statistics on the number of housing units constructed through planned investments in the public sector. Housing is constructed by all levels of the Government including local Governments, State Housing Boards, State Governments, public undertakings and the Central Government.

23.7 Apart from housing constructed for government employees, the role of the public sector in the provision of housing has been small. Subsidised dwellings have been provided to certain selected economically weaker sections of the community. Between 1950-51 and December 1979, 2.05 lakh houses were constructed for plantation labour and industrial workers. Housing for other low income groups totalled 3.36 lakhs. Construction of housing under various other schemes for somewhat higher income groups totalled about 1.42 lakhs. In the rural areas, about 77 lakh sites have been distributed and about 5.6 lakh houses constructed under the Rural House-Site-cum-House Construction Scheme.

23.8 As is evident from the above, the role of Government in the field of housing has necessarily been rather limited. It was only during the Fifth Plan that provision was made to provide house sites to some of the rural landless as well in addition to the schemes operating in urban areas.

23.9 A review of the various social housing schemes implemented by State Governments and their agencies has revealed some problems in these programmes. These schemes were intended to create housing for Economically Weaker Sections (EWS) with household income below Rs. 350 per month and households in Low Income Group (LIG) with incomes between Rs. 350 to Rs. 600 per month. It now appears that houses constructed for a particular income category are largely occupied by families in the next higher income group since the instalment payments required for the house are clearly beyond the paying capacity of the income groups for which the houses were meant. Those allottees/tenants who do continue to occupy their houses tend to run up payment of arrears of their instalments/rents. This has, therefore, be-

come a major problem for the State Governments and Housing Boards. As a result, future provision of social housing schemes will need to make a more realistic appraisal of the paying capacity of the recipients: this will mean a modification of standards with a view to economy. In addition to the groups mentioned above, the only class of people who have benefited substantially from public sector support in housing have been employees of Government, of public sector corporations and other autonomous bodies.

23.10 A review of past performance in public sector as well as private sector housing investments makes it clear that the country's housing problems—both rural as well as urban—cannot be solved in the Sixth Plan period. It should, however, be feasible to catch up with the housing requirements of the country if a sustained programme of investment and construction is undertaken over the next 20 years. This programme would attempt to cover the existing housing shortfalls as well as providing for the expanding population. For the Sixth Plan period, the combined public and private sector outlay is expected to be about Rs. 12900 crores; Rs. 3500 crores for rural housing and Rs. 9400 crores for urban housing. Such an outlay would yield about 13 million dwelling units in rural areas and 5.7 million units in urban areas. Reliable data on investment in private housing are not easily available. However, the Central Statistical Organisation (CSO) has estimated that gross capital formation in residential buildings in the private sector (including public sector undertakings) was about Rs. 2243 crores in 1976-77. If we assume the share of public sector undertakings to be not more than Rs. 50 crores, gross capital formation in housing in the private sector would have been around Rs. 2200 crores in 1976-77. It is then safe to assume that private sector investment will not be less than Rs. 11500 crores during 1980—85 Sixth Plan period. An investment of Rs. 1302 crores is proposed in the public sector. Additional investments by public sector enterprises, departmental undertakings and grants-in-aid institutions may be of the order of Rs. 250—300 crores. Since the public sector outlay will necessarily be small in relation to the total investment, maximum benefit from such an outlay will be achieved if public resources are largely devoted to low cost schemes such as "sites and services".

Objectives

23.11 It is clear that housing conditions in the country are rather poor. A large number of people either live without any shelter whatsoever or in units below the lowest possible standards. The objectives of the Plan are, therefore, to reduce substantially the number of absolutely shelterless people and to provide conditions for others to improve their housing environment. Specifically, the objectives of the Sixth Five Year Plan are as follows:

- (i) Provision of house-sites and assistance for the construction of dwellings for rural landless labourers. This will normally include an element of housing extension services to assist in proper planning of layouts, sanitation, etc.

(ii) In view of the severe constraints of public resources, public sector social housing schemes will be designed to benefit the maximum number of people. They will, therefore, be directed towards the economically weaker sections of the community and designed so that they are within their paying capacity. For the rest, investment policies would be framed so as to promote and encourage self-help housing. In addition, resources of institutional agencies like HUDCO and State Housing Boards will need to be augmented to enable them to provide infrastructural facilities as a means of encouraging housing in the private sector. Care, however, must be taken to avoid subsidies in these activities.

(iii) Specific efforts must be made to secure a reduction in costs in public housing schemes by reviewing standards and by using cheap and alternative building materials. This will necessitate the promotion of research in building technology and the development of cheap and local building materials. Attention should also be paid to the possibilities of energy conservation in construction technology by utilising existing materials in local use in the construction of shelter. The programme for the provision of shelter should be linked with sanitation programmes such that the potential of deriving energy from human wastes can also be realised.

23.12 In order to achieve these objectives, specific attention will have to be given to:

- (a) housing activity in small, medium and intermediate towns which have been neglected hitherto;
- (b) low cost housing techniques including existing local methods so as to bring down unit costs;
- (c) the modification of existing building bye-laws, land use controls, minimum plot requirements and land requirements for roads which often make it difficult to reduce the costs of shelter;
- (d) the avoidance of direct subsidies in urban housing. In the case of higher and middle income housing, subsidies should be totally avoided. For low income housing, where some direct subsidies are inevitable, they should preferably be in the form of infrastructural and sanitation facilities which improve the environment for people to invest in their own shelter;
- (e) greater stimulus and support to private housing in the middle and lower income groups so that there are incentives to channelise savings into housing construction.

Rural Housing

23.13 The Minimum Needs Programme places a high priority on the provision of house sites and assistance for construction of houses for the rural landless workers. It is estimated that the number of eligible families needing housing assistance would be around 14.5 million families by March 1985. Of these, 7.7 million landless families have already been allotted house sites, leaving about 6.8 million families who are still without a site. The Plan proposes to provide sites to all the remaining landless families. Of the families who have been provided sites only, about 0.56 million families have so far been given construction assistance. This leaves about 13.9 million families who will still need such housing construction assistance. About 25 per cent of these eligible families, i.e. about 3.6 million families, will be provided assistance with construction during 1980—85, with the balance being provided for in the following years. Provision is being made for Rs. 250 per family for developed plots, approach roads and a masonry tubewell for each cluster of 30 to 40 families. Construction assistance is expected to amount to Rs. 500 per family. This assumes that all labour inputs will be supplied by the beneficiaries. These provisions involve a total outlay of about Rs. 354 crores for the programme, Rs. 170 crores for the provision of sites and about Rs. 184 crores for construction assistance.

23.14 It should be the endeavour of all States to provide outlays of at least this magnitude in the Sixth Plan and Annual Plans. While it is expected that all families currently without sites will be provided sites under this programme by 1985, the next Plan will have to ensure that construction assistance is available for those remaining in need.

23.15 It is recognised that with this kind of assistance houses will have to be built with only mud walls and tiled roofs but it is essential that an attempt is made in the next five years that this highly deprived group of landless rural labour, who currently have no land, are able to obtain this barest minimum of shelter. Therefore, in order to implement this programme, it is proposed that in every district, organisations are set up at the tehsil, taluka and block level for the disbursement of the housing subsidy to the eligible families. These organisations should assist in developing layouts and housing plans for these clusters of houses such that appropriate access as well as drainage is available for these sites. Where possible and desired, community latrines and bathing places will also be established. Attempts should also be made to obtain all materials locally, e.g., roof tiles and drain tiles from local potteries. It would also help if the beneficiaries of these local organisations can help with guidance in the design of their houses within the given constraints. The National Buildings Organisation, State Housing Boards and the HUDCO have plans on hand to prefer improved design types for use in the rural areas.

23.16 In general, the State Governments are implementing the programme on the basis of norms and standards visualised in the Plan. However,

some State Governments are currently implementing the programme on a more ambitious scale involving larger amounts of subsidies and loans. Given the limitations of resources, State Governments will make every effort to adhere to the norms and standards suggested in the Plan in order to ensure that the target of constructing 3.6 million houses is achieved during the Plan.

23.17 In addition to the requirements of the rural landless under the Minimum Needs Programme, there is obviously need for other housing as well in rural areas. Because of the scarcity of resources there is only very limited additional public provision for rural housing in the State Plans. The Housing and Urban Development Corporation (HUDCO) and General Insurance Corporation (GIC) have also entered the field of rural housing and have begun to provide loans for construction in rural areas.

Urban Housing

23.18 The public sector has only a marginal, though promotional, role to play in the provision of urban housing. It is clear, that the need is great for better and more housing in urban areas. As stated earlier, given the overall resources constraints and more pressing competing claims on public resources, the vast majority of additional housing in urban areas will have to be met from private resources. The role of the public sector will have to be restricted to the improvement of slums, the direct provision of housing to some of the urban poor and encouragement of agencies such as HUDCO which can promote the marshalling of private resource into housing in a constructive manner.

23.19 It is proposed that the strategy of attempting massive relocation of slums in urban areas should be given up in the future. Such relocation not only involves substantial hardship to those affected in terms of loss of easy access to employment centres and other amenities, but results in unnecessary destruction of existing housing capital, however sub-standard it may be. It is, therefore, important that substantially increased investments be made in the environmental improvement of slum areas. Low cost sanitation and drainage are key areas of much needed investment in the slums of our cities.

23.20 Direct public sector assistance is proposed for housing the Economically Weaker Sections (EWS) of the population. The strategy here is to provide 'Sites and Services' Schemes with enough funds for a minimum structure, the beneficiaries to be given loans up to Rs. 3000 per unit repayable over a period of 20-25 years at concessional rates of interest. The Scheme relies on the expectation that the beneficiaries will themselves gradually improve the quality of accommodation in course of time. A provision of about

Rs. 485 crores has been made in the Plan, with a target of about 16.2 lakh units to be constructed.

Housing and Urban Development Corporation

23.21 The bulk of the remaining public sector investment in housing is to be channelled through the Housing and Urban Development Corporation (HUDCO). As on 31st July, 1980, HUDCO had sanctioned 1274 schemes in 319 towns and cities in 17 States and 4 Union Territories involving loan assistance of Rs. 600 crores, and has disbursed about Rs. 337 crores. On completion, these projects will provide about 6.8 lakh dwelling units and about 62,000 developed plots and a number of shops and commercial complexes. Of these, about 86 per cent of the plots are for the benefit of the EWS and LIG. During the current year 1980-81, HUDCO is expected to sanction loans of the order of Rs. 160 crores and disbursements are visualised at about Rs. 89 crores. In addition, HUDCO has launched new schemes like financing rural housing, apex cooperative housing societies and urban development schemes.

23.22 The Plan proposes an increase in the equity of HUDCO from the present Rs. 25 crores to Rs. 75 crores. Including the recovery of loans, it will then be able to invest about Rs. 600 crores over the next five years in its various housing programmes. Currently, HUDCO is allocating its loan disbursements in the following proportions:—

Economically Weaker Section	. . . .	30%
Low Income Group	. . . .	25%
Middle Income Group	. . . .	25%
High Income Group	. . . .	20%

HUDCO should be encouraged to step up its activities in the provision of EWS and LIG housing in the future, perhaps by utilising elements of cross subsidisation from its high income group housing and commercial activities.

LIC and other Institutional Support

23.23 The Life Insurance Corporation (LIC) is the other public financial organisation, which has provided financing for housing. Upto March 1977, the LIC has provided Rs. 728.56 crores in loans for various housing programmes. Its experience with promoting housing by linking it with insurance policies does not appear to have been too successful. Loans advanced so far under this scheme have amounted to only Rs. 53 crores. The scheme should, therefore, be reviewed and amended in order to make it more effective. LIC is statutorily required to invest 25 per cent of

the net accretion to its controlled fund in socially oriented schemes, such as, housing, electrification, water supply, sewerage and industrial estates. If the housing programme is to help the weaker sections of the community, who cannot otherwise benefit from the scheme of loans to policy holders, the LIC would need substantially to increase the allocation of funds for housing for EWS and LIG. A similar principle should apply for investments in housing being made by the General Insurance Corporation.

23.24 Cooperative housing programmes represent an ideal form of self-help housing and, therefore, need encouragement. Developed or partially developed land will be allocated to the housing cooperative societies where successful functioning has been hampered due to lack of this facility.

Urban Land Policy

23.25 A ceiling on urban land prescribed under the Urban Land (Ceiling and Regulation) Act 1976 was meant to prevent speculation in land and to ensure the optimal allocation of land to different users. The implementation of the Act has experienced great difficulties and the State Governments have not been able to implement it effectively. A Working Group was set up in the Ministry of Works and Housing with representatives from State Governments to suggest ways and means of improving the Act. The Report has since been submitted to Government and is being examined. In the meantime, there is a general feeling that costs of land have increased substantially, both of private land as well as of land owned by public agencies. As a result, fears are expressed that urban housing might become too expensive for a large number of people. It would be useful, therefore, to initiate systematic investigations into the functioning of urban land markets and to identify the causes of the increase in the value of land. Measures can then be recommended to promote a more efficient and equitable functioning of the urban land market so that these enormous and unwarranted increases in land values are checked.

Outlays and Targets

23.26 The public sector outlay on housing in the Sixth Plan is shown in Table 23.1.

Table 23.1
Sixth Plan Outlay on Housing

(Rs. crores)		
Scheme	Fifth Plan 1974—79 (outlay)	Plan outlay 1980—85
(1)	(2)	(3)
A. States and Union Territories		
1 Rural House Site-cum-House Construction Scheme (MNP)	55.00	353.50
2 Social Housing Schemes	450.56	837.37*
Total : States and Union Territories	505.56	1190.87
B. Central Sector		
3 Housing and Urban Development Corporation (HUDCO)	14.00	50.00
4 National Buildings Organisation (NBO)	1.68	2.00
5 Hindustan Prefab Ltd.	0.15	0.05
6 General Pool Office and Residential Accommodation	51.12	142.00
7 Subsidised Housing Scheme for Plantation Workers	5.00	15.00
8 Housing Scheme for Dock Labour	0.26	0.20
9 House Building Advance to Government Employees	—	93.25
10 Science and Technology	—	2.00
11 Police Housing Scheme @	23.00	—
12 National Building Materials Corporation	0.15	—
13 Training Institute for C.P.W.D.	—	0.50
Total : Central Sector	95.36	300.00
Grand Total : States/UT and Central Sector	600.92	1490.87

*Includes Rs. 200.02 crores for departmental housing and house building advance.

@Transferred to the State sector w.e.f. 1-4-1979

23.27 The major part of the public sector outlays is on social housing schemes which will also receive institutional finance. Aggregate investments in such schemes and the physical targets are indicated in Table 23.2.

Table 23.2

Investment and Physical Targets in Social Housing 1980-85

Scheme	Unit Cost (Rs.)	Investment envisaged		Targets (In lakh dwelling units & sites)		
		Plan (Rs. crores)	HUDCO	Plan	HUDCO	Total
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. Social Housing						
1 EWS Housing (upto Rs. 350 p.m.)	3000 (6000)	485.70	180.00*	16.19	3.00	19.19
2 L.I.G. (Rs. 351-600 p.m.)	15000 (15000)	97.10	150.00	0.64	1.00	1.64
3 M.I.G. (Rs. 601-1500 p.m.)	25000 (33500)	51.80	150.00	0.20	0.45	0.65
4 H.I.G. (above Rs. 1500 p.m.)	40000 (80000)	12.95	120.00	0.03	0.15	0.18
5 Rural Housing	500	183.50	..	36.70	..	36.70
<i>Total A.</i>		831.05@	600.00	53.76	4.60	58.36
B. Rural House Sites	250	170.00	..	68.00	..	63.00
C. Departmental Housing	35000	246.00	..	0.70	..	0.70

*Includes provision for rural housing also.

@Includes Rs. 637.35 crores of social housing in the State's sector and Rs. 10.2 crores on account of Plantation and Dock Labour Housing in the Centre.

NOTE : Unit costs in brackets represent average ceiling costs of HUDCO.

URBAN DEVELOPMENT

Objectives and Strategy

23.28 Urbanisation in India has grown at a relatively slow rate throughout this century as well as in the last 30 years. This is quite consistent with the overall pattern of development that the country has experienced where the proportions of people engaged in agricultural and non-agricultural pursuits have barely changed over this whole period. Despite this slow rate of growth, the country exhibits all the urban problems that can be found in any part of the world. Moreover, many of these problems are aggravated

by the very low per capita income observed even in large cities. Unlike many other countries where their capital cities or other metropolitan cities are excessively dominant, India exhibits a very balanced size distribution of settlements. According to the 1971 Census, out of a total population of 547.95 million, about 109 million were in urban areas. The growth rate of urban population during the 1961-71 decade was about 3.2 per cent per year as compared with about 2.2 per cent per year for the total population. The distribution of the urban population between different size classes of towns in 1971, along with the inter-censal growth rates, is given in Table 23.3.

Table 23.3

Sl. No.	Town Classification	Number of Towns	Population (million)	Percentage of population	Annual Rate of growth 1961-71
(0)	(1)	(2)	(3)	(4)	(5)
1	Class I (1 lakh and above)	151	53.38	48.92	4.27
2	Class II (50,000 to 99,999)	219	14.71	13.48	4.43
3	Class III (20,000 to 49,999)	652	19.95	18.29	2.36
4	Class IV (10,000 to 19,999)	987	13.96	12.80	2.11
5	Class V (5000 to 9999)	820	6.20	5.68	(--)-0.22
6	Class VI (less than 5,000)	290	0.90	0.83	(-)0.65
Total :		3119	109.10	100.00	

23.29 It would appear from the Table that larger towns have grown faster than smaller towns, and it might therefore be concluded that the country is suffering from an unhealthy process of urbanization which must be remedied. The reality is, however, more complex with a great deal of inter-regional variation as well as intra-regional differences. Part of the misconception that arises from the above Table is caused by the movement of towns into higher size-classes along with the growth of population. For example, only 107 towns were classified as Class I towns in 1961 as opposed to 151 in 1971. A better appreciation of the process of urbanisation in India is obtained from the Table 23.4. The growth rates in this Table are obtained by keeping towns in each size class constant, according to their classification in the 1961 Census:

Table 23.4

Rate of Growth of Population

Size class Category	Annual Rate of Growth of Population (1961-71) [@]
1 Class I (1 lakh and above)	3.04
2 Class II and III (20,000-99,999)	2.92
3 Class III, IV, V (5,000 to 19,999)	2.86
4 Class VI (Less than 5000)	3.20

[@] Growth rates compiled from information in M. K. Jain's 'Inter-State Variations in the Trends of Urbanisation in India'-International Institute for Population Studies, Bombay, 1977

23.30 The process of urbanisation has thus been relatively balanced in India. Within this overall pattern, it is important to distinguish problems as they occur between different regions and different cities. For example, excluding West Bengal, the whole Eastern region (Orissa, Bihar, Assam) was less than 10 per cent urbanised in 1971 as compared with 28 and 31 per cent for Gujarat and Maharashtra at the high end. Hence, while in the backward States the problems of urbanisation are caused by stagnation, those in the more advanced States are caused by relatively rapid growth. The articulation of national urbanisation policy should then involve specific consideration of regional problems and urban development should be viewed in the context of its relationship with rural development in each region. The problems of each urban area should be seen in the light of its specific functions within the overall settlement framework.

23.31 As in housing, public resources for urban development are necessarily limited and high priority areas for public investment have to be selected for particular attention. The thrust of the urbanisation policy during the next decade would be to give greater emphasis to the provision of adequate infrastructural and other facilities in the small, medium and intermediate towns which have been neglected hitherto in this respect. The aim would be to strengthen these market centres to equip them to serve as growth and service centres for the rural hinterland. For this purpose, increased investments are proposed in these towns in housing, water supply and communication facilities. Likewise, facilities for education, medical care and recreation will need to be augmented. Given the economic importance of large cities, care must be taken to improve the conditions of the urban poor and raise civic services, such that the large capital investments

of all kinds that exist in these cities are utilised better. Given the constraints on available resources, the only way that the appalling conditions in which the urban poor live today can be improved is to adopt more realistic norms and standards for urban services. We need to adopt low cost standards for infrastructure so as to benefit the maximum number of urban people.

23.32 In order to ensure the continuance of the present balanced distribution of urban population, positive inducements need to be given for setting up new industries and other commercial and professional establishments in small, medium and intermediate cities, taking advantage of the particular special conditions available in each place. These could include appropriate concessions in respect of capital expenditures on housing, schools, entertainment facilities, power, water supply, sanitation and drainage. Power, telephone and telex connections must be improved in these towns. It is essential to strengthen local bodies organisationally as well as financially so that they can themselves improve the infrastructure and services in their towns. While these improvements are being made, tax incentives can also be considered for the location of employment generating, productive activities in these towns.

23.33 This kind of balanced approach is essential to ensure an orderly process of urbanisation along with the overall development of the country. There has been a tendency to neglect infrastructure provision in small, medium and intermediate cities in the past which may have restricted their role as dynamic growth centres. This must be redressed.

Programmes

23.34 In the Sixth Plan, the major emphasis is placed on the following measures:

- (a) Instead of attempting a massive relocation of slums, the greater emphasis would be on environmental improvement of slums for which substantially increased investment will be made. A particular area becomes a slum more because of poor environmental conditions, poor drainage, sewerage and sanitation, rather than the poor state of structures. Of the total urban population, nearly a fifth is estimated to constitute the slum population. In 1985, the magnitude of such population needing attention is estimated to be about 33.1 million. Of this, only 6.8 million have been covered so far by the scheme in the earlier Plans. The proposed investment of about Rs. 150 crores will benefit about 10.0 million people, assuming a per capita expenditure of Rs. 150. This scheme will be applicable to all urban areas irrespective of the size of the city/town. This forms part of the Minimum Needs Programme. The facilities that will be provided are water supply, storm water

drainage, paving of streets, street lighting and provision of community latrines. Areas inhabited by scheduled castes or scavengers etc. are to be given due priority.

- (b) A provision of Rs. 96 crores has been made in the Central Sector for the Centrally Sponsored Scheme of Integrated Development of Small and Medium Towns. This will be in the form of assistance to the State Governments on a sharing basis. It is visualised that about Rs. 200 crores would become available from the Central, State Governments and implementing agencies for the development of about 200 towns during the Plan period. Small and medium towns with a population of less than one lakh are eligible to receive assistance from the Centre under the Scheme, provided matching contributions are forthcoming from the State Governments/ implementing agencies.
- (c) In the next five years, Rs. 423 crores will be spent by the State Governments in urban development programmes. Besides including the States' share against the centrally sponsored programme of Integrated Development of Small and Medium Towns, the above provision is meant for providing facilities such as roads, pavements, minor civic works as well as such amenities as bus sheds, markets, shopping complex, theatres etc. It is expected that the State Governments would make adequate provisions for the continuing commitments and further activities in respect of the scheme of Integrated Urban Development Programme in Metropolitan Cities and Areas of National Importance, which ceased to be centrally sponsored from 1-4-1979. A sum of Rs. 247 crores is being provided for the continuing development projects in Calcutta being co-ordinated by the Calcutta Metropolitan Development Authority and aided by the world Bank. An additional sum of about Rs. 66 crores will be spent on on-going schemes in State Capital Projects in Bhopal, Gandhinagar and Chandigarh. These outlays cover schemes to improve water supply, sewerage, roads, traffic and transportation. Provision is also being made for area development, etc. in these cities.
- (d) For the National Capital Region around Delhi, a provision of Rs. 10 crores has been made. This scheme, the details of which are under review, is expected to de-concentrate economic activity from the core of Delhi into regional towns-located in U.P., Haryana and Rajasthan.
- (e) A sum of Rs. 1.60 crores is being provided for research and development in or-

der to improve the formulation of policy on urbanisation and urban development. The roles of different sizes of towns and cities is not well understood; the relationship between urban and rural activities needs to be investigated further in order to improve the links between urban and rural areas; the comparative costs of providing infrastructure and services to large, medium and small cities need to be worked out. Finally, research is necessary to formulate policies to strengthen local bodies so that they can play a greater role in the financing and implementation of urban services.

Outlays

23.35 Table 23.5 shows the outlay on Urban Development.

Table 23.5

Plan Outlay on Urban Development

(Rs. crores)

Scheme	Fifth Plan 1974-79 (Outlay)	Sixth Plan Outlay 1980-85
A States and Union Territories		
1 Environmental Improvement of Slums	50.00	151.45
2 Urban Development Programmes	156.73	422.83
3 C.M.D.A.* and State Capital Projects	143.92	313.25
Total : A	350.65	887.53
B Central Sector		
4 Integrated Development of Small and Medium Towns**	—	96.00
5 National Capital Region	5.09	10.00
6 Research and Development	0.21	1.60
7 Integrated Urban Development Project@	149.51	—
8 Development of Displaced Persons Colony	—	0.05
9 Removal of cattle in Calcutta	—	2.35
Total : B	154.81	110.00
Grand Total : States/Union Territories & Centre	505.46	997.53

* Calcutta Metropolitan Development Authority (CMDA).

** Centrally Sponsored Scheme on a sharing basis.

@ Discontinued from the Central Sector with effect from 1-4-1979.

WATER SUPPLY AND SANITATION

23.36 Although a national water supply programme was launched in 1954 during the very First Five Year Plan, and progressively larger allocations were made for water supply and sanitation in the succeeding Five Year Plans, the progress made so far in the provision of safe water supply and basic sanitation can hardly be called satisfactory. The available statistics relating to the status of rural and urban water supply in India present a discouraging picture especially in the rural areas. By March 1980 about two lakh villages in the country with a population of some 160 million were yet to be provided with potable water supply facilities. The situation in the urban areas is relatively better but here too, particularly in the hundreds of smaller towns, water supply and sanitation arrangements are far from adequate. The statistics in fact do not fully portray the hardship and inconvenience that is experienced by the poor, particularly the women and the children, in areas where water is scarce, inadequate or polluted. In terms of mandays lost due to water-borne or water related diseases which constitute nearly 80 per cent of the public health problem of our country, the wastage is indeed colossal.

23.37 Until the end of the Fourth Five Year Plan, i.e. during the period 1951—74, the total investment made by the Central and State Governments for providing water supply and sanitation facilities was of the order of Rs. 855 crores, over 65 per cent of it in the urban areas. During this period, the water supply programme was not given a high enough priority in the national planning process. The constraint of resources in the States and the competing demands for programmes in other sectors compelled the State and local governments to give relatively lower priority to water supply in the allocation of funds. There was also at the same time insufficient appreciation of the magnitude and complexity of the problem.

23.38 The importance of providing safe water supply and sanitation as a basic minimum need without meeting which no improvement in the living standards of the people could take place, was reiterated in the Draft Fifth Five Year Plan 1974—79 which included drinking water for villages in its Minimum Needs Programme. The Draft Fifth Five Year Plan declared that adequate resources would be allocated for the programme irrespective of the resources constraints of individual States. The objective of the Minimum Needs Programme for drinking water was to provide the facility to all villages suffering from chronic scarcity or having unsafe sources of water. The Plan provided for an expenditure of Rs. 381 crores on rural water supply and sanitation as compared to a total of Rs. 289 crores provided in all the previous Plans.

23.39 The Sixth Five Year Plan is being launched at a time of increasing awareness, both nationally and internationally, of the importance of safe drinking water supply in sustaining the processes of econo-

mic and human resource development and improving the quality of our environment. The drought of 1979-80, which was accompanied by an acute scarcity of drinking water in many parts of the country where wells, tanks and other sources dried up in large numbers, has added urgency to the search for a lasting solution to the problem. The global concern with the need to provide drinking water and elementary sanitation to the people in developing countries led the United Nations Water Conference at Mar del Plata (Argentina) in 1977 to call for a ten Year campaign by member-countries and international agencies to provide access to safe water and sanitation for all people. The ten years 1981-90 have been designated as the International Drinking Water Supply and Sanitation Decade. India as a signatory to the Resolution, has pledged its full support to the action plan under the International Decade.

23.40 Considering the magnitude of the problem in a vast country like India and the constraints on resources it is obvious that we cannot afford expensive or sophisticated water supply services. Nor is it possible to have a uniform mode of water supply everywhere. The wide variety of climatic conditions and of the sources of water, surface and underground, should permit the adoption of a variety of solutions which are economical, in keeping with local needs and conditions and capable of speedy implementation. Simple, even austere, standards will be necessary so that maximum population coverage, specially of the poor and the under-privileged sections of the community, can be achieved within the limited funds available.

Rural Water Supply and Sanitation

23.41 Until the Third Five Year Plan drinking water supply in the rural areas was a component of the amenities scheme of the Community Development Programme. Besides, the local development works programme, taken up through voluntary labour participation, and the programme of welfare of backward classes also included schemes relating to water supply. These efforts were supplemented by the National Water Supply and Sanitation Programme of the Ministry of Health. It is estimated that by the end of 1968-69 about 1.2 million sanitary wells and hand-pumps had been constructed and piped water supply provided to some 17,000 villages. During the Third Five Year Plan, under a Central scheme, Special Investigation Divisions were established in most States to make an assessment of the water supply situation especially in areas of acute scarcity and those endemic to water borne diseases. In the Fourth Five Year Plan 1969-74, the bulk of the provision for rural water supply was allocated for these areas. For this purpose, a new centrally sponsored scheme was also launched in 1972-73 to accelerate the efforts of the State Governments in meeting the needs of such areas. The programme gained further momentum during the Fifth Five Year Plan which made an allocation of Rs. 381 crores in

the State Plans including Rs. 329 crores under the Minimum Needs Programme mentioned earlier. In addition, a provision of Rs. 100 crores was made in the Central Sector under the Accelerated Rural Water Supply Scheme. Available information based on reports from State Governments indicates that by the end of 1979-80 about 1.84 lakh villages had benefited from water supply schemes of one type or another.

23.42 The Special Investigation Divisions established during the Third Five Year Plan period were the first step in identifying villages which could be regarded as problem villages from the point of view of the quality and accessibility of drinking water sources. Preliminary data collected by these Divisions in 1964-65 indicated that about two-thirds of the rural population lived in areas where it was relatively easy to provide safe drinking water from local sources like wells. The remaining one-third lived in villages which suffered from water scarcity and where engineering skills, extra financial outlays, and time consuming works would be called for. These villages were categorised as follows:—

- (a) Those which do not have an assured source of drinking water within a reasonable distance of say 1.6 kms.;
- (b) those which are endemic to diseases like cholera, guinea-worm etc.; and
- (c) those where the available water has an excess of salinity, iron, fluorides or other toxic elements.

The first category was defined as scarcity and difficult villages and the other two as health problem villages.

23.43 In 1971-72 a total of 1.52 lakh villages in the country were identified as being without a safe and assured source of drinking water. Of these, 90,000 villages were classified as scarcity and difficult villages and 62,000 as health problem villages. In addition, it was estimated that there were 1.85 lakh villages with a population of 160 millions which were served by simple wells.

23.44 Since 1972-73, as a result of the larger investments made in the rural water supply sector, about 95,000 problem villages have been provided with safe drinking water supply facilities by March 1980. Thus, some 57,000 villages (including those in Sikkim) which had been identified as scarcity or health problem villages in the earlier survey remain to be provided with safe water supply. However, various State Governments have recently reported that the earlier survey did not adequately represent the magnitude of the problem partly because it was not complete and partly because the drought conditions in subsequent years had brought to light fresh areas which were vulnerable to water scarcity. The latest data received from the State Governments show that there are at present about 1.90 lakh villages in the country which need

to be provided water supply facilities on a priority basis.

23.45 It is worth emphasising that these figures represent only the first step in the evaluation of the problem. The type of water supply system required varies from State to State and often from one area to another within a State. It is necessary for the State Governments to work out suitable engineering solutions for covering all the needy villages so as to ensure that at least one source of potable water is available throughout the year in every such village. Details for requirement of funds, materials and equipment, staff and maintenance arrangements will have to be worked out and annual action plans prepared. The programme envisaged in the Sixth Plan has to be viewed in the perspective of a 10 year plan but during this plan period itself it will have to be limited to assuring water supplies in the rural areas through simple and inexpensive devices. In many areas a simple sanitary well with parapet and with regular cleaning and disinfection will be considered a safe and adequate source of water supply. In hard rock areas or where the water table is low, emphasis will have to be given on deep tube wells with hand-pumps. Power pumps or piped water supply schemes should only be the last alternative.

23.46 During the Sixth Five Year Plan the effort will be to cover all the problem villages of the three categories mentioned earlier. With the financial provisions made in the Plan, it will be possible to achieve this objective except in certain difficult areas in the hill and desert regions where, because of physical constraints, the programme may take a longer time. The approach in all the areas will be to provide at least one source of drinking water in every village identified as a scarcity or health problem village. Additional sources may, however, be necessary in villages with large populations or dispersed hamlets. In particular, the needs of the scheduled caste habitations in the rural areas will have to be given priority.

23.47 Apart from the problem villages which will be covered under the Minimum Needs Programme, there are other villages where the existing sources of water supply may need improvement or augmentation. The Sixth Plan provides Rs. 128 crores for these areas. Altogether the provision for rural water supply in the Sixth Plan is Rs. 2135 crores, Rs. 600 crores in the

Central Sector and Rs. 1535 crores in the State/Union Territory Plans.

23.48 Poor maintenance of existing water supply systems in the rural areas continues to be a source of concern in most States. Lack of involvement of the local community in the maintenance arrangements, shortage of staff and inadequate funds for maintenance are the main reasons why the existing water supply schemes have failed to yield the expected benefits. It is clear that the operation of small rural water supply systems can be ensured only with the participation of the village community and institutions. Excepting very large systems covering many villages and requiring skilled supervisory staff, in most cases it should be possible for the block and village level functionaries to take care of the relatively simple operation and maintenance requirements of rural water supply schemes. A three-tier maintenance set up, with a care-taker at the village level, a mechanic at the block level and a mobile repair team at the district level, has been successfully tried in Tamil Nadu and can be adopted in other States with suitable variations. It has been noticed that wherever the maintenance arrangements are adequate, the beneficiaries are not unwilling to pay a nominal charge for the water supplied to them. The effort should in all cases be to recover at least the operating expenses.

23.49 So far little attention has been given to the problem of rural sanitation except for some pilot projects in a few States. It is estimated that almost 98 per cent of the rural house-holds do not have any latrines. Keeping in view the present position of rural sanitation and the limitation of budgetary resources sanitation facilities can be provided to only 25 per cent of the rural population by the end of the Decade. Much more can, however, be done in this area through self-help schemes organised by the village community. Simple low cost designs of water-seal latrines have already been developed in many areas. Extension efforts will need to be made on a large scale to assist the village organisations in the adoption and use of these designs, with such local modifications as may be necessary. The UN Resolution on the International Drinking Water Supply and Sanitation Decade calls for basic sanitation facilities being made available to all citizens by 1990. This objective can be attained only through large scale mobilisation of voluntary effort at the village level.

23.50 The effort in the Sixth Five Year Plan is to make a modest beginning in this direction by undertaking pilot projects in all States which would help in making an assessment of the community attitudes in the rural areas to the type of latrines to be provided and the nature of sanitation facilities needed.

Urban Water Supply and Sanitation

23.51 According to information supplied by the State Governments, the number of towns and population provided with piped water supply systems are as shown in the following table:—

Table 23.6

Class of urban area	Total number of towns	Number served	Total population (in lakhs)	Population served (in lakhs)
(1)	(2)	(3)	(4)	(5)
Class I (over 100,000)	151	149	533.80	506.72
Class II (50,000 to 99,999)	219	206	147.12	124.80
Class III (20,000 to 49,999)	652	542	199.47	151.97
Class IV (10,000 to 19,999)	987	649	139.61	85.04
Class V (5,000 to 9,999)	820	423	61.97	31.71
Class VI (below 5,000)	290	123	8.96	3.59
TOTAL	3119	2092	1090.93	903.83

23.52 Some features of the present coverage of water supply services in the urban areas may be mentioned. While towns with nearly 84 per cent of the urban population have been provided with drinking water facilities, the population coverage is partial and uneven. Even in the larger cities many of the newer settlements and areas inhabited by the economically weaker sections continue to be without adequate water supply. Further, out of the 1027 towns still lacking drinking water supply facilities, as many as 902 belong to the group of towns which have a population of less than 20,000. It is in these smaller towns that the population served by drinking water facilities is 50 per cent or even less. In the past, the bulk of plan investments in urban water supply has gone to the larger cities and the smaller towns have in consequence continued to suffer.

23.53 The position in regard to urban sewerage and sanitation is even less satisfactory. Out of the 3,119 towns, only 198 have been provided with sewerage facilities. Even in respect of class I cities having a population of one lakh and above, only 46 per cent have arrangements for sewerage and sewage treatment. The overall population coverage in the urban areas is about 20 per cent.

23.54 Water supply and sewerage programmes in the urban areas should be considered an integral part of urban development. While the pressing need of providing adequate water supply and sewerage facilities in the larger cities, especially in the high density areas populated by the low income groups and economically weaker sections, must continue to receive priority, greater attention needs to be given in the Sixth Five Year Plan to the needs of smaller and medium size towns which have been neglected in the past. The Sixth Plan lays considerable emphasis on the integrated development of small and medium size towns and the environmental improvement of slums. Water supply and sewerage schemes have to be dovetailed in this programme. The Town and Country Planning Organisations in the States which have the responsibility of preparing master plans for these areas have to ensure that adequate provision is made for water supply and sewerage facilities in the formulation and implementation of these plans.

23.55 Some effort has recently been made to evolve low cost techniques for urban sanitation. The UNDP Global Project in India is intended to assist and promote the installation of water-seal latrines in 110 towns in 7 States, viz., Assam, Bihar, Gujarat, Maha-

rashtra, Rajasthan, Tamil Nadu and U.P. The Project aims at adopting appropriate technologies which would be particularly helpful in the smaller towns. Pilot projects are to be taken up in these States to provide low cost water-seal latrines with on-site disposal of human waste.

23.56 During the Sixth Plan, priority would be given to the completion of on-going urban water supply and sewerage schemes, including augmentation of the existing systems in the larger cities. It is expected that about 930 urban water supply schemes and 120 urban sewerage and drainage schemes will be completed during this period. In addition, it is proposed that new schemes of water supply will be taken up in about 550 towns and sewerage schemes in 110 towns.

23.57 As in the rural areas, the maintenance of urban water supply schemes, particularly in the small municipalities, is unsatisfactory. The poor quality of maintenance results mainly from the unwillingness of the local bodies to levy water rates and the inability of the State Governments to provide adequate non-plan grants for maintenance purposes. Urban water supply and sewerage schemes are highly capital intensive and there is a strong case for recovery from the beneficiaries at least the interest and operation and maintenance charges to start with.

Outlays

23.58 The outlays for Water Supply and Sanitation Sector in the Sixth Five Year Plan are as under:

Table 23.7

Scheme	(Rs. crores)	
	Fifth Plan (1974-79)	Sixth Plan (1980-85)
1 State/U.T./Plans		
(i) Rural Water Supply & Sanitation of which M.N.P.	381.24 (329.27)	1554.24 (1407.11)
(ii) Urban Water Supply & Sanitation	539.17	1753.56
Total: State Plan	920.41	3307.80
2 Central Plan		
(a) Central Sector :		
(i) Prevention and Control of Water & Air pollution	0.80	12.00
(ii) Other programmes	0.93	2.22
(b) Centrally Sponsored Schemes		
(i) Accelerated Rural Water Supply Programme	100.00*	600.00
(ii) Other programmes	8.54	..
Total: Central Plan	110.27	614.22
GRAND TOTAL	1030.68	3922.02

*Outlay provided subsequent to the finalisation of the Fifth Plan.

LABOUR AND LABOUR WELFARE

Labour policy derives its philosophy and content from the Directive Principles of State Policy as laid down in the Constitution and has been evolving in response to the specific needs of the situation and to suit the requirements of planned economic development and social justice. It is the product of tripartite consultations in which representatives of the working class, the employers and governments have been participating at various levels. Participation of the parties so vitally concerned lends the product the strength and character of a national policy. The aim is to promote cooperation between workers and employers in order to improve production and working conditions and to promote the interests of the community at large.

REVIEW

24.2 While in the early years of industrialisation labour policy was preoccupied mainly with the organised sections of the labour force, growing attention is being paid to the interests of the workers in the unorganised sector without detracting from the concern of Government for the improvement of the real-earnings and working conditions of those in the organised sector.

24.3 The legislative measures adopted during the last decade are evidence of diversification of labour policy to progressively fulfil the Directive Principles of the Constitution. The more important of the measures taken since 1970 are the Contract Labour (Regulation and Abolition) Act to regulate the employment of contract labour and to provide for its abolition in certain circumstances; the Bonded Labour System (Abolition) Act for the abolition of the bonded labour system and to free labourers who have incurred a bonded debt; the Beedi Workers Welfare Acts to promote the welfare of persons engaged in beedi establishments, the Acts to promote the welfare of workers in Iron Ore, Manganese Ore, Limestone and Dolomite mines, the Sales Promotion Employees (Conditions of Service) Act to regulate conditions of service of sales promotion employees; the Equal Remuneration Act for the payment of equal remuneration to men and women workers and for the prevention of discrimination against women in the matter of employment, the Employees Family Pension Scheme, the Employees Deposit Linked Insurance Scheme and the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act. A new Article 43-A was also inserted in the Constitution

under the Directive Principles of State Policy to secure the participation of workers in management in order to create better mutual understanding between labour and management and facilitate the adoption, on both sides, of an objective approach towards the problems of industry and the workers.

OBJECTIVES & STRATEGY

24.4 The thrust of the programmes in the Sixth Plan should be on implementing effectively the measures contemplated in these different legislative enactments and in extending the coverage of the employees state insurance scheme, the employees provident fund and family pension scheme. Special programmes would also need to be undertaken by the State Governments for the benefit of agricultural labour, artisans, handloom weavers, fishermen, leather workers and other unorganised workers in the rural and urban areas.

24.5 Programmes of workers' education will need to be extended and their quality improved to bring greater awareness of the wider national interests so that workers' representatives can play an effective role in economic and social life.

24.6 There are two special problems facing women workers: discrimination in the labour market based on sex, and their dual responsibility as workers and mothers. Special programmes of workers' education will need to be evolved for women workers. Young persons also face special problems in a rapidly changing society and economy where there has to be an equilibrium sought between preservation of inherited values and adjustment to changing work patterns and living conditions. It is necessary to have special programmes of workers' education for young persons.

24.7 In the organised sector emphasis will have to be on (i) improving the services of the employees state insurance, employees provident fund and family pension scheme, (ii) promoting cooperation between workers and employers through participation in management and (iii) strengthening the industrial relations machinery to better anticipate industrial disputes and to act promptly in order to avert work-stoppages.

24.8 The severity of the energy constraint, the ageing of plant and equipment and prevalence of excess capacity in a number of industries, are features of the emerging situation during the Sixth Plan. These

call for (i) conservation and economy in the use of oil and oil based industrial processes, (ii) better maintenance of plant and equipment, (iii) replacement of plant and equipment which have either outlived their economic life or have to be adapted to use new sources of energy, and (iv) greater labour productivity and acquisition of multiple skills. Training programmes, work schedules and incentive schemes will have to be adapted to meet these needs.

24.9 The determination of the size and level of wages is linked with the problems of evolving and sustaining a wage structure which while based on accepted notions of fair remuneration to labour takes into account the relevant consideration of economic efficiency and incentive. In a society dedicated to the ideals of social justice, it is doubtful if the wage rate can be left entirely to be determined by the market forces of demand and supply. The accepted purpose of policy is to narrow down the existing inequalities and to eliminate malpractices in regard to wage rate and wage payment. On the other hand the commitments to the principles of freedom of association and collective bargaining would require that state regulation should be minimised and it should be limited to ensuring that the weaker sections of labour are not exploited. The tasks of policy here are to lay down criteria for fixation and revision of minimum wages and to evolve wage structure without impinging on the freedom of the parties to negotiate wage agreements.

24.10 The Indian economy is characterised by a dualism, i.e., the existence of comparatively well organised sector side by side with the decentralised sector with a large population which is self-employed. Conscious efforts have, therefore, to be made to bring about a greater degree of *inter se* equalities in the incomes of non-wage earners, the self-employed, the professionals and the like. In this context, the role of an integrated type of income policy suited to the structural features of the economy holds out promise of fruitful results. The policy instruments for the implementation of such a policy have to be different and more complex than those which have been employed by the developed countries. In the developed countries, wage policy is oriented to their internal problems such as rising prices and balance of payments. The main objective of these countries is to contain the rate of increase in money wages to rate of growth of productivity so that cost inflation does not result. Furthermore, the employment (unemployment) situation in such countries is vastly different from that of ours. In the case of India, however, the main attention has still to be towards providing employment and also minimum levels of wages so that bulk of the population comes above the poverty line.

24.11 In specific terms, the issues and problems of the wage policy relate to the elements like need based minimum wage, protection of the real wages through compensation for rise in the cost of living, incentives for increases in productivity, allowances for hazards of occupation, wage differentials for skills, responsibilities and other justifiable reasons, essential fringe benefits, bonus and such other *ex-gratia* payments,

social security arrangements like medical care, provident fund, gratuity, family pension etc.

24.12 The level of the minimum wages should be raised, in such a manner that soon the concept of a need-based minimum wage becomes a reality. Construction of a proper cost of living index and the linkage of the wages to the index by appropriate formulae in all areas of wage employment are necessary for protection of the real wages. Criteria would have to be evolved by means of tripartite consultations for allowing increases in wages on the basis of productivity. The techniques of job grading and evaluation should be developed for determining the differentials to be allowed for difference in the nature of the duties and responsibilities.

24.13 While the impact of certain factors like the capacity to pay, productivity and profitability, consumption pattern and cost of living, system of wage fixation, criteria considered in respect of wage fixation etc. as also the heterogeneous character of the economy as reflected in different regions would be felt in the wage differentials disparities, it is to be recognised that the national wage policy should be based on a rational system of wages which *inter alia* provides for wage differentials justifiable mostly on economic criteria. It is in this context that certain guidelines have to be prescribed even while the primacy of collective bargaining is stressed.

24.14 Bonus payments and some social security benefits have been brought under statutory arrangements. The system of productivity linked bonus introduced recently in Railways, Posts and Telegraphs and some departmental undertakings has the merit of the incentive element capable of application in similar areas where linkage with the profits is not a possible proposition. These systems may be rationalised and refined.

24.15 Marked disparity between inter-State and inter-regional, inter-industry occupations and also between the organised and unorganised, and urban and rural sectors in all these matters is a noticeable feature. Low productivity in agricultural/rural unorganised sectors, socio-economic characteristics including the large extent of mass poverty, unemployment/under-employment, limitation of avenues for gainful employment, lack of organisation on the part of workers affecting their bargaining capacity account for the disparities. The protection afforded under the Minimum Wages Act 1948 has helped minimise the exploitation, to some extent in the rural/unorganised sectors. Growth of income and employment in the un-organised sectors would, however, go a long way in narrowing down these disparities.

24.16 Even in the organised sector, disparities exist between the more sophisticated technology industries and financial institutions on the one side and the rest due mainly again to factors like extent and effectiveness of unionisation, higher profitability, built in privileges and rigidities etc. It would be prudent to consider measures which would ensure

that some portion of the wages be linked to minimum productivity norms in case of factories, mines and plantations, and in case of financial institutions and establishments these be linked to the agreed norms of work standards and work performance.

24.17 Industrial harmony is indispensable for a country to make economic progress. Economic progress is bound up with industrial harmony for the simple reason that such harmony inevitably leads to greater cooperation between workers and management which results in better production and productivity and contributes to all round prosperity of the country.

24.18 One of the indicators of the state of industrial relations in the country is the data on the loss of mandays due to strikes and lockouts. Mandays so lost during the 1970s were:

Year	Time loss (in million mandays)
1971	16.5
1972	20.5
1973	20.6
1974	40.3
1975	21.9
1976	12.7
1977	25.3
1978	28.3
1979 (provisional)	43.9

24.19 Except for the year 1974 which witnessed a prolonged strike in the railways, the time loss in the first six years was generally well below 22 million. Thereafter, there was a rising trend in the time loss till it attained its peak figure of 43.9 million. In most of the cases, wages and allowances, bonus, personnel and retrenchment and conditions of work have been identified as the causes resulting in disputes leading to strikes and lockouts. Attempts to tackle these issues and to settle the disputes through conciliation, arbitration and adjudication have had partial success.

24.20 Healthy industrial relations, on which industrial harmony is founded, cannot be regarded as a matter of interest only to employers and workers, but also of vital concern to the community as a whole. Further, in the ultimate analysis, the problem of industrial relations is essentially one of attitudes and approaches of the parties concerned. A spirit of co-operation stipulates that employers and workers recognise that while they are fully justified in safeguarding their respective rights and interests, they must also bear in mind the larger interests of the community. This is the true significance of the doctrine of industrial harmony in its three dimensional aspect.

24.21 The Industrial Disputes Act, 1947 has been the main legislative framework which has provided the machinery and procedure for the settlement of disputes through mediation, conciliation, arbitration and adjudication. Steps were also taken in the past to provide a voluntary approach to industrial relations through Codes. A general feeling has developed that the existing arrangements have not proved effective in preventing disputes and promoting settlements. Since the submission of the report of the National Commission on Labour, efforts have been made for evolving a new and comprehensive industrial relations legislation but these have not succeeded on account of the divergence of approaches among the trade union organisations on certain basic issues such as the machinery and procedure for settlement of disputes, the criteria and procedure for recognition of trade unions, i.e., whether the representative character of trade unions should be determined through verification of paid membership of contending unions or through secret ballot; right to strike in essential industries including public utilities, role of government in regulating industrial relations, etc. While efforts must continue to minimise the areas of disagreement among the parties concerned and acceptable improvements in law and machinery effected, some of the changes in the existing laws on trade unions, industrial disputes and standing orders, which are generally considered essential for promoting industrial relations, need not be held over and should be carried out. These changes would help in streamlining the existing procedures, and securing speedy justice to workers. The question of providing security of service to such categories of employees who are at present outside the ambit of labour laws also needs consideration.

24.22 It may also be stressed that if the huge investments during the Five Year Plan are to yield the desired results, certain important measures cannot be delayed for long; for example, the core sector including power, energy, coal, steel and transport needs to be insulated against uncertainties of the industrial relations situation to the maximum extent possible. If adequate consultative machinery and grievance procedures are evolved and made effective, strikes and lockouts can become redundant in these industries. In other areas, also, strikes and lockouts should be resorted to only in the last stage. Effective arrangements should also be made for the settlement of inter-union disputes and to discourage unfair practices and irresponsible conduct.

WORKERS' PARTICIPATION IN MANAGEMENT

24.23 At the enterprise level, workers' participation in management should become an integral part of the industrial relations system to serve as an effective instrument of modern management. It should be made a vehicle of transforming the attitudes of both employers and workers for establishing a co-operative culture which may help in building a strong, self-confident and self-reliant country with a stable industrial base. Various measures have been tried

in the past to promote workers' participation. Starting from the limited scheme of statutory Works Committees, voluntary arrangements were made in the form of joint management councils, scheme of worker-directors, both as a statutory arrangement in nationalised banks as well as a voluntary one in selected Central public enterprises, and voluntary schemes of workers' participation for manufacturing/mining industries in 1975 and for commercial and service organisations in the public sector in 1977 as essential ingredients of the 20-Point Economic Programme. A 21-Member Committee comprising the representatives of employers, trade unions, government and academicians has studied the matter in depth and recommended, among others, a legislative scheme of workers' participation providing three-tier participative forums at shop floor, plant level and Corporate/board levels. An enlarged area of participation to cover matters relating to operational economic and financial, personnel, welfare and environment areas has also been recommended. It is recognised that there is a very wide area of relationship in an enterprise outside the domain of collective bargaining where employers and workers can work jointly for the benefit of different interest groups and for the common interest of the enterprise as a whole. Such a system of consultative and joint-decision making would ensure frictionless operation at various levels, provide job satisfaction, release the latent creative energy of workers, reduce their alienation and enhance the commitment of workers and the line management to the common ideal of better performance. But it is necessary to provide effective arrangements for training workers and managerial/supervisory personnel so as to motivate them in making the scheme of workers' participation a success in the larger interest of the enterprise on which depends the well-being of both the parties. An effective agency for monitoring and evaluation would greatly help in making participative management a success.

24.24 It is necessary also to strengthen the tripartite consultative machinery so that it may be possible to evolve the broad framework of labour policies and programmes after full consideration and discussion among all interests concerned—the trade unions, employers and government. At the industry level, standing tripartite committees could serve a useful purpose in identifying the bottlenecks and deficiencies and suggesting corrective measures. Regular and effective functioning of such forums would provide opportunity for a dialogue and facilitate proper motivation which is essential for improving industrial relations. To help this process, communication and information sharing systems should be enlarged and decisions arrived at after proper consultations should be implemented with the utmost expedition.

TRADE UNIONS

24.25 Trade Unions in the organised sector have attained a unique status and position. But the extent of unionisation has not been uniform. On the whole, it would be in the vicinity of about 30 per

cent of the strength of the working force in the organised sector. Proliferation of unions and inter-union and intra-union rivalry have affected their reasoned bargaining power as well as their financial position. This phenomenon of multiplicity and the dependence of unions on outsiders for leadership have sometimes led to inter-union rivalries which have often undermined the effectiveness of collective bargaining and led to industrial unrest. It would help in the growth of trade unions on healthy lines if multiplicity is overcome. It would enhance their strength and facilitate the enlargement of their role in many areas of nation building including planning and development. It calls for a reorientation of the approach, which has to be based on a value system of social obligations, mutual trust and fair practices in an atmosphere of goodwill and understanding. Trade unions must give serious thought to these matters in the interest of the trade union movement.

24.26 Serious efforts need to be made by trade unions to promote a spirit of greater involvement of workers in the enterprise to fulfil the norms of greater efficiency and also achieve excellence in its overall performance so as to be able to share the benefits of such improved functioning.

24.27 Trade unions have a vital and constructive role in improving the quality of life of the workers. They should evince greater interest in welfare programmes for their members such as education including literacy, health and family planning, and recreational and cultural activities. They can also promote personal and environmental hygiene and promote a sense of thrift and savings. Government can consider some financial aid to those trade unions which take up such welfare activities. Such involvement in constructive activities would help the trade unions in furthering the interests of their members.

SOCIAL SECURITY AND LABOUR WELFARE

24.28 Expansion of social security measures result in multiple advantages. Several social security measures like Employees State Insurance, Employees Provident Fund, Gratuity, Maternity benefits, etc. have been in operation. However, their coverage is limited mostly to the organised sector. The Employees Provident Fund assumes significance in terms of accruals which are sizeable. A major portion of these accruals form an important source for financing development. Together with employers' contribution and the availability of accumulated benefits, it also acts as an important redistributive measure benefiting the lower income class. The coverage of the scheme currently extends to 157 industries/classes of establishments with a total membership of about ten million. The scheme should be gradually extended to smaller establishments and to the rural areas. With increase in membership and a possible enhancement in the rate of contribution, the size of the fund could be augmented considerably and, among other things, this could be used

to finance important direct benefit programmes like housing for workers which has so far lagged behind due to paucity of resources.

24.29 The Employees State Insurance Scheme provides for medical care, maternity care, insurance against sickness or employment injury and similar benefits. At the end of December, 1980 it covered over six million workers in 408 centres; the total number of beneficiaries including family members was twenty seven million. The medical benefits under the Scheme are provided through the State Governments except in Deihi where they are provided by the Corporation direct. A phased programme for expansion of the scheme has been drawn up but limitations of financial and physical resources of the State Governments have been a major constraint in expanding the scheme. Efforts should be made to remove the difficulties and to extend the coverage to new areas.

24.30 There are statutory welfare schemes for workers in mining industries like coal, iron ore, manganese ore, limestone and mica and for workers in the beedi industry which provide facilities of drinking water, housing, education and recreation. It is necessary for State Governments to undertake welfare programmes for the benefit of workers and artisans in the rural sector particularly for those engaged in agriculture, fishing, weaving and leather processing.

24.31 As welfare and social security services often overlap in areas of medical care and income security during sickness and disability, it will be conducive to efficiency and economy if services in such common areas can be integrated.

SAFETY AND WORKING CONDITIONS

24.32 Working conditions include not only wage structure, fixing of a minimum wage and protection of income, but also the fixing of working hours, periods of rest, paid holidays, provision of canteen facilities and provision of creches for children. Today, safety includes not only protection of workers against accidents at work but also against occupational diseases. Indeed, with the growth and diversification of industry and agriculture, the safety and health of workers goes beyond mere measures of prevention. It is equally important to improve the environment since safe and healthy working conditions are the best protection for the worker and the best guarantee for increased production. Safety in industrial establishments is the concern primarily of the State Governments. Safety in ports and docks and in mines, including oil fields, is the concern of the Government of India. The Director General of Factory Advice Service and Labour Institutes lays down standards and carries out inspections in ports and docks. He also undertakes research and studies in the fields of industrial safety, ergonomics, industrial hygiene and occupational health. He liaises with the Chief Inspectors of Factories of the different States to secure common standards, exchange of information

and experience and to develop alert system to detect occupational hazards to the health of the workers. He is also the National Authority in the International Alert System to detect potential hazards.

24.33 The Director General of Mines Safety is concerned with the safety and health of workers in the mines. In the field of mines safety, surveys are undertaken regarding accident prone mines for identification of corrective measures. Augmentation of training facilities and modernisation and expansion of rescue services constitute an important area of activity in this field. Provision has also been made for improvement in the R & D facilities and development of rescue apparatus. These institutional arrangements and promotional measures would be adequately strengthened. Effective measures would be taken to ensure consciousness at all levels regarding safety precautions at work place. Steps would also be taken for an overall improvement of safety education and the provision of arrangements for this purpose in all factories, mines, ports etc. The National Safety Councils and Safety Conferences can make a significant contribution to bring about safety consciousness in this area also, workers' representatives will be increasingly associated as they can play an effective role in the maintenance and preservation of safe working conditions.

24.34 The thrust in the Sixth Plan ought to be in extending measures to protect the safety and health of workers engaged in agriculture and forestry. There is also need to intensify and extend the studies which have been initiated with the assistance of organisations like the Indian Council of Medical Research to identify the incidence of occupational diseases in specific areas, to evaluate the adequacy of existing arrangements for protection and treatment of workers and to detect newly emerging occupational health hazards.

LABOUR RESEARCH

24.35 The activities relating to labour research & statistics would also be strengthened to expand the coverage and improve the quality of the data and minimise the timelag in compilation and publication. Schemes have been included for the revision of the Consumer Price Index Numbers relating to industrial workers and agricultural workers compiled by the Labour Bureau. The National Labour Institute would extend consultancy and training services particularly in the areas of workers' participation in management, promotion of grass root leadership and motivation research etc.

PHYSICALLY HANDICAPPED

24.36 Vocational rehabilitation of the physically handicapped categories would be promoted through evaluation and adjustment services and skill training imparted in specially designed centres which would also have facilities for production under controlled conditions. At present eleven Centres are functioning under the Directorate General of Employment and Training (DGE&T) for their rehabilitation. During

the Sixth Plan it is proposed to set up more such centres in addition to expanding the existing ones. The attention of these Centres has been mostly towards the orthopaedically handicapped category so far and other categories like blind, deaf and dumb, mentally retarded, spastics etc. would also have to be covered. Voluntary organisations have been playing an effective role in this field. A coordinated approach towards optimum utilisation of the facilities would be beneficial. A suitable action programme is being drawn up on such an integrated approach in the context of the International Year for Disabled Persons 1981. Reservation of training places as well as jobs for these categories to a suitable extent is being pursued.

APPRENTICESHIP TRAINING

24.37 This item has been included in the 20-Point Programme. Location of training capacity based on surveys is a continuous process. The progress of this programme has been affected by deficiencies in the quality of training imparted and the non-absorption of the trained apprentices in regular jobs. These issues are inter-related to some extent. Hence alongwith the extension of this scheme to cover more trades, efforts will be made to improve the quality of training through better practical instructions including related instruction facilities, provision of hostel arrangements for the benefit of out-station apprentices, increase of stipend, more effective supervision and better liaison with the industries etc. Regarding absorption of successfully trained apprentices preferably in the same units where they have received training, reserving some percentage of jobs filled by open recruitment is recommended. Successful completion of apprenticeship could be prescribed as one of the qualifications for employment so that there could be optimum utilisation of trained manpower.

ORGANISATION OF RURAL WORKERS

24.38 Involvement of rural workers' organisations is relevant not only for the better implementation of the minimum wage provisions but also for generally ensuring the benefits intended for rural workers under the various development programmes. It is well known that even in the organised sectors, the growth of trade union movement has not been significant in terms of strength of membership, or its even spread. The problem in the case of rural workers is further aggravated due to their lower level of awareness and other disabilities. As it would take time for voluntary trade unions to make a dent among these sections, it is considered necessary for the State machinery to facilitate the process in the initial stages.

24.39 It may also be noted that the Government of India has already ratified I.L.O. Convention No. 141 which enjoins that it shall be an objective of the national policy concerning rural development to facilitate the establishment and growth of strong and independent organisations of rural workers, including

agricultural labourers, artisans, share croppers, tenants and small farmers so that they get their due share in the benefits of economic and social development. As in the case of trade unions of industrial workers, organisation of the rural poor needs to be sponsored by the workers themselves or voluntary organisations including political organisations interested in the welfare of the rural poor. The Government may take some measures to facilitate the process. These would include suitable legislation for conferment of specific rights to the rural poor to set up unions for safeguarding their interests, registration of such unions of the rural poor, specific immunity to office-bearers and members of such unions from certain criminal and civil suits and setting up machinery for settlement of disputes, training and education of the cadre and some form of financial support for meeting organisational expenses, etc.

24.40 A promotional effort in this area is proposed to be undertaken with necessary guidance and financial assistance from the Centre and the active involvement of the State Governments particularly their block level agencies.

REVISION OF WAGES IN AGRICULTURE

24.41 Another aspect relevant to the upliftment of certain sections of the poor relates to the effective enforcement of the provisions of the Minimum Wages Act, 1948 which provides for the fixation and periodical revision of minimum rates of wages in agriculture and other employments in the unorganised sectors. The protection mainly benefits the landless agricultural labourers and workers in other 'sweated' employments. Except in the employments under the Central Government which do not account for much under these categories, the implementation of this Central legislation is the responsibility of the State Governments. Slow-coverage of new employments, delay in periodical revisions of the minimum rates fixed under the Act and ineffective enforcement of the existing provisions have been the main issues relating to this measure. The need for strengthening the enforcement machinery, simplification of the procedure relating to coverage and revisions, the linkage of the rates with the Consumer Price Index Numbers, involvement of the rural workers' organisations in the implementation of the provisions are among the steps advocated to improve the results. The necessary amendments in the statutory provisions are likely to be initiated soon. Sufficient strengthening of the enforcement machinery would provide an effective arrangement for better implementation of the Minimum Wages Act. In this context it may be pointed out that this measure coupled with programmes like National Rural Employment Programme and Integrated Rural Development etc. would represent a coordinated and mutually supporting effort for raising large number of rural poor above the poverty line. Proposals for Central legislation for agricultural workers are under consideration.

BONDED LABOUR

24.42 Besides the evils of indignity and exploitation involved, the system of bonded labour has placed certain sections of the population in perpetual poverty, backwardness and dependence. The abolition of the system by an appropriate legislation in 1975-76 was first step in generating hopes for this section, the lowest among the rural poor. Subsequently efforts were undertaken for the social and economic rehabilitation of the freed bonded labourers by making available opportunities for gainful employment including self-employment. While these efforts were mostly integrated with the on-going sectoral programmes, the need for special schemes to supplement these efforts was realised and a Centrally sponsored programme was started in 1978-79. The experience of last two years has brought to light certain practical problems in implementing this programme. Even the identification of this category has given rise to vastly varying estimates partly, due to the lack of clear concept and also due to the inadequacies in the machinery of the State Governments.

24.43 The preliminary report of the survey on the incidence of bonded labour conducted in 1978 by the Gandhi Peace Foundation and National Labour Institute indicated a high figure of about 22.0 lakhs. However, according to the findings of the National Sample Survey (32nd round) the estimated number of bonded labourers in 1977-78, was about 3.5 lakhs. Pending further scrutiny of these estimates, the figure of 1.20 lakhs as reported by different State Governments was adopted for operational purposes. While these persons are expected to be rehabilitated by 1981-82 the State Governments have been requested to identify if any more persons falling in this category. Any partial rehabilitation would defeat the purpose of the programme and result in their relapse into near bondage. To prevent such an eventuality, an expanded scope of rehabilitation on a family basis is being considered with provisions for minimum consumption loans and making available durable assets to facilitate their engagement mainly in non-farm occupations like animal husbandry, piggery, bee-keeping, etc. which could provide a reasonably sound basis for sustained employment and income. A change in the pattern of assistance is also under contemplation.

CHILD LABOUR

24.44 Total abolition of child labour with all its socio-economic ramifications does not seem to be a feasible proposition in the immediate future. According to 1971 Census, the estimated number of child workers below the age of 15 years was 10.74 million representing 4.66 per cent of the total child population and 5.95 per cent of the total labour force. The predominance of boys in the category of child labour is indicated by the fact that they account for more than 70 per cent of the estimated child labour force. The incidence of child labour is mostly in the unorganised, informal and unregulated sectors. This is to be expected since there are statutory provisions regulating the engagement of child labour in factories, mines and plantations which are in the organised sector. While this system is spread throughout the country, the

State of Andhra Pradesh accounted for more than 15 per cent of the total child labour in the country. Abolition of this practice has to be a long term goal based on minimising the need for their earnings to supplement the family incomes and suitable statutory provisions for regulating their engagement in different occupations. However, immediate attention should be given to prevent their exploitation which when pursued in unhealthy environment causes permanent damage to the physical and mental development of children. Towards this end the tightening of the existing regulatory provisions and introduction of welfare measures to improve the nutritional level of the working children would be reflected in the appropriate programmes.

24.45 A high powered Committee has recently studied this question and recommended among other things, a multiple policy approach in dealing with the problems of working children. Appropriate measures would be taken to regulate employment of child labour, guarantee minimum standards relating to condition of service, welfare etc. Child labour has to be seen distinctly in the categories of wage earning employment: paid family workers; and apprentices in traditional crafts. The household approach to poverty alleviation envisages the ultimate elimination of child labour through programmes for the economic emancipation of the family and for education of children.

WOMEN LABOUR

24.46 Since women form an important component of the workforce and since they bear a triple burden, special steps will have to be taken to promote their welfare and development. Generally, welfare agencies have been reluctant to press for their demands because of the fear of the adverse impact such demands may have on women's employment. Non-recognition of their role has led to complete neglect of their needs. The protection extended so far relates to prohibition of employment of women in underground coal units/mines, also in certain other hazardous occupations, provision of certain welfare facilities like creches, maternity benefits and ensuring equal wages for equal work for both male and female labour. While social services like health services, education, etc. are required by all labour, male and female, the employment of female labour would call for special attention to the following:

- (i) provision of basic amenities in working and living conditions, such as housing, water supply, hospital and medical services, sanitation, etc.;
- (ii) provision of maternity leave benefits, family planning incentives, etc.;
- (iii) provision of care and education for all the children of the family;
- (iv) provision of opportunities for education, skill training and upgrading and advancement in order to widen areas and avenues for their employment; and
- (v) provision of alternative employment schemes for off-season and unemployment periods.

24.47 This requires the development of suitable infrastructure and joint action by the Ministries of Labour, Rural Reconstruction and Social Welfare, besides the State Governments, local authorities and voluntary agencies. Such measures would be promoted during the Plan.

CONTRACT LABOUR

24.48 Contract labour is generally employed for casual, seasonal or irregular work. The Contract Labour (Regulation and Abolition) Act, 1970 seeks to abolish the contract labour system in perennial operations and regulate it where the system cannot be abolished. The Act is implemented both by the Centre and the States. In the Central sphere the contract labour has been prohibited for certain specified operations in coal, iron ore, limestone, dolomite and manganese mines, and in buildings owned or occupied by establishments under the Central Government. The working of the Act over the years has indicated somewhat slow rate of progress in abolishing contract labour. Various deficiencies have also been noticed and suitable amendments to the Act are under consideration.

CONSTRUCTION LABOUR

24.49 A large part of the unorganised labour force in the country consists of unskilled labour, both male and female employed in various forms of building and construction activity. They are mostly rural migrant either landless or share-croppers and marginal/small land holders who come to the cities in search of work, being drawn from the same pool as the unorganised agricultural labour in the rural areas. This is not only migrant in the conventional sense of having moved from their original place of residence due to economic pressure but also extremely mobile due to the conditions and problems of employment in the construction industry which is characterised by high turnover, use of contract labour, irregular employment, seasonal variability, dependence on supplies of raw materials etc. Some of the characteristics of this category are:

- (i) high economic vulnerability due to the double combination of irregular and unstable employment and consequent high mobility on the one hand and their utilisation only in the lowest grade of job on the other;
- (ii) high proportion of female labour and frequent employment of whole family or couples;
- (iii) low capacity to utilise existing services because of high mobility; ignorance resulting from migrancy, lack of responsibility of civic agencies towards them as well as poverty, illiteracy etc.;
- (iv) low health status, particularly harmful to children resulting from hazardous, insanitary and inadequate working conditions;
- (v) lack of unionisation due to mobility and other reasons mentioned above; and

- (vi) lack of opportunity for training, skills upgrading or literacy for older people and of basic education for the children due to above conditions.

24.50 The basic steps that need to be taken to provide a fair deal for this group are:

- (a) provision of some degree of stability and longer duration of employment;
- (b) recognition of the special role of women in the labour and provision for them; and
- (c) infrastructure for the development and practical implementation of services which are provided for by existing legislation.

24.51 To a limited extent, the Workmen's Compensation Act, 1923, the Minimum Wages Act, 1948, the Employees State Insurance Act, 1948, the Contract Labour (Abolition and Regulation) Act, 1970, and Standing Instructions relating to casual labour applicable to the employing agencies apply to construction labour. It has, however, been noticed that these legislative enactments and standing orders do not cover safety at work and social security. To remove this lacunae, a Central legislation for construction workers is under consideration.

24.52 Even for projects which are planned to continue for five years the unskilled labour is usually employed for periods of three months or less. Often there are long gaps and periods of unemployment. A minimum of 200 consecutive working days would need to be assured. This can be done through adoption of NREP approach with proper forecasting of labour requirements at different stages by employers. The Ministry of Labour should insist upon suitable arrangements regarding the utilisation of unskilled labour by Government departments. Significantly, about 80 per cent of all investments in buildings and construction in the country is Government investment and nearly half of all Plan expenditure is eventually routed to this sector. It should thus be possible to insist on such an exercise in the interest of labour and make it a pre-condition for project approval.

INTER-STATE MIGRANT LABOUR

24.53 Lack of employment opportunities have forced many rural workers to migrate in search of jobs. Special problems of this category of labourers have been recognised. To regulate the employment and conditions of service of such workers and to provide them certain welfare amenities, the Inter-State Migrant Workmen (Regulation of Employment and Conditions of Service) Act, 1979 has been enacted and rules framed under it brought into force with effect from 2nd October, 1980. The Act provides for registration and licensing of establishments and contractors. The other obligations on the part of the contractor relate to furnishing of particulars of workmen issue of pass book to every workman employed by him, payment of

wage and allowance according to guidelines, provision of amenities like suitable residential accommodation, adequate medical facilities, protective clothing to suit varying climatic conditions and suitable conditions of working. The Act also provides for inspection, deterrent punishment and raising of industrial disputes by the migrant workmen.

24.54 Effective steps would be taken during the Sixth Five Year Plan to ensure implementation of this Act by a suitable machinery at the Central and the State levels. The infrastructure in this regard could be developed on the following lines:

- (i) **Migrant Labour Board**—A statutory body would be set up with representation from the three main concerned Ministries (namely, Labour, Social Welfare, and Works and Housing) though other Ministries and Departments (notably Irrigation) are also concerned and may be included. The Board would not be merely *advisory* but should have executive powers to enforce its decisions; otherwise it cannot be effective. It would concern itself with all issues affecting wages and working conditions, of planning for stability in employment and welfare provisions; and should have powers to revoke or withhold licenses until such time as its requirements are met with. There should be corresponding Boards in each State.
- (ii) **Funding for the Board and services** operated by it should come from a cess levied on all projects. The cess should be related to the volume of investment and duration of the project and not to the numbers of people employed. This should be regularly costed for as part of the tender.
- (iii) The Board should have a team of specialised social workers, in each State, to constitute a Migrant Labour Cell. The duties of this cell should be to keep in touch with all migrant labour, to provide them access to normal facilities and civic amenities, to act as an employment information bureau. The team of social workers will have to be mobile and flexible and should receive special orientation and training for this work. The cell should work in close collaboration with local authorities, particularly the health and education departments of municipal authorities, who should be helped to form their own mobile teams to offer services to such groups, so that they can be gradually integrated in the regular urban networks.

- (iv) The Board should fund creches, non-formal education centres and other specialised services which should be provided by competent agencies, with adequate trained staff. These specialised services cannot be rendered by building contractors, but can only be funded by them. Separate fund has to be found for training, supervision and management of these centres and monitoring to be done by the Board or a specialised sub-Committee of the Board consisting of people with competence in the field.
- (v) Training is needed, not only for workers, organisers and supervisors of creches, non-formal education centres, health centres and other specialised services, but also for the staff of the Migrant Labour Cells, and for extension work to local authorities, as well as for functionaries at all levels handling this programme. Suitable budgets for this infrastructure has to be worked out.

FARM LABOUR

24.55 With the spread of intensive agricultural practices in the Punjab-Haryana-Western U.P. region, large numbers of labour families from Bihar and Eastern U.P. are moving towards areas where there is work. The living conditions of such migrant farm labour need considerable improvement. Measures would be introduced during the plan to lay down norms of welfare activities and dormitory housing on the farms for such migrant farm labour.

MIGRANT SHEPHERDS AND DAIRY CATTLE OWNERS

24.56 Several communities engaged in animal husbandry have to move over long distances in the hills to feed their animals. Jammu and Kashmir has started educational programmes for the children of such migrant families. However, this problem needs integrated action. For this purpose, suitable projects would be supported for developing systems of delivery of minimum needs to such families.

OUTLAYS FOR 1980—85

24.57 An outlay of Rs. 161.9 crores is proposed for Labour and Labour Welfare programmes for the period 1980—85. Of this, the Central outlay would be of the order of Rs. 78.5 crores and the remaining Rs. 83.4 crores being accounted for by States and Union Territories. Annexure 24.3 gives the broad break-up of the total outlay by major programmes.

Annexure 24.1

Growth of Trade Unions & Membership

Year	No. of Registered workers' Unions	Number submitting returns	Membership of Unions submitting returns
			(In lakhs)
1973	23503	6402	43.77
1974	25056	5716	42.19
1975	25460	6097	45.69
1976	25665	6609	46.97

Source: Labour Bureau

Annexure 24.2

Average Annual Wages of Factory Workers

Year	Average Wage Per Worker	All-India Consumer Price Index Number for Industrial Workers (Base 1960=100)	Average Wages at 1960 (Constant) Prices*
	(Rupees)		(Rupees)
1960	1202	100	1202
1965	1735	137	1265
1968-69	2223	174	1263
1973-74	3364	250	1304
1974-75	3823	317	1249
1975-76	4301	313	1374
1976-77	4357	301	1443
1977-78	4560	324	1407

*Deflated by the All India Consumer Price Index Number for Industrial Workers. (base 1960=100)

Source: Annual Survey of Industries.

Annexure 24.3

Sixth Plan Outlays : Craftsmen Training and Labour Welfare Programmes

(Rs. in lakhs)

Sl. No.	Group of Schemes	Centre	States	Union Territories	Total
I	Craftsmen Training	2350	4566	633	7549
II	Apprenticeship Training	750	456	65	1271
III	Employment Service.	700	723	70	1493
IV	Labour Welfare	1550	1011	148	2709
	TOTAL (I to IV)	5350	6756	916	13022
V	Centrally sponsored scheme of Rehabilitation of Bonded Labour	2500	668	..	3168
	GRAND TOTAL (I to V)	7850	7424*	916*	16190
	or say (in Rs. crores)	78.5	74.2	9.2	161.9

*As recommended by Working Groups.

HILL AREA DEVELOPMENT

It is now recognised that the pathways of development adopted in the past have resulted in an uneven distribution of the benefits of economic growth as between geographical areas and also between socio-economic groups. It was in realisation of this phenomenon that certain specific target group oriented programmes, such as SFDA and MFAL were initiated during the Fourth and Fifth Five Year Plan periods. Special programmes for drought-prone, desert and tribal areas were also initiated. But in spite of these programmes, certain geographical areas present some very special ecological and socio-cultural features, which unless specifically taken into account do not permit the present planning process and the schemes developed within it, to be of major assistance to them. The Hill Areas of the country belong to this category.

25.2 The development of the hilly areas in the country, however, cannot be undertaken in isolation from the adjoining plains, with which their economy is closely inter-related. The hilly areas influence to some extent the climate of the plains; they contain the sources, the catchments and the water-sheds of several major river systems which flow to the plains; they abound in forests, plant and mineral wealth as well as hydel energy resources. Our experience of development planning during the last three decades has increasingly underlined the fact that unless adequate programmes are evolved for the conservation and proper utilisation of the resources of the hill areas, not only the problems of these areas will continue to remain unsolved, but the economy of the plains may also be adversely affected. Symptomatic of this aspect are the rapid siltation of dams, reservoirs, flooding, changes in agro-climatic conditions and pressure on the employment market because of the large-scale migration of people particularly men from hill areas. Development of the resources of the hill areas is hence necessary in order to enable the population living in these areas, who are by and large very poor, to have their share of the benefits accruing from modern science and technology. But such development, however, has to proceed in a way that the eco-system constituting the hills and the plains, is not irreversibly damaged, but is preserved in a suitable condition for future generations. There is, therefore, a paramount need for conceiving an integrated

strategy for the development of the hill areas based on sound principles of ecology and economics. It was in realisation of this need that special hill area development programmes were initiated during the Fifth Plan. During the Sixth Plan also, the hill areas of the country will continue to receive special attention on account of their difficult terrain, agro-climatic conditions, historical lag in economic development, their environmental impact on the plains and above all, their great growth potential.

CATEGORISATION OF HILL AREAS

25.3 The hill areas fall broadly into two categories, namely, (i) those that are co-extensive with the boundaries of the State or the Union Territory and (ii) those which form a part of a State.

25.4 The development of both categories of hill areas requires appropriate programmes of development.

Hill States

25.5 The hill areas which are self-contained politico-administrative units are being treated as Special Category States whose outlays are met, substantially out of Central assistance. These are the States and Union Territories of the North-Eastern Region, Jammu and Kashmir and Himachal Pradesh. The investments needed for meeting the vast infrastructural gaps in communications, transport, power generation and transmission, for the development of stable and diversified agriculture in place of the extensive practice of jhumming, horticulture, plantation crops giving rise to low volume and high-value products and large-scale afforestation with a view to restoring and protecting ecology, are heavy. On the other hand, it would take a considerable time for these areas to build up an adequate resource base. In view of this, the bulk of the outlays are provided out of Central Assistance.

North-Eastern Council

25.6 For the integrated development of the Hill States and Union Territories of the North-Eastern region, the Central Government set up the North Eastern Council in 1971 by an Act of Parliament. The North-Eastern Council started functioning with the commencement of the Fifth Five Year Plan. The

Council takes up such schemes as are of common interest to more than one State or Union Territory and to the region as a whole under its development plans. The Council has played an important role in the development of inter-regional programmes of power generation and transmission, construction of roads, agriculture, animal husbandry, fisheries etc. It has been supporting research and experimental projects. A training infrastructure is being built up for manpower development in the region under the auspices of the Council.

Hill Areas in Composite States of the Himalayan and sub-Himalayan region

25.7 Hill areas forming part of larger composite State occur in Assam, Uttar Pradesh and West Bengal in the Himalayan and sub-Himalayan region. Although the primary responsibility for the development of these hill areas is that of the concerned State Governments, the need for Central assistance has been recognised even as far back as the Second Five Year Plan. Arrangements for providing Central assistance to the Hill Areas Development Programme have been further systematised since the commencement of the Fifth Five Year Plan. The Special Central Assistance is being allocated among the constituent States, giving equal weightage to the area and population of the hill areas.

25.8 Since the Fifth Plan, the concept of a sub-plan has been introduced, in order to ensure complementarity and linkages among the schemes formulated under the various sectors of the State Plan and out of the Central additive. A statement showing the Area, Population and Districts/Talukas covered under the Hill Areas Programme is given below:—

Hill Area	Area (Sq. Kms)	Population (1971) (Lakhs)	No. of Districts
Assam Hill Areas	15.2	4.55	2 Districts (Karbi Anglong and North Cachar)
Uttar Pradesh Hill Areas	51.1	38.22	8 Districts (Dehradun, Pauri, Garhwal, Tehri Garhwal, Chamoli, Uttarkashi, Almora, Pithoragarh and Nainital)
West-Bengal Hill Areas	2.4	4.80	3 Sub-Divisions of Darjeeling District viz. Sub-Divisions of Sadar Kalimpong and Kurseong.

Western Ghats and other Hill Areas

25.9 The Western Ghats region consists of a contiguous area of 132 talukas in the States of Maharashtra, Karnatakā, Tamil Nadu, Kerala and the

Union Territory of Goa. The total area is 134.5 thousand Sq. Kms, and the population in this area is 26.49 millions. Central assistance is provided for development programmes in these areas, though the concept of a sub-plan has not been introduced. The other hill areas include Tamil Nadu Hill Areas (in addition to the Western Ghats areas) with an area of 2.5 thousand Sq. Kms. and population of 4.94 lakhs.

NEW THRUSTS AND FUTURE DIRECTION

25.10 The experience gained from the working of the sub-Plan suggests the need for greater horizontal integration among the various elements of a development programme. Mere regionalisation of the area budget alone will not help. Equally there is a need for a balance in emphasis between beneficiary-oriented and infrastructural development programmes, keeping in view the vital importance of ecological restoration and conservation. Better water and land-use and control of soil erosion through watershed management, afforestation, silvi-pasture development and replacement of annual crops with perennial shrubs and trees and plantation crops in steep slopes and development of other high value-low volume crops linked with processing and marketing are some of the methods of promoting sustainable development. Rural and small industries and electronic and precision instruments industries will also be promoted.

Land Use Pattern

25.11 The current land-use pattern either in the form of *jhuming* in the eastern Himalayan region or in the form of indiscriminate deforestation for a variety of purposes in the Western region is leading to ecocatastrophies of various kinds. It is widely accepted that in the hills and in undulating terrain, it would be wise to grow perennial plants and to promote scientific animal husbandry. Horticulture, particularly apple cultivation, has received widespread interest not only in Jammu and Kashmir, Himachal Pradesh and Uttar Pradesh Hills but also in Arunachal Pradesh and parts of eastern Himalayan region. This has to be supported by appropriate steps in post-harvest technology and marketing. Shortage of packing material in Himachal Pradesh is leading to deforestation of valuable timber trees. Transport of produce in the north-eastern region is another bottleneck. The emphasis, therefore, has to be on high value—low volume crops and products. In some parts of the hills, out-migration of men has taken place, making it necessary to introduce agricultural implements and machinery which could be handled by women.

Soil Erosion

25.12 The damage that soil erosion causes to the hill areas, including its impact on irrigation projects is well known. In this context, it is necessary to evolve an integrated strategy in the hill areas of mini-watershed management. Besides the technology as applied to these areas in fields like road construction, power, irrigation and industrial projects would need constant review to avoid unfavourable consequences like land slides and erosion.

Forestry

25.13 Forestry is essential not only for eco-preservation but also for fuel, human and animal nutrition, timber and raw-material for industry. It also provides wind barrier to agriculture and shade for plantations of coffee, tea, spices, etc. Preventing further deforestation and promoting extensive planting of these are both necessary. Afforestation of catchment areas is of very high priority for preventing soil erosion as well as regulating water supply. Suitable agro-forestry techniques would be fostered in such areas.

Animal Husbandry

25.14 In spite of the opportunities offered by favourable climate, the economic potential offered for dairying, sheep and other animal husbandry in the hill areas has not been fully tapped. In many hill regions the problem is of overgrazing due to uncontrolled animal population and poor management. The scientific management of these lands can increase the yield of fodder and support effectively a large animal population. The animal husbandry programme will need a strong preventive and curative animal health programme, together with processing and marketing of the produce.

Conservation and Environment

25.15 The hill areas, particularly, the Himalayan region is rich in genetic material of medicinal and food plants, fruits, including citrus and a wide range of other economic plants, orchids and other flowers. Some rare wild life still occurs in these areas. It would be important to have an integrated strategy for the preservation of the valuable flora and fauna through a chain of biosphere reserves, national parks and gene-sanctuaries.

25.16 For the scientific planning of the hill areas in the country, vital information on resources e.g., occurrence of minerals, soil characteristics, vegetational types and characteristics, estimation of the volume of surface and sub-surface flow in watersheds, etc., is required. Such information also needs to be constantly updated. Remote-sensing techniques and air-photo interpretation combined with ground truth studies hold great possibilities for this purpose. A perspective plan spelling out the long-term and short-term developments in the area will be drawn up. Plans will be drawn up for the regional, sub-regional, taluka (block) and settlement levels.

25.17 While the use of legal and executive powers to provide necessary protection to the environment should be made effective, far more reliance should be placed on people's action to achieve the desired results. The need for increasing public awareness about the environmental issues and to stimulate public participation in activities for environmental protection has been emphasised in the Chapter on "Development and the Environment". The measures indicated for the above purpose would be vigorously implemented in the Hill areas.

25.18 The concept of eco-development needs to be built into the programmes selected for implementation. Keeping constant need for eco-preservation in view, it is necessary that economic projects located in these areas build into their cost, the cost of eco-restoration. A paper project, for example, should include the cost of afforestation and its economic viability determined accordingly.

Planning

25.19 During the Sixth Plan, an integrated strategy, as outlined above, will be pursued. The planning process so far developed for the hill areas would be reviewed both in its operational mechanics and content. The programmes of ecological conservation in some areas would require a regional approach and coordinated action by several states. The Western Ghats region and the Himalayan region, both cut across several states. For these regions, appropriate implementation mechanisms would be devised for ensuring a regional overview and action at the national level.

25.20 To summarise, new approaches will have to be introduced for meeting the basic needs of hill people comprising water, food, work, fodder, feed, fuel and fertiliser. Water will have to be harvested in small ponds and reservoirs on a watershed basis and stored for use during winter and spring. Since land in the hills is best used for perennial crops, it will be advisable to store the needed food-grains in small storage structures at numerous points so that food availability attains the requisite degree of viability for persuading farmers to abandon jhumming and adopting cultivation of annual crops in steep slopes. "Store water and food wherever possible" has to be a major motto of the IRD programme in hill areas. Work will have to be provided under NREP and development projects in the fields of forestry, animal husbandry, fisheries, horticulture, agro-forestry and cottage industries. Since, women do most of the jobs in hills, they will have to be given opportunities for upgrading their skills in *Krishi* and *Van-Vigyan* Kendras. The District Manpower Planning and Employment Generation Councils will have to prepare detailed blue-prints and action plans for this purpose. Fodder and feed plants will have to be grown extensively under the social forestry and agro-forestry programmes. Until adequate fodder and feed become locally available, it will be necessary to establish "Fodder and Feed Banks" at suitable places involving the supply of enriched cellulosic wastes and straw. Arrangements for fuel-supply will have to be made under the village woodlots programme. Quick growing fuel trees will have to be cultivated under the social forestry programme. The Inter-University Eco-development camps to be organised with the help of the staff and students of universities and the Eco-development forces consisting of ex-servicemen will have to play a leading role in spearheading the afforestation movement. This programme will have to be monitored and scientifically supported by the Himalayan Research network to be constituted with the involvement of all the 12 universities in the Himalayas. A similar programme will have to be organised for the Western Ghats region.

25.21 The current practice of maintaining a large number of unproductive cattle just for the purpose of getting manure should be rendered unnecessary by providing the needed nutrients to crops through biological and mineral fertilisers. Cultivation of legumes both for fodder and grain purposes together with suitable rhizohal cultures will have to be taken up on a large scale in forest canopies.

25.22 If a new movement for the promotion of scientific land and water use and human resource development in the hills is launched during this Plan, the extensive damage now taking place in the hills to basic life support systems, both because of the greed of the rich and the genuine needs of the poor for fuel, fodder, feed and fertiliser can be arrested. Success in protecting the hill eco-systems will determine the future fate of agriculture in the adjoining plains.

Outlays

25.23 The Plan of the North-Eastern Council is fully funded by the Central Government. The programmes are implemented through the constituent units or Central organisations. The NEC's five year plan 1974—79 was of Rs. 90 crores and actual expenditure was Rs. 86.67 crores. The outlay provided in the Sixth Five Year Plan for NEC's programmes is Rs. 340 crores.

25.24 The provision for Special Central Assistance for hill areas in composite states of the Himalayan and sub-Himalayan region and the Western Ghats and other Hill areas was Rs. 170 crores in the Fifth Plan, the actual expenditure during 1974—79 being Rs. 162.65 crores. In the Sixth Plan, the provision has been raised to Rs. 560 crores.

DEVELOPMENT OF BACKWARD CLASSES

One of the Directive Principles of State Policy in the Constitution enjoins that the "State will promote with special care the educational and economic interests of weaker sections of the people, and in particular, of the scheduled castes and scheduled tribes and shall protect them from social injustice and all forms of exploitation." This directive has been reflected in the Five Year Plans which have sought to raise the socio-economic levels of all the people including scheduled castes/scheduled tribes and other weaker sections. However, three decades of development have not had the desired impact on these socially, economically and educationally handicapped groups. Their problems cannot be resolved through the percolation of general economic growth. The majority of the scheduled castes/scheduled tribes who form one-fourth of the population, are below the poverty line and also face special problems peculiar to them. Continuing to pursue traditional occupations, they are unable to avail of the fruits of economic growth and participate fully in the process of modernisation. The practice of untouchability against scheduled castes is a special handicap for them and even the few educated groups amongst them are unable to compete for job opportunities created while scheduled tribes still remain largely outside the main stream of development mainly because of their relative isolation and their exploitation by outside agencies. A large proportion of bonded labourers are also scheduled castes. In both these cases, social and economic impoverishment merge to form a single basic factor for backwardness. In spite of Constitutional Directives and number of legislative and executive measures by the Government, their situation has not improved appreciably mainly due to the lack of economic support. Although special programmes were formulated in the previous five year plans for their socio-economic development, the basic problem of their poor economic base has remained almost untouched so far. The Sixth Five Year Plan lays special emphasis on measures to solve their problems.

REVIEW

26.2 The recognised backward classes are scheduled castes, scheduled tribes, denotified, nomadic and semi-nomadic tribes and other castes which are socially

and educationally backward. The development programmes for the scheduled castes and scheduled tribes in the earlier Plans, tended to be formulated in an *ad-hoc* manner without any perspective and were more in the nature of welfare schemes. The special programmes for these groups were conceived as a supplement to the total development effort under general sectors of development. In practice, these special programmes merely substituted the benefits available to the scheduled castes, scheduled tribes under normal development schemes. This resulted in much lower investment for their development than envisaged. A mid-term appraisal of Fourth Plan showed that the fact that Plan outlays for Backward Classes were meant to supplement sectoral programmes, was not fully appreciated. The provision of funds for these programmes rose from Rs. 39 crores in the First Plan to Rs. 327 crores* in the Fifth Plan and a total of Rs. 744 crores was spent till the end of 1978-79. Of this amount 48 per cent was spent on educational schemes, 26 per cent on economic schemes and the rest on health, housing, drinking water supply and grants-in-aid to voluntary organisations working amongst scheduled castes and scheduled tribes. In addition, funds have been provided as special central assistance for the Tribal Sub-Plans to supplement the flow of funds from the normal development programmes in the States. The details are in Annexure 26.1 and 26.2

26.3 In terms of physical achievements by 1978-79 more than 59.75 lakhs of backward classes children were receiving stipends and scholarships at pre-matric level annually and another five lakh students at the post-matric level. Thirteen pre-examination training centres had been established to coach candidates appearing in State Civil Services and other subordinate services examinations and nine centres for all-India Services and other Central Services. Most of the economic schemes were in the nature of grants and subsidies to individuals for agricultural inputs, horticulture, fisheries, animal husbandry, cottage industries, training-cum-production centres etc. In 1978-79, a scheme to provide Central assistance to Scheduled Castes Development Corporation set up by the States was started with Rs. 5 crores.

*Includes 1978-79 also

For these Corporations, States and Centre share in equity funds in the ratio of 51 : 49. Programmes of housing and house-sites to backward classes and specially the scheduled castes also received attention. Efforts were made to improve the working and living conditions of scheduled castes engaged in hereditary unclean occupations, but these efforts have not yet made much impact. Other programmes included establishment of Tribal Research Institutes for survey and research on tribal problems.

26.4 In the Fifth Plan for the first time a strategy of earmarking funds for the development of scheduled tribes was evolved. For the scheduled tribes, because of their population concentration in specific areas, the instrument of Tribal Sub-Plans was developed to ensure flow of benefits from all sectoral programmes and to provide integrated delivery of services in the tribal areas. In the guidelines to the State Governments, the modalities of quantifying funds from identifiable programmes and where necessary tailoring them to the needs of the tribal people and areas, were issued. Accordingly, separate sub-plans were formulated covering 63 per cent of the tribal population in the country, in 16 States and 2 Union Territories. The Tribal Sub-Plan areas were divided into 180 Integrated Tribal Development Projects for operational purposes.

26.5 High priority was accorded to protective measures and elimination of exploitation. The areas for exploitation in tribal areas occur in the fields of liquor vending, land alienation, money lending and collection of forest produce. The States enacted laws/regulations to prohibit transfer of land from tribals to non-tribals. In recent years, State Governments have also reviewed the laws and taken appropriate measures to plug the loopholes.

26.6 In the Tribal sub-plan areas an outlay of the order of Rs. 644 crores from States Plans (including Rs. 120 crores Special Central Assistance) was made in the Fifth Plan (1974-78). Of this amount 29 per cent was spent on Agriculture and Allied sectors, 5 per cent on Cooperation, 27 per cent on Irrigation and Power Development, 10 per cent on Transport & Communication, 4 per cent on Industries, 22 per cent on Social and Community Services and 3 per cent on economic and general services. In addition, pockets with 50 per cent or more tribals in a population of 10,000 in a contiguous areas, have been included in the Tribal Sub-Plan Areas from 1979-80 onwards raising the tribal population covered under the Tribal Sub-plan to 75 per cent at the beginning of the Sixth Plan.

26.7 In terms of physical achievements, 5.72 lakh hectares of additional area was brought under minor irrigation, 1.68 lakh hectares under soil conservation, about 8,000 hectares of land was brought under horticulture, approximately 52,000 hectares of land was restored to tribal farmers, more than 8,000 villages provided with water supply and 6,528 villages were electrified.

26.8 The administrative structure created in the tribal sub-plan areas vary from State to State. But a review showed that the delivery system has not been effective in tribal areas because there have been inadequacies in the administrative machinery, lack of sensitive trained management, lack of general preparedness for large investments, deficiency in accounting systems, procedural delays and lack of proper monitoring and evaluation.

26.9 For the scheduled tribes population living outside tribal areas and the scheduled castes who are dispersed among the general population, there was no instrument for ensuring a similar flow of benefits from sectoral development programmes, except under the special programmes of SFDA, DPAP, CAD where 20 per cent of beneficiaries were chosen from these two categories.

26.10 The educated class amongst the scheduled castes, comprising a very small fraction has acquired some vertical mobility through reservations in jobs and other economic opportunities specially created for them. The position of the scheduled castes in general is, however, becoming more vulnerable because of pressure of population and keener competition for limited resources. In the previous plans, the flow of benefits to scheduled castes from programmes under general sectors could not be quantified, even if some benefits did flow, as under SFDA, DPAP, CAD etc. No positive steps were taken to ensure that scheduled castes obtained their share of the benefits of public investment.

OBJECTIVES AND STRATEGY

26.11 The major objective of the Sixth Plan (1980-85) is to wage an all-out war on poverty and mobilise all our latent energies for the creation of a more dynamic and more equitable society. This will be achieved only if the scheduled castes/scheduled tribes who constitute the bulk of the poorer sections of the population receive their due share from the Plan programmes. In view of this, Special Component Plans will be formulated as Part of various programmes to enable scheduled castes families to cross over the poverty line within a short period

26.12 The programmes formulated for scheduled castes/scheduled tribes and backward classes can no longer be confined to mere educational incentives, grants and subsidies for economic activities, housing, drinking water wells etc. Comprehensive development plans are required to be formulated keeping in view the special problems and needs of each of these communities. Further, these programmes have to be integrated with other general programmes in the context of over all development strategy of the Plan.

26.13 For scheduled tribes the present sub-plan approach which operates through Tribal Development Projects will be continued. Tribal identity and the tribal way of life will be preserved in a manner consistent with their aspirations for development.

26.14 For the scheduled castes, the strategy of Special Component Plan has been adopted particularly for States/Union Territories having large scheduled castes population. The special development programmes for Backward Classes would be in addition to this. These programmes would also provide for educational and economic schemes to those groups who are not included in either of the schedules but are equally indigent.

26.15 The main thrust of the policy thus for development of the scheduled castes/scheduled tribes during the Sixth Plan is fourfold, namely, (a) integration of services at the delivery point to the beneficiary with a view to develop self-reliance in him, (b) development of services from the bottom-upwards instead of top-downwards, (c) development of skills to diversify the occupations, specially in the case of scheduled caste, and (d) introduction of latest technology based on local materials and local skills to reduce drudgery of workers and also to remove the social stigma attached to their present profession. A simple subsidy based approach has perpetuated dependence and curbed initiative. Hence the whole structure of grants and subsidies would have to be re-examined to ensure that they be so built in the programme that the beneficiary becomes self-reliant over a specified period.

26.16 The main programme is for the generation or augmentation of purchasing power through the schemes like National Rural Employment Programme, the Integrated Rural Development Programme, the programme of agriculture, animal husbandry, fishery, sericulture etc. In addition, the basic needs of these communities would be met from the Minimum Needs Programme.

26.17 All these programmes will be so devised as to eliminate the contractor from outside the area who exploits the weakest and to spread the benefit of the programme and the profit to all members joining the programme. A creche, processing centre or kitchen run by women, health centre, adult education, health and nutrition education, etc. would be integrated with these Programmes. The community facilities and assets like the water supply sources, community centres, street-lighting, other M.N.P., etc. would preferably be located in the colonies inhabited by the scheduled castes and other backward classes. A study of Anganwadis in the ICDS projects, which are modified version of the Balwadis, for pre-school education for the age-group of 3-6 years, located in the predominantly scheduled caste/scheduled tribe areas has shown benefits accruing to the children belonging to those communities. But, by and large, it has been observed that Balwadis seldom reach the most backward. The style and pattern of Balwadis may have to be changed to provide simple management through village women and attaching them, if possible, to the schools so that the girls who have to attend to their younger brothers and children could attend the school while looking after them in the creche-cum-balwadi attached to the school. In order to support a massive nutrition programme each

family may be required to bring a handful of uncooked food for each child and some elderly women from the village may look after the provision of nutrition.

26.18 Supervision at delivery level would be made independent by selecting the members of the supervisory committee from amongst the beneficiaries. Training of all officers at different levels would need to be improved. The institutions which have been able to reach their services to the poorest, would be selected for imparting training.

26.19 Scheduled Castes/Scheduled Tribes Corporations need to improve their participation in the venture and provide necessary credit, inputs, marketing and other infrastructure to support these programmes and help in eliminating exploitation.

26.20 In the case of scheduled castes the eradication of untouchability in all forms will be attempted so that social disabilities do not inhibit their economic and social development. Special vigilance cells set up in a few States for proper and speedy investigation of complaints involving offences against members of the scheduled castes will be extended to others also. Publicity against the practice of untouchability will be intensified.

26.21 Voluntary organisations have an important role to play in the mobilisation of support to various programmes and their effective implementation. Their participation in creating consciousness among backward classes for their developmental needs will be essential. It will be necessary to develop leadership at different levels so that their urge for betterment is constantly sustained.

SUB-PLANS FOR TRIBAL AREAS

26.22 The tribal population of 39 million at the time of 1971 Census increased to 42 million with the Amendment Act of 1976 when the area restriction within a State was removed. The majority of tribal population is concentrated in eastern, central and western part of the country and about 25 per cent are dispersed in small pockets in the southern zone. In the Sixth Plan some further areas of tribal population will be brought within the ambit of Tribal Sub-plans by identifying tribal pockets of 50 per cent concentration in a population of 10,000 in contiguous areas. The coverage of tribal population is thus likely to go up from 63 per cent as at the end of the Fifth Plan to 75 per cent.

26.23 The Tribal Sub-plans envisage development effort in the identified areas with resources pooled from (i) outlays from State Plans; (ii) investment from Central Ministries; (iii) special Central assistance; and (iv) institutional finance. An analysis of the investments made in the Fifth Plan shows that out of States' share of funds larger outlays have gone into infrastructural schemes and only 5 per cent of investment was for beneficiary-oriented schemes. Though allocation for infrastructural programmes might help create employment and build facilities,

there would be a long time-lag between the infrastructural facilities being created and utilisation by the tribals. To expedite this, it is necessary that planning process be re-oriented in favour of family-oriented schemes with a sharper focus in the target group. In family-oriented planning, institutional finance becomes crucial. In the Fifth Plan period, the contribution of financial institutions in tribal areas has been inadequate in relation to need. The same is true for the flow from Central and Centrally Sponsored Schemes. Both these sources would be tapped more fully to promote tribal development.

26.24 So far as administrative machinery in tribal areas is concerned, there has been adverse criticism about the complex pattern of administration. A multiplicity of Government Departments advising beneficiaries for development activities and separation of revenue, judicial and development administration has caused confusion and resulted in lack of confidence in administration. It is necessary to have integration of administrative functions in the area of an Integrated Tribal Development Project. The chain of command can be from the State level through the Commissioner of a Division, Collector of a district, project administrator of ITDP, BDO to block level extension officer and to the village level worker. In the Sixth Plan, therefore, an attempt will be made to have such unified administration.

26.25 The training of personnel for tribal areas and provision of necessary facilities like housing, health and education for them will be accorded high priority. Often suitable personnel is not available at the field level in remote tribal areas. In such situation the local youth with at least minimum educational qualifications would be selected and given required training for assisting in developmental activities.

26.26 The programme content of the tribal sub-plans would require to increase the productivity levels of agriculture and horticulture, animal husbandry, forestry, small and village industries and marketing. These would need to be linked with improved post-harvest technology. The LAMPS would be improved to provide credit and marketing facilities. Another aspect which would be dealt with is transfer of technology and in doing so it would be the endeavour not to destroy economic base of the tribals but gradually introduce improved techniques of agriculture, horticulture and animal husbandry, etc. Resettlement of shifting cultivators amongst tribals in 233 Blocks over 62 districts would be improved by provision of a package of services required. Education is key to the development of human resource along with provision of basic amenities like safe drinking water, adequate shelter and health care and an optimal level of nourishment. Their special health problems like sickle cell anaemia, goitre and other endemic ailments would be tackled. A substantial programme for control of leprosy would be taken up.

26.27 For the Tribals outside the sub-plan area and pockets of concentration, the area approach of development would not be feasible. Integrated schemes of infrastructural development like school, PHCs,

etc. and of family-benefit would be taken up. These programmes would require to be built into the general rural development programmes.

26.28 Formulation of project reports and programmes for the primitive tribes would receive special attention. A separate organisational structure would be created with careful selection of personnel to deal with their problems sympathetically. Arrangements for monitoring and concurrent evaluation would be strengthened.

SPECIAL COMPONENT PLAN FOR SCHEDULED CASTES

26.29 The population of the scheduled castes in the country is about 100 million. They have very few assets and are generally dependent on agricultural labour, leather work and other low-income occupations. Of working population of scheduled castes, 52 per cent are agricultural labourers and conversely 33 per cent of agricultural labourers are scheduled castes. Most bonded labourers are scheduled castes. The few cultivators amongst scheduled castes are share-croppers or subsistence farmers. Others mostly pursue traditional occupations and are unable to avail themselves of the new employment opportunities. Their literacy level is only 14.7 per cent as compared to the all-India level of 33.80 per cent (excluding scheduled castes and tribes). Female literacy among them is as low as 6.44 per cent against all-India female literacy level of 22.5 per cent (excluding scheduled castes and scheduled tribes). In spite of their adverse conditions they contribute significantly to the sustenance and growth of the production system of the country.

26.30 The main thrust for the development of scheduled castes has to come from every sector of development and by every Department and Agency. The need-based programmes to be formulated for the scheduled castes would keep in focus target groups in the occupational categories. The core programme for economic development would lay emphasis on land development and agricultural production, animal husbandry including dairy, sheep, goat, poultry, pig-gery development, leather work, weaving, other cottage and village industries, fisheries and small scale and tiny industries. In implementing all these programmes, availability of institutional finance is crucial. It is envisaged that the Scheduled Castes Finance and Development Corporations would play a catalytic role in channelising inputs, credit as well as funds under DRI. An additionality of Special Central Assistance is being provided to stimulate and supplement the efforts made by the States. Such Corporations are functioning in 17 States. States with a substantial population of scheduled castes where these have not yet been formed, would be encouraged to set up such Corporations.

OTHER PROGRAMMES FOR BACKWARD CLASSES

26.31 The special programme for backward classes are basically supplementary programmes. The special provisions for scheduled castes/scheduled tribes and other backward classes are made under this sec-

tor for education, health, nutrition etc. supplementing the normal programmes of other sectors. The main emphasis will be on raising literacy and improving the educational levels of backward classes through schemes of pre and post-matric scholarships, educational incentives like provision of books, stationery, uniforms, coaching classes, boarding grants, hostel facilities, etc. The problem of first generation learners amongst scheduled castes/scheduled tribes is lack of guidance and encouragement from parents specially at High School level. A number of States have initiated steps to increase enrolment and retain children in school. Greater emphasis is being placed on girls' education and checking drop outs. This will be done by giving them special coaching programmes to enable them overcome their environmental handicaps and educational backwardness. By 1985 it is envisaged that about 105 lakh children of scheduled castes/scheduled tribes and other backward classes would be benefiting from stipends/scholarships and other incentives at pre-matric level and that 8 lakh scheduled caste/scheduled tribe students would be receiving post-matric scholarships. Hostel facilities for scheduled caste and scheduled tribe girls under the Centrally Sponsored schemes will be increased. In order to improve the employment prospects of educated scheduled castes and scheduled tribes and to fulfil the quota in jobs reserved for them, there are pre-examination training centres for those

appearing for all-India and State Service Examinations. The capacity of these centres will be expanded.

26.32 Special attention will be given to modernise scavenging, flaying and tanning, etc., to remove the stigma attached to these unclean occupations through improved technology. Educational incentives will be given to the children of families involved in these activities and alternative avenues of occupation will be provided in order to improve their living and working conditions.

26.33 For economic improvement of scheduled castes/scheduled tribes, funds provided under the backward classes will be utilised mainly to give subsidies/grants to assist scheduled castes/scheduled tribes trained under various trades and crafts in Krishi Udyog Kendras and help modernise their skills to make them more competitive.

26.34 Voluntary organisations which have contributed to the welfare of scheduled castes and tribes through such programmes as running of hostels, ashram schools, dispensaries and maternity and child welfare centres, training centres, propaganda and publicity for Civil Rights Act, etc., will continue to receive grants-in-aid from Central and State Governments.

Annexure 26.1

Outlay and Expenditure in the Successive Plans for Special Programmes for Backward Classes

Plan	(Rs. crores)	
	Outlay	Expenditure
First Plan	39.00	30.00
Second Plan	90.00	79.00
Third Plan	114.00	99.14
1966-69	62.00	68.49
Fourth Plan	171.29	141.00
Fifth Plan (1974-78)	227.89	226.00
1978-79	99.09	99.94
1979-80	98.84	86.40

Outlay and Expenditure in Fifth Plan 1974-78, 1978-79 and 1979-80—Tribal Sub-Plan

	(Rs. crores)					
	Outlay			Expenditure		
	State Plan	Special Central Assistance	Total	State Plan	Special Central Assistance	Total
1974-78	523.64	120.00	643.64	469.83	119.31	589.14
1978-79	332.44	70.00	402.44	239.61	70.00*	359.61
1979-80	394.67	70.00	464.67	382.45	70.00*	452.45

*Releases/only.

Annexure 26.2

Sixth Plan Outlays : Development of Backward Classes

(1)	(Rs. crores)											
	Fifth Plan 74-78 (Exp.)			Annual Plan 78-79 (Exp.)			Annual Plan 79-80 (Anti. Exp.)			Sixth Plan (Tent)		
	States & UTs.	Centre*	Total	States & UTs.	Centre*	Total	States & UTs.	Centre*	Total	States & UTs.	Centre*	Total
	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Education	67.86	57.50	125.36	42.90	20.60	63.50	26.66	9.85	36.51	349	157.50	506.50
Economic Dev.	29.88	..	29.88	15.05	0.50	15.55	19.42	12.24	31.66	209	65	274
Health, Housing & others	67.10	2.82	69.92	19.09	1.34	20.43	15.95	1.42	17.37	153	17.50	170.50
Direction	0.84	..	0.84	0.46	..	0.46	0.86	..	0.86	9.30	..	9.30
TOTAL	165.68	60.32	226.00	77.50	22.44	99.94	62.89	23.51	86.40	720.30	240.00	960.30
Special Central Assistance for Tribal Sub-Plan Areas ^(a)	..	119.31	119.31	..	70.00	70.00	..	70.00	70.00	..	470	470
Special Central Assistance for Dev. of Scheduled Castes ^(a)	..	..	..	..	..	..	..	5.00	5.00	..	600	600
	165.68	179.63	345.31	77.50	92.44	169.94	62.89	98.51	161.40	720.30	1310	2030.30

*Figures given for Central Sector are amounts released only as per Min. of Home Affairs.

^(a)This is only the Central additive. The major funds flow to the Tribal Sub-Plans and Special Component Plans mainly from the general sectors of the State Plans. In addition, resources also flow from institutional finance and under various programmes of the Central Ministries.

WOMEN AND DEVELOPMENT

The Constitution of India not only provides for equal rights and privileges for women and men but also for making special provision for women. A series of social legislations have been enacted from time to time for raising the status of women in the country. The Five Year Plans have consistently placed special emphasis on providing minimum health facilities integrated with family welfare and nutrition for women and children, acceleration of women's education, their increase in the labour force and welfare services for women in need. Various welfare and development schemes have been introduced to improve the living conditions of women and to increase their access to and control over material and social resources. Special steps have been taken to remove legal, social and other constraints to enable them to make use of the rights and new opportunities becoming available for them.

27.2 Various studies show that women are becoming increasingly conscious of their rights and capabilities. However, the demographic features of female population like excessive mortality in female children resulting in persistent decline in sex ratio, low rate of literacy, and low economic status stress the need for greater attention to the economic emancipation of women. The low status of women in large segments of Indian society cannot be raised without opening up of opportunities of independent employment and income for them. But the process of change to raise the status of women under various spheres of socio-economic activities would require sustained effort over a period of time.

REVIEW

27.3 Under the different Five Year Plans, general as well as special programmes were taken up for the welfare of women and also to cater to their special requirements. A wide network of maternity and child health centres and family welfare centres were established. An attempt to integrate the family welfare programme with general health services has been made. Prophylaxis against nutritional anaemia amongst mothers and immunisation of pregnant women against tetanus has been taken up along with prophylaxis against blindness in children caused by Vitamin 'A' deficiency and immunisation against diphtheria, whooping-cough, tetanus and polio for children.

27.4 Special nutrition programme was started in 1970-71 for providing nutritional supplements to the most vulnerable group of pregnant and nursing mothers and children of the age group 0-5. Nutrition education has been made a basic component of supplementary nutrition, health and education programmes.

27.5 Emphasis has been laid on increasing the enrolment of girls in schools by providing various incentives. Functional literacy as part of the national adult education programme as well as under the Integrated Child Development Services projects has been given special emphasis.

27.6 The Equal Remuneration Act aims to eliminate discrimination in remuneration against women. Labour laws have been made to provide for material benefits and creches in units employing women.

27.7 Social welfare programmes cater to the special needs of women who by reason of some handicap—social, economic, physical or mental—are unable to avail of or are traditionally denied the amenities and services provided by the community. In the beginning, emphasis was on the provision of institutional services but it has now been shifted to the preventive and developmental aspects.

27.8 Despite all these development measures and the Constitutional legal guarantees, women have lagged behind men in almost all sectors. There has been a steady decline in sex ratio. For 1,000 men there were 972 women in 1901, which became 946 in 1951 and 930 in 1971, while the position is opposite in the developed countries. Sex ratio for all ages in 1971 was 951 for rural areas and 857 for urban areas. The inter-State variations are considerable. The ratio is adverse in the States of Punjab, Uttar Pradesh, Jammu and Kashmir and West Bengal. It is most favourable in Kerala, followed by Orissa, Tamil Nadu and Andhra Pradesh. Similarly, the expectation of life at birth, a good indicator of development, shows that it is 44.7 for the females against 46.4 for the males in 1971.

27.9 The surveys by the Registrar-General of India reveal that the infant mortality rate (IMR) is more among female babies as compared to males in rural and urban areas as may be seen from the table below:

Table 27.1

Infant Mortality Rate by Sex and Residence

Year	Rural		Urban		All India	
	Male	Female	Male	Female	Male	Female
1972	141	161	85	85	132	148
1978	130	142	69	71	120	131

27.10 It has been estimated that in 1978-79 of the total non-enrolled children of the age group 6—14, two-thirds were girls. In 1979-80, in the age group 6—11, the population of girls in schools was two-thirds that of the boys (about 66 per cent for girls against about 100.2 per cent for boys). In the age group 11—14, the number of girls in the schools was half that of the boys (28 per cent for girls and 52.0 per cent for boys).

27.11 In literacy also, excluding 0—4 years age group, the number of women literates is less than half of the males (*i.e.*, 21.97 per cent for women against 45.95 per cent for males). The rural female literacy rate is only 13.2 per cent (1971) while the urban rate is 42.3 per cent. About 83 districts have less than 5 per cent female literacy and 113 between 5 and 10 per cent. The female literacy for scheduled caste is 6.44 per cent and for scheduled tribe is 4.85 per cent. The rates of literacy varied widely from 3.58 per cent in Arunachal Pradesh, 4.8 per cent in Rajasthan, 7.2 per cent in Bihar to 61 per cent in Kerala.

27.12 Despite preventive legislation, the age of marriage for girls specially in rural areas and lower strata of society has remained low. The Report of the Committee on the Status of Women shows that the percentage of girls married by 14 years of age in rural areas in 1961 was as high as 22 as compared to 7 among the urban females of the same age group. By 1971, this percentage came down to 14 in rural areas while it dropped to 4 in urban areas. Early marriages result in frequent pregnancies, poor health and lack of opportunity for proper personality development. Repeated pregnancies account for high incidence of anaemia and maternal malnutrition, ultimately leading to high maternal mortality rate.

27.13 Women labour force participation rate remained generally unchanged for the last three decades around 28 per cent while in the case of men it was fairly stable around 57 per cent. In the organised sector the women's share increased only slightly from 11 per cent in 1971 to 12.4 per cent in 1979. A few women in all walks of life reached the top positions but on the whole they continue to be concentrated mainly in low-scale, low-wage and drudgery involving jobs. Women are mainly employed in the unorganised sector which forms the overwhelming majority of female workers (over 90 per cent). This is also linked with their low rate of participa-

tion in the training programmes in industrial training institutes, polytechnics, engineering colleges, Krishi Vigyan Kendras, technical and industrial schools, though special measures to expand training opportunities for women in non-traditional occupations have been taken. The details given in Annexures 27.1 and 27.2 are relevant in this regard.

STRATEGY

27.14 The main drawbacks in women's development have thus been mainly preoccupation with repeated pregnancies without respite in physical workload, lack of education, formal and non-formal and a preponderance of social prejudices along with lack of independent economic generation activity or independent assets. The strategy thus has to be three-fold—of education, employment and health. They are interdependent and dependent on the total developmental process. In addition, the voluntary adoption of the small family norm has to be promoted among all couples.

27.15 In the Plan, the basic approach is of the family as a unit of development. Within this approach, special attention on the most vulnerable members will be given. The most vulnerable members may change from family to family and within the family from time to time. But for some time in future, women will continue to be one of the most vulnerable members of the family. Hence, the economic emancipation of the family with specific attention to women, education of children and family planning will constitute the three major operational aspects of the family centred poverty alleviation strategy.

27.16 In order to understand and analyse the backwardness of women a disaggregated view of the problem, according to groups, communities and areas is necessary. An aggregate picture is sometimes misleading, *e.g.*, the average female literacy in India is 22 per cent against about 4 per cent in Arunachal Pradesh.

27.17 Separate cells in organisations and agencies generating substantial employment opportunities to look after the women's interests are helpful but have a limited role. It is more important to create a general awareness and understanding of the problems of women's employment in all the top policy and decision making and executive personnel. There is also the special problem facing women like the preference for male children for social and cultural reasons. This will require awareness, understanding and action. The best way to do so is to educate the children, orient the teachers, examine the text books and teaching-aids and ensure that the next generation grows up with new thinking. As it is not enough to wait for them, non-formal education of men and women is necessary as an immediate short-term measure. Both men and women need education in home science so that the concept of symmetrical families can take root.

27.18 In order to take corrective measures as the programmes are implemented, the statistical data of physical achievement in beneficiary-oriented programmes will have to be collected by sex. The implementation of programmes would be reviewed from time to time.

27.19 Economic independence would accelerate the improvement of the status of women. Government would endeavour to give joint titles to husband and wife in all development activities involving transfer of assets. This would be taken up for implementation to start within programmes like distribution of land and house-sites and beneficiary-oriented economic units.

27.20 Voluntary action has a key role to play in mobilising public support against social prejudices. Hence its strengthening at the grassroot level will be necessary. Such organisation of voluntary action is necessary for creating a proper climate for the introduction of social legislation as well as for its effective implementation and the provision of legal aid.

27.21 For promoting adequate developmental efforts for women at different levels and creating needed channels for women to participate effectively in decisions that affect their lives, grassroot level organisations should be promoted. Mahila Mandals and other voluntary agencies would be encouraged to take up socio-economic programmes for providing wages and self-employment in rural areas. They would be linked with cooperatives and federations for marketing of products. Adequate attention should be paid to offer technical and managerial assistance to these agencies so that they would prepare viable economic projects for attracting institutional finance and market their products. Marketing, being crucial to the programme, the arrangements would need to be reviewed.

27.22 The Central Social Welfare Board would continue to be largely responsible to extend support, both technical and financial, to voluntary agencies, particularly in the backward areas. The programmes of the Central Social Welfare Board and those of individual developments will be functionally integrated so as to optimise the benefits from all programmes intended for women.

27.23 Advisory Committees at different levels would be set up for reviewing the adequacy of the implementing machineries and periodic progress for various social legislations such as Anti-Dowry Act, Child Marriage Restraint Act, Indian Succession Act, etc. The National Committee for Women headed by the Prime Minister will provide overall guidance and leadership in this field.

27.24 At district levels, special cells for increasing women's participation through wage and self-employment would be set up as part of the proposed machinery for district manpower planning and employment generation.

27.25 Research and studies to improve data base regarding women would be supported. Coordination, evaluation and monitoring of the programmes would need to be improved. Science and technology to reduce drudgery of household work would be supported.

Education

27.26 The programmes for universalisation of elementary education will be specially directed towards higher enrolment and retention of girls in schools. This would require Balwadi-cum-creches attached to the schools to enable the girls to attend school since otherwise they would have to stay at home to look after the younger brothers and sisters in the absence of mothers at work. It would also require income-generation work for girls outside the school hours to supplement the family's income. Other incentives like uniforms, free books and stationery etc., already in force, would need to be effectively expanded. Women teachers, where necessary, would be appointed in rural areas to encourage girls education. Residential quarters for women teachers would also be constructed. Science teaching in girls' schools/colleges will be strengthened to achieve greater participation of women in science and technology. Admission policies will be streamlined to promote greater enrolment of women in engineering, electronics, agricultural, veterinary, fishery and forestry courses. In education and training, women would thus be brought to the mainstream along with men to share the facilities fully.

27.27 The functional literacy programme would be expanded, specially in areas having low female literacy rates. Special non-formal educational programmes will be introduced for girls in the age group 15—20 years who could not complete formal schooling earlier. Every effort will be made to ensure that at-least 1/3 of trainees under the TRYSEM programme are girls. Special Krishi, Udyog and Van Vigyan Kendras will be established for women.

27.28 For boosting the programmes for education of women belonging to backward classes, the number of girls' hostels would be increased. The rates of post-matric scholarships for different courses are higher for girls as compared to boys. This scheme would be further expanded to provide larger opportunities for girls. Instead of increasing separate women's polytechnics, which were developed as multi-purpose institutions for imparting training in arts, crafts, etc., co-educational institutions would be encouraged as far as possible.

Health

27.29 In health, provision will be made for continuing and expanding the maternal and child health schemes including antenatal, natal and postnatal services, training of popular 'DAIS' who are already practising in every village so as to reduce the maternal and neo-natal deaths and complications. Training capacity for ANMs would be further augmented to meet the requirement of sub-centres. Experi-

ence reveals that ANMs posted in rural areas are not able to adjust to the local conditions due to lack of familiarity with the socio-cultural situation, accommodation and security. To overcome these field problems, efforts would be made to select girls from local areas, relax minimum educational qualifications, raise upper-age limit and give preference to widows or deserted women. In almost all the hospitals, the nursing personnel are mainly female. The training facilities for them will be expanded. Family welfare programmes will receive high priority. Sustained effort would be made to create consciousness, acceptance and demand for this programme. Co-operation of the voluntary organisations would be sought for disseminating relevant health and family planning information and for launching a national movement for population stabilization.

27.30 Effort would be made to expand the minimum health facilities integrated with family welfare and nutrition. The nutritional status of a child at birth is influenced by the nutritional status of his mother. It is well documented that a vast majority of pregnant and nursing mothers, especially belonging to the low socio-economic group, live on diets which are inadequate. The high incidence of pre-maturity, low birth weight of babies and neo-natal mortality can be attributed to poor nutritional condition among the mothers. In view of this, importance will be given to improving the maternal nutrition status. With an increase in women's employment, the income of the household would go up thereby resulting not only in raising the nutrition and child-care in the family but also bringing down the birth rate and infant mortality rate.

27.31 The long-term approach to solving the problem of malnutrition in women would be to generate employment among them as it would provide purchasing power to women which will have an impact on her as well as her family's nutritional status. Along with this, basic services like health, creche-cum-balwadis, etc. would be provided to enable their employment retention. Till the long-term programme effectively builds up, nutrition intervention to most vulnerable groups of women, namely, pregnant and nursing mothers from the weakest sections of the society, would continue to get nutrition supplement under the Supplementary Nutrition Programme. Education will also be imparted on the production and consumption of nutritious foods and on the adoption of simple horticultural remedies involving kitchen gardening for the major nutritional maladies of each block.

Employment

27.32 One of the most important means of achieving improvement in the status of women would be to secure for them a fair share of employment opportunities. Areas and sectors where women's employment is either low or on the decline would be identified and corrective measures initiated to pro-

vide additional avenues for employment. Effort would be made to offer larger employment for them in the schemes for public distribution system, rural godowns, Operation Flood II, Dairy Development and social forestry and in armed forces. Modernisation of traditional occupations of women such as spinning and weaving, match-making, coir, cashew, rural marketing, agriculture, animal husbandry and fishery, etc., would be selective and would include simultaneous development of skills for alternative employment for them. Mechanisation will be encouraged in such areas where the processing or manufacturing involves extremely strenuous and debilitating hard work which is injurious to health. The impact of new projects on women's employment will be monitored.

27.33 Family aid services would be supported so as to enable women to remain in employment. Enforcement of statutory obligations for setting up creches would be pursued vigorously. Creches would be established in the hostels for working women, State and Central Government offices, public sector undertakings, residential colonies and project sites. Creches will have to be designed for regular establishments as well as for agricultural, construction and migrant labour families. In rural areas this would be linked up with the scheme of NREP. The implementation of the Equal Remuneration Act would be reviewed and appropriate measures introduced for their effective functioning. Measures would be taken for the payment of wages/salaries earned by women directly to them.

27.34 The specific needs and problems of self-employed women will be identified and steps taken to extend appropriate support to self-employed women like street vendors, petty shop-keepers, weavers, etc.

27.35 A major step to be taken to promote female employment would be to expand and diversify the education and training opportunities available to women. Bias is often at work to prevent women from joining certain types of education and training in sufficient numbers. Appropriate training facilities would be initiated for the skill-development of women job seekers to promote their employability including self-employment. They would be eligible for employment and training in all fields provided they fulfil the required qualifications. Under the Apprenticeship Training Scheme, placement of increased number of women trainees would receive special attention. Under the Vocational Training Programme for women, rural training component and setting up of more regional institutions are envisaged. The national scheme of Training of Rural Youth for Self-Employment (TRYSEM) is expected to cover a large number of rural women. These would also be expected to facilitate the removal of skill constraints and biases working against the recruitment of women trainees. A fair share of stipends, hostel seats, etc. would be made available in order to facilitate rapid growth in the number of female trainees. As an incentive, special prizes and awards may be instituted for women trainees or students in recognised institutes. The Pro-

grammes would be integrated with production activities.

Social Welfare

27.36 The coverage of the programme of Hostels for Working Women would be stepped up with emphasis on making this scheme a self-financing project as far as possible. Measures for re-entry of women who go out of employment for raising their families would be considered along with the provision of part-time jobs in an organised manner. Besides arrangements for keeping their knowledge up-to-date, specially in science and technology would be considered. Training and rehabilitation schemes for women in need of care and protection would be formulated to facilitate their absorption into the normal stream of socio-economic life. Institutional services would be expanded selectively to provide shelter to the most needy and unrehabilitable category only. The socially and physically handicapped women would be helped to take advantage of the services provided under social defence and handicapped sub-sectors of social welfare programmes. However, the trades under the training programmes under various institutions would have to be diversified to make their rehabilitation successful.

27.37 In summary, the major thrust of the VI Plan in the field of welfare of women is their economic upliftment through greater opportunities for salaried, self and wage employment. For this purpose, appropriate technologies, services and public policies will be introduced. The technological package will include imparting new skills and upgrading existing skills. The service package will pay attention to training and credit needs and to marketing. The public policy package will include measures in the area of ownership rights, enforcement of wage laws and employment impact assessment with reference to the employment of women in development projects. Women's organisations will be assisted to grow in effectiveness. Specific attention will be paid for the removal of socio-economic biases resulting in the neglect of female children and women. Measures for their improvement of health and nutritional status will be strengthened. Programmes relating to education, health, nutrition and employment would no doubt go a long way in the removal of social disabilities facing women. However, the improvements in the socio-economic status of women would depend to a large extent on the social change in the value system, attitudes and social structure prevailing in the country.

Annexure 27.1

Education level-wise participation of women in Labour Force and unemployment among them in 1977-78 as revealed by 32nd round of NSS. (Principal activity rural—States)

Category	% Share in Labour force		Labour force Participation Rate		Unemployment Rate	
(1)	(2)		(3)		(4)	
RURAL						
(i) Illiterate	88.11	(55.01)	34.19	(67.56)	4.04	(0.60)
(ii) Literate and upto Middle School	10.68	(39.33)	16.01	(57.56)	13.16	(2.75)
(iii) Secondary School	1.02	(4.64)	33.65	(75.27)	45.84	(13.01)
(iv) Graduate and above	0.19	(1.02)	55.54	(89.00)	44.81	(19.72)
ALL	100.00	(100.00)	30.51	(63.67)	5.52	(2.22)
URBAN						
(i) Illiterate	25.83	(22.09)	23.18	(60.39)	7.88	(2.16)
(ii) Literate and upto Middle School	35.49	(50.85)	9.03	(53.84)	25.65	(6.57)
(iii) Secondary School	25.71	(18.38)	22.26	(72.27)	42.37	(10.08)
(iv) Graduate and above	12.97	(8.68)	43.64	(88.02)	35.92	(9.31)
ALL	100.00	(100.00)	17.06	(60.12)	17.76	(6.48)
RURAL & URBAN						
(i) Illiterate	52.59	(48.43)	32.88	(66.84)	4.37	(0.74)
(ii) Literate and upto Middle School	28.56	(41.63)	13.49	(56.60)	16.18	(3.69)
(iii) Secondary School	13.78	(7.39)	25.80	(73.75)	43.78	(11.56)
(iv) Graduate and above	5.07	(2.55)	45.36	(88.33)	37.49	(12.63)
ALL	100.00	(100.00)	27.83	(62.92)	7.01	(3.07)

N.B.: Figures in brackets represent the male participation rate.

Annexure 27.3

Industry-wise Employment of women in the organised Sector (As on 31st March, each Year)

Sl. No.	Industry Division	1971		1979	
		Number of Women Employed	Proportion of Women to Total Employed	Number of Women Employed	Proportion of Women to Total Employed
(0)	(1)	(2)	(3)	(4)	(5)
		(000)	(Per cent)	(000)	(Per cent)
1	Agriculture and Allied Activities	405	37.6	581.6	35.9
2	Mining and quarrying	54	8.9	85.8	9.64
3	Manufacturing	422	9.0	573.3	9.78
4	Electricity, Gas and Water Supply	16	3.7	13.4	2.0
5	Construction	56	5.9	59.0	5.29
6	Trade and Commerce	29	5.0	20.7	5.46
7	Transport, Storage and Communications	44	1.9	67.9	2.54
8	Financial, Insurance, Real Estate and Business	865	13.4	66.0	7.78
9	Community, Social and Personal Services	(included in Item 8)		1194.2	15.56
	TOTAL	1891	11.1	2760.8	12.4

SOURCE: Directorate General of Employment and Training.

SOCIAL WELFARE

Social welfare programmes aim at enabling the deprived sections of the population to overcome their social, economic or physical handicaps and improve their quality of life. They supplement the developmental programmes in general in dealing with the problems of poverty and unemployment and are meant in particular, to assist the most disadvantaged groups below the poverty line, especially children from poor families, women, the handicapped and the infirm.

REVIEW

28.2 Under 'Social Welfare sector, preventive, developmental and rehabilitative services are provided to the socially and physically handicapped as well as to the vulnerable and weaker sections of the society. These services have developed gradually and the inputs increased steadily during the successive plan periods. In the First Five Year Plan, a provision of Rs. 4.00 crores was made and the amount was placed at the disposal of the Central Social Welfare Board, set up in 1953 for encouraging voluntary organisations, especially in the field of women and child welfare. It gave grants-in-aid and technical assistance to the voluntary organisations. It also started Welfare Extension Projects' for providing welfare services to women and children in rural areas.

28.3 The Second Plan with an approved outlay of Rs. 19 crores witnessed the participation of Central and State Governments in addition to the activities of the Central Social Welfare Board. The scope of social welfare was widened so as to include and promote additional activities for welfare of women and children like welfare extension projects in urban and border areas, condensed courses of education for adult women and socio-economic programmes. For tackling the problem of juvenile delinquency, beggary and vagrancy and immoral traffic in girls and women, the Central Government sponsored various 'social Defence' schemes and the State Governments were encouraged to implement them with necessary financial support. Special programmes were introduced for the education, training and rehabilitation of the physically handicapped.

28.4 In the Third Plan, the State Governments and the voluntary organisations were associated closely in drawing up the Plan with an outlay of Rs. 31 crores. While providing services, effort was directed in particular towards sections of the community which needed

special care and protection. The object was to replace individual haphazard relief and charity by organised and sustained activity for education, welfare and rehabilitation with the general support of the community. The resources provided were utilised both for expanding the existing services and for assisting voluntary organisations to continue their activities. To this extent, development of new services tended to be limited.

28.5 The Fourth Plan aimed at the consolidation of the initiatives taken in the previous plans. An outlay of Rs. 41 crores was provided for this purpose. One of the major programmes in operation was the 'Family and Child Welfare Projects' in rural areas. The grants-in-aid programme was utilised to a larger extent than in the past. The 'Social Defence' programmes which were being implemented by the States with financial support from the Central Government were completely transferred to the States for implementation and the Centre continued to give guidance and advice to the States.

28.6 The effort so far was mainly directed to the provision of some basic curative or ameliorative services. The preventive and developmental aspects which are more effective and economical in the long run did not receive adequate attention. The major thrust in the Fifth Plan with an outlay of Rs. 83 crores was on the expansion of preventive and developmental programmes. During this period, child welfare was given the highest priority. To ensure healthy growth and development of children and reduce infant and maternal mortality rates, the scheme Integrated Child Development Services (ICDS) was launched on an experimental basis to provide a package of services consisting of supplementary nutrition, immunisation, health check-up, referral services, nutrition and health education and non-formal education to children in the age-group 0-6 and pregnant and nursing mothers in rural, urban and tribal areas.

28.7 The ICDS scheme was evaluated by the Programme Evaluation Organisation of the Planning Commission. Its findings show that the ICDS projects have over come initial difficulties such as recruitment of staff, training, equipment and supplies but the success of the programme is more in respect of children in the age group of 3 to 6 years than towards

children belonging to the age group of 0 to 3 years. The periodic assessment made by the All-India Institute of Medical Sciences have pointed out that the nutrition status and the health standards of the children have remarkably improved in the project areas. The States have pointed out that lack of proper storage facilities, weak supply of food items and incomplete identification of severely mal-nourished cases remain the main limitations of the programme.

28.8 Coordination at the block level among the health, social welfare and block development staff in many States is not effective. Proper methods and procedures would have to be evolved for achieving effective coordination. Integration in the provision of services at the *Anganwadi* level is reported to be poor and ineffective. Identification of the target groups based on objective criteria is not being undertaken systematically. Thus the most needy and vulnerable groups have not been able to benefit from this programme.

28.9 In regard to the welfare services for women, priority was given to the needs of women in need of care and protection, women from low income families and women with dependent children and working women. The scheme of condensed course of education and socio-economic programme continued to be expanded. A programme of functional literacy aimed at endowing women with necessary knowledge and skills to perform the functions such as child care, nutrition, health care etc. was introduced in the ICDS project areas. A scheme to assist voluntary organisations in extending hostel facilities for working women was taken up. In addition to the continuing schemes for education and training of the physically handicapped, a scheme of 'Integrated Education' was evolved for placing handicapped children in ordinary schools.

28.10 The role of voluntary organisations in the implementation of various programmes was recognised.

28.11 The selected major physical achievement so far at the Centre has been 281 Family and Child Welfare Projects, later transferred to the States, launching of 200 Integrated Child Development Services (ICDS) projects in the rural, tribal and urban areas. Besides, institutional and non-institutional services for nearly 40,000 children in need of care and protection, creches for about 50,000 children of working mothers, functional literacy for adult women in 200 ICDS projects were provided. About 3901 condensed courses of education benefitting around 84,000 adult women were organised. Socio-economic units numbering 2,942 for providing employment to nearly 35,000 needy women and 196 hostels have been sanctioned for working women. The Central Social Welfare Board has provided grants-in-aid to about 6,000 voluntary organisations. The Central and State Governments have been providing scholarships to the physically handicapped. In addition the latter are offering services in the shape of Creches, *balwadis*, child guidance centres, training-cum-

production centres for women, institutional and non-institutional services for the socially and physically handicapped.

28.12 During the last three decades thus social welfare services have grown both in volume and in range and the outlays have also increased considerably from a mere Rs. 4 crores in the First Plan to Rs. 83 crores in the Fifth Plan. The administrative machinery has also expanded and there is a better awareness of the developmental concept of social welfare, its linkages with other sectors of development and its role in raising the levels of living of the most vulnerable groups. A large number of voluntary organisations are now being assisted to undertake social welfare programmes in different parts of the country. Social legislations have been reviewed and amended to make them more effective, and training, compilation of statistics and research have thrown light on the nature and the dimensions of different problems and deficiencies in implementation.

28.13 In spite of these achievements, certain deficiencies in programme planning and implementation need to be remedied in order that the effectiveness of social welfare schemes can be enhanced. There has been a tendency to depend on schematic patterns in the implementation of the schemes by Government or voluntary organisations leaving little room for flexibility or ability to respond to the requirements and variations in local situations. The involvement of local community in planning and programming has been inadequate and their participation has been more in the nature of minor partners. There has been lack of integration of services at the beneficiaries level.

28.14 The development of welfare services between States has varied considerably and the backward States where the need is greater have suffered both from lower financial allocations and weak administrative machinery which have been further accentuated by frequent transfers at the policy-making levels. The field machinery for supervision has been weak. Absence of professionally trained manpower both at decision-making levels and supervisory levels has affected the quality of services.

28.15 Voluntary organisations have concentrated and developed only in some States and that, too, in selected areas within States for extending certain types of welfare services. The grant-in-aid programmes have not been able to promote and develop voluntary organisations in remote and backward areas with the result that the existing disparities have been aggravated and central funds have flowed more to areas already having strong administrative machinery and infrastructure to utilise the funds. Women's organisations specially at the local level in rural areas have not been promoted.

28.16 While development of services for children have shown an increase, those for the physically handicapped have remained extremely inadequate and little has been done to bring the handicapped in

the mainstream of national development through integrated programmes of education, training and placement.

28.17 The linkages of social welfare programmes with economic programmes has not materialised except in a very limited way and many economic projects have been launched, particularly in rural areas without proper consideration of the social impact or the social service needs of women and children. There is lack of coordination between the State Governments and the State Social Welfare Boards in programme planning and implementation. Such co-ordination has assumed urgency in view of the proposed expansion. Monitoring of programme performance of even the important schemes continues to be in terms of financial achievements rather than physical performance related to the objectives of the schemes. The welfare needs of working women, specially from low income groups in urban and rural areas, have not been properly assessed and the package of services needed to uplift them has not been ascertained.

STRATEGY

28.18 Social welfare sector is basically supplemental to the needs of the most deprived and the real benefit to them should come from the general sectors. The National Rural Employment Programme and the beneficiary-oriented Integrated Rural Development Programme would contribute substantially in this regard, besides agriculture, animal husbandry, irrigation and other economic activities.

28.19 Social planning should be an integral part of economic planning and every economic project would build into its study and cost the social problems created and their solutions. While developing infrastructural facilities under major sectors like power, transport, industries and irrigation, their benefit to the weakest would be specially noted and correctives provided for where necessary.

28.20 In order not to spread the allocations too thin, areas which are most backward and prone to the handicaps or social disorders will be identified. In these areas, the most needy families will be identified specially from amongst the landless agricultural labour, scheduled castes and scheduled tribes and other sections. Amongst the families, the most vulnerable members, namely, children of the age-group 0-6, pregnant and nursing mothers, the physically handicapped, the aged and infirm would be identified and programmes developed to meet their needs.

28.21 Preventive and developmental services would be given preference over institutional care as the latter is very costly and can substitute family care only in exceptional cases. Institutional services would be strengthened only selectively by encouraging voluntary agencies to the extent possible.

28.22 The child care services to the most vulnerable group 0-6, will be strengthened to provide linkage with other inputs like health and hygiene, education and water supply.

28.23 In women's programmes the emphasis would be laid on the promotion of employment and education. Institutional care for women in need of care and protection would be provided only when it is unavoidable. A chain of self-supporting activities will be developed to encourage greater employment of women, especially from low income groups in urban and rural areas with a view to developing a total package of services needed by them. Studies and development of technology to reduce drudgery of their household work would be supported.

28.24 The physically handicapped will be encouraged to integrate with the normal stream of life. Their education, training and employment would be promoted to facilitate integration. Prevention and early detection of physical handicaps will be given importance. Attention will be focussed on the development of multidisciplinary services for treatment of the handicapped.

28.25 The Central Social Welfare Board and its counterparts in the States are entrusted with the responsibility to promote, stimulate and strengthen voluntary action in the field of social welfare. They would play a major role in promoting and strengthening of voluntary effort. The mechanism to coordinate the activities of the State Social Welfare Advisory Boards with those of the State Social Welfare Departments would be reviewed and suitable steps would be taken to make its functioning effective. Voluntary institutions will be encouraged to develop programmes in rural and other areas where they have not reached and to build up innovative and flexible programmes to suit the requirements of these areas. They would require technical guidance, financial support and in-service training to improve their managerial efficiency and standard of services. Steps would be taken for the simplification of grant-giving procedures and timely release of funds. In addition all-India/major voluntary organisations working in the field of social welfare will be given grants-in-aid.

28.26 For effective implementation of social welfare programmes, local communities would be fully involved and stimulated for sharing greater responsibility in organisation and supervision. Their participation will also be essential for identifying the beneficiaries. A system of participative decision-making by all beneficiaries at the delivery point may be considered.

28.27 Simple monitoring systems at the State and project levels would be developed for effective follow-up of major programmes. Provision for research and evaluation of the programmes will be inbuilt into the programme outlays.

28.28 The administrative machinery needs to be strengthened in view of the considerable expansion of

services. Induction of professionally trained technical manpower at decision-making and supervisory levels would be considered. Exchange of personnel between extension organisations and research and teaching institutions will be encouraged to stimulate analysis and fresh thinking on various schemes. Training at various levels will be strengthened to equip the workers with the basic skills required for programme management.

PROGRAMMES

Child Welfare

28.29 Child welfare will be accorded high priority within the overall frame of social welfare. The scheme 'Integrated Child Development Services' would be the major scheme and would be expanded so as to cover additional 400 blocks raising the total to 600 blocks by the end of Plan Period. Measures will be taken to improve the working of the *anganwadis* by strengthening training, improving supervision and providing linkage with health, nutrition and other services and socio-economic programmes for women. Emphasis will be laid on the development of monitoring system at the State and project levels. Special efforts should be made to evolve the local communities and other agencies in all aspects of programme improvement. The existing programmes of creche/day-care centres and *balwadis* would be integrated for providing a package of services and linked with areas of economic activity for women under various sectors of employment. The programmes of *balwadis* and welfare extension projects would be merged with ICDS projects wherever they coincide. The programme of services for children in need of care and protection will be suitably modified to develop cheaper models with better standards of services. The scheme will be linked with training institutions and socio-economic programmes so that the children could be rehabilitated in the society.

Women Welfare

28.30 The scheme of condensed course and vocational training has proved its utility in offering opportunities to the young girls to continue their education. It would be expanded further to prepare girl students for lateral entry to classes V and VIII also. Voluntary Organisations would be given incentives to organise these courses among the most backward tribal and rural areas in order to enable the girls to take up locally available opportunities under various developmental schemes. Effort would be made to keep proper liaison with the training institutions for Anganwadi workers, ANMs etc. so that women completing the condensed courses could readily be absorbed into various occupations. The scope of vocational training would be enlarged to cover a large number of trades so that the trainees would be able to find ready employment. Areas having low female literacy rates would be identified and selected for organising condensed courses and vocational training.

28.31 The existing socio-economic programmes would be reoriented so as to make the scheme economically viable and self-sustaining. Emphasis will be placed on the provision of financial assistance in the shape of seed money only rather than giving one time grants as in the past. The projects would be prepared keeping in view the economic viability and involvement of financial institutions so that the projects could be replicated considerably and larger number of women could be helped to secure employment.

28.32 With the progressive change in the economic structure, more and more women are entering the labour force. As both the parents are employed, the children in most of the cases are left to themselves or alternately in the case of older children who are otherwise supposed to be in school. The problem is more acute in cases of migratory labour force where children are brought up in unhygienic conditions and environment. Therefore, provision will be made for setting up family aid services such as creches *balwadis* etc. for the children of working mothers, specially in the rural areas, construction work sites, irrigation project sites, etc.

28.33 Voluntary organisations which have played an important part in the uplift of women would be further stimulated through financial and technical support so as to generate a country-wide movement in the implementation of welfare services.

28.34 The scheme of assisting voluntary organisations to provide training in marketable skills to destitute and needy women would be continued with the objective of making them self-reliant. The other socially and physically handicapped women would continue to take advantage of the services provided under 'Social Defence' and 'Welfare of Handicapped'.

Welfare of the blind and the handicapped

28.35 Comprehensive primary health care, distribution of Vitamin 'A' to prevent blindness among children and intensive educational programme for the prevention of accidents would have to be given higher priority. Medical and para-medical health services for pre and postnatal care and immunisation would be expanded in order to prevent several types of deformities. Legal frame-work for the prevention and treatment of accidents as also insurance against them would be suitably provided. Safety regulations would be devised for various categories of occupations and strictly enforced.

28.36 Opportunities for integrated education, vocational training and economic rehabilitation would be created in order to integrate the disabled with the main stream of socio-economic life. The scheme of integrated education (which aims at placing the disabled children in ordinary schools with the help of special teachers, aids and resources, trained teachers, special equipment and books, resource and assessment facility) would be revised and expanded so that the varying needs of different types of handicapped children might be met effectively. Designs

of buildings may be suitably modified to facilitate mobility of the handicapped along with the normal persons. Special schools will be discouraged except for severely handicapped, who could not be educated with normal children. The scheme of scholarships, both at the Centre and the States, would be expanded further to offer financial support to the students pursuing educational and vocational pursuits. The existing facilities for the production of text books and literature would be augmented to meet the requirements of expanded educational facilities. The Apprenticeship Training Scheme would be extended to all categories of disabled to substantially expand and develop in-plant training. The Vocational Rehabilitation Centres (VRCs) are presently undertaking evaluation and adjustment training for the rehabilitation of the physically handicapped, primarily for the orthopaedically handicapped. The scheme is proposed to be expanded in scope by imparting 'Skill training' to the physically handicapped and 'providing job oriented experience in close collaboration with local industry to promote employability of the disabled. Towards this end, 'skill training' workshops and training-cum-production centres are proposed to be added to the VRCs.

28.37 Besides educational and vocational training, the functional ability of the disabled would be improved by equipping them with proper aids and appliances. Provision of these aids would enable them to participate in the educational and economic activities in a better way. Simple, durable and inexpensive equipment will be made available to them. For this purpose, the Artificial Limbs Manufacturing Corporation would widen its activities to cover all categories of the handicapped and will develop the required aids and appliances. The National Institute of Prosthetic and Orthotic Training would take lead in the development of rehabilitative techniques and equipment in this field. Training of medical and paramedical staff in rehabilitation techniques would be provided for. Community health volunteers and teachers would be given training in early detection of handicaps.

28.38. Employment Opportunities for the handicapped would be increased substantially. Schemes linked with vocational training for self-employment would be strengthened and expanded. The reservation of one per cent of vacancies each for the blind, deaf and orthopaedically handicapped in Group 'C' and 'D' posts in Central services and in comparable posts in public sector undertakings made by the Government in 1977 would be followed by strengthening the arrangements for monitoring at the Central and State levels. Possibilities for reservation of jobs, stalls and counters at Cinema houses, railway stations and other public places as well as other avenues for open competitive employment, self-employment of various types, would be fully explored to provide larger scope for their absorption. Reservation of a particular percentage for activities under TRYSEM would be considered to cover the disabled. Under this scheme, special provisions for payment of

stipends, appointment of properly trained craftsmen to train the disabled and provision of tools and equipments would be considered. Incentives to employers in the form of tax relief would be needed for the production of special equipment or modifications of the existing equipment. Inter-departmental co-ordination committees would be set up at Central, State, and other levels to review the programme performance and suggest ways to improve employment and training facilities. Adequate machinery would be created for identifying various types of jobs and training facilities required for filling them.

28.39 Voluntary organisations would be aided for setting up sheltered workshops for the severely handicapped to supplement these efforts.

28.40 Mass media would be utilised to give widest publicity to the promotion of preventive, medical, vocational, educational and rehabilitative aspects of various schemes intended for the benefit of the handicapped. Similar services will be extended to rural areas by setting up rural wings at the VRCs. The working of these VRCs would be subjected to periodic evaluation.

28.41 The four National Institutes for the Handicapped i.e. one each for the visually handicapped, deaf and dumb orthopaedically handicapped and mentally handicapped would be strengthened and expanded so that they could fulfil the tasks envisaged, specially research and training at the national level. In addition, the national associations and research organisations would be encouraged to undertake research into the problems relating to the identification of techniques and adaptations for rehabilitation of various categories of the disabled, training of teachers, development of technical and prosthetic aids and other areas.

Prohibition

28.42 Excessive consumption of narcotics, alcoholic drinks and addictive drugs is deleterious to health and causes physical and mental damage besides economic ruin to many poor families. Their use would have to be curbed and discouraged through sustained propaganda and community education. Mass media would have to be fully utilised for propagating knowledge about the ill-effects of addiction of various types and promotion of temperance. Voluntary organisations and local bodies would be encouraged to undertake educational work and campaign for disseminating knowledge on the hazards of addiction. Moreover, research studies relating to drug abuse, including consumption of alcohol among students, industrial workers and general community would be supported. Women from those families who are economically affected by drug and alcoholic addiction would be encouraged to take up training and assistance under various socio-economic programmes.

Research and Training

28.443 The National Institute of Social Defence would continue to assist the Central and State Governments in developing and coordinating services in various areas of social defence such as prevention and control of juvenile delinquency, beggary, probation etc. and helps in drafting of model legislations and rules in the sphere of prevention of crime and treatment of offenders and other connected legislations. It would conduct training courses and research studies in this area.

28.444 The National Institute of Public Cooperation and Child Development which was set up as an apex organisation in the field of public cooperation and child development will review and revise training curricula and teaching methods for various training courses, particularly in the field of child development. To make the training programme of the Institute more effective, adequate audiovisual aids and training materials would have to be developed. Action would be initiated for setting up extension demonstration units like child guidance clinics, child care centres and nutrition demonstration units for strengthening its training programmes and to develop innovative models. The Institute would make use of the integrated rural development and child development projects for giving field experience to the faculty and the trainees. It will conduct research and evaluation studies which are policy-oriented and related to managerial aspects of child development and public cooperation. It would provide consultancy services to voluntary organisations in the matter of programme development, management and improvement. The regional field units would have to be strengthened for meeting the training needs of grass-root level functionaries in the States under different projects.

28.445 The four National Institutes for the Disabled would be strengthened to play leading roles in research and training dealing with single and multiple handicaps.

28.446 Identification of the emerging social problems relating to children, women, the handicapped and the aged and assessment of their welfare needs will have to be done in a systematic manner to facilitate formulation of suitable schemes by the Centre and the States. The nature and magnitude of these

problems will be ascertained so as to determine priorities, organisational patterns and allocations. Studies relating to the influence of genetics on various types of deformities to provide knowledge for early detection would be supported. Evaluation of some of the important programmes like creche-cum-balwadis, integrated child development services, condensed courses, socio-economic programmes, women's development corporations, organisational models of different delivery systems, services under the Children Act, integrated education for the handicapped etc. would have to be taken up for improving the overall managerial efficiency of these schemes. There is need to update the statistics on social welfare. Research and evaluation studies would be sponsored on the problems of children, women and physically handicapped. Available research findings will be utilised by implementing agencies to take corrective action, wherever needed.

28.47 In the *State sector*, child welfare will be given greater attention. Schemes relating to the setting up of creches, balwadis and other non-institutional services would be expanded. These would be linked with other programmes like nutrition, health services, supply of safe drinking water and improvement of environmental sanitation and hygiene. Voluntary organisations will be encouraged further with grants-in-aid for promoting welfare programmes for the socially and physically handicapped persons. For women in distress and need, diversified schemes of vocational training, assistance for economic rehabilitation, self-employment and socio-economic programmes would be given greater importance. Allocations for scholarships, integrated education and prosthetic aids for the disabled would be adequately stepped up. Training programmes for imparting skills linked with the assistance for economic rehabilitation will be encouraged. Institutional services would be undertaken and strengthened selectively, preferably by involving voluntary agencies. Various services under Children's Act like the establishment of Children's Courts, Children's Boards, Remand Homes, Certified Schools, appointment of probation officers etc. would be suitably expanded.

OUTLAYS

28.48 The provision for Central and Centrally-Sponsored Schemes is Rs. 150 crores vide details in Annexure 28.1. The Plan outlay for the States and Union Territories is Rs. 122 crores vide Annexure 28.2.

Sixth Plan Outlay : Social Welfare, Central and Centrally Sponsored Schemes.

(Rs. in crores)

	Plan Outlay	
	1974-79	1980-85
CENTRAL		
<i>I. Women Welfare</i>		
1 Family and Child Welfare	2.40	a.
2 Functional literacy	2.69	2.37 _{LC}
3 Condensed courses of education	2.89	7.00
4 Socio-economic programme	4.00	9.25
5 Hostels for working women	5.07	13.75
6 Promotion and strengthening of grass root level women's organisations . . . . .	..	1.97
<i>II. Welfare of handicapped</i>		
1 Expansion and improvement of National Institutes for the Blind, the Deaf, the Mentally Retarded and the Orthopaedically Handicapped	2.50	6.80
2 Scholarships, research, training, sheltered employment, grants-in aid to voluntary organisations and IYDP	4.83	12.03
3 Artificial Limbs Manufacturing Corporation . . . . .	..	2.00
4 Rehabilitation of leprosy patients . . . . .	..	0.75
<i>III. Planning, Research, Training and Evaluation</i>		
1 National Institute of Social Defence	0.25	0.25
2 National Institute of Public Cooperation and Child Development	0.65	1.50
3 Social Work Education and Training	2.71	7.00
4 Planning, Research, evaluation, monitoring and innovative action-cum research projects	0.54	1.00
<i>IV. Grants-in-aid to voluntary organisations by the Central Social Welfare Board and strengthening its field units</i>		
		9.32
<i>V. Grants-in-aid to All India Voluntary Organisations</i>		
		1.82
<i>VI. Creches/day care centres for children of working mothers</i>		
		0.20
<i>VII. Education work for prohibition</i>		
		0.01
<i>VIII. International year of the Child</i>		
		..
<i>IX. Grants to National Dairy Development Board for intensive child development programme</i>		
		..
TOTAL CENTRAL		39.87
		95.68

a. Programme is being looked after by States.

LC Token provision.

*Rs. 4.00 crores to be provided under Rural Development Sector.

	Plan Outlay	
	1974—79	1980—85
CENTRALLY SPONSORED		
I Child Welfare		
11 Services for children in need of care and protection	8.00	5.75
22 Integrated Child Development Services	7.40	45.00
33 Special Nutrition Programme	6.69	..
III Women Welfare		
Welfare of destitute women and children	1.00	0.75
IIII Welfare of physically handicapped		
11 Integrated education	0.41	2.80
22 Placement of handicapped through Special Employment Exchanges and appointment of Special Officers in ordinary employment exchanges	0.16	0.02
TOTAL Centrally Sponsored	23.66	54.32
TOTAL Central & Centrally Sponsored	63.53	150.00

Annexure 28.a

Sixth Plan Outlays Social welfare—States and U.T.'s

(Rs. in lakhs)

Sl. No.	State/U.T.	Plan Outlay	
		1974—79	1980—85
States			
1	Andhra Pradesh	79	2850*
2	Assam	46	200
3	Bihar	50	260
4	Gujarat	61	450
5	Haryana	21	360
6	Himachal Pradesh	25	198
7	Jammu & Kashmir	64	200
8	Karnataka	184	600
9	Kerala	53	467
10	Madhya Pradesh	115	500
11	Maharashtra	156	410
12	Manipur	15	135
13	Meghalaya	23	65
14	Nagaland	25	100
15	Orissa	13	200
16	Punjab	242	507
17	Rajasthan	52	162
18	Sikkim	11	33
19	Tamil Nadu	405	1350
20	Tripura	11	160
21	Uttar Pradesh	121	846
22	West Bengal	174	925
	Total—States	1946	10978
Union Territories			
1	Andaman & Nicobar Islands	6.10	23.00
2	Arunachal Pradesh . . . . .	..	55.00
3	Chandigarh	2.00	150.00
4	Dadra & Nagar Haveli	5.00	7.00
5	Delhi	217.00	700.00
6	Goa, Daman and Diu	13.44	35.00
7	Lakshdweep	2.05	19.00
8	Mizoram	30.56	130.00
9	Pondicherry	37.75	100.00
	TOTAL—UTs.	314.30	1219.00
	GRAND TOTAL	2260.30	12197.00

*Includes Rs. 1800 lakhs for Special Employment Schemes.

APPENDIX
SIXTH FIVE YEAR PLAN 1980—85
A FRAMEWORK

P R E F A C E

by

MINISTER FOR PLANNING AND DEPUTY CHAIRMAN

At the first meeting of the reconstituted Planning Commission, held in April 1980 under the Chairmanship of the Prime Minister, Smt. Indira Gandhi, it was decided that there should be no Plan holiday and that the Sixth Five-Year Plan should cover the period 1980—85. Detailed guidelines for the preparation of the Plan have already been sent to State Governments by the then Acting Deputy Chairman and the Member-Secretary. It has since been decided that we should adopt a three-stage process for finalising the Sixth Plan. These are:

- (i) A meeting of the National Development Council sometime preferably towards the end of August, 1980 to consider a Draft Plan-frame, which will indicate the major goals of the Plan, the quantum of resources likely to be available and the programme thrusts.
 - (ii) On the basis of the decision of the National Development Council on Plan priorities and programme thrusts, Central and State Governments will prepare the detailed Plan proposals by October 15, 1980. These will be integrated in the form of a Draft Sixth Five Year Plan and sent to State Governments in early December, 1980.
 - (iii) A meeting of the National Development Council will be held either towards the end of December, 1980 or in January, 1981 to consider the Draft Plan and finalise it. This should then form the basis for Plan allocations, both in the States and at the Centre in the regular budgets for 1981-82.
2. A copy of the draft Plan-frame is attached. While formulating the Programme Thrusts, the 20-point economic programme and the pledges given to the people have also been among the principal guiding factors. The document is not intended to be exhaustive covering all sectors of the economy but rather seeks to highlight as an approach paper the problems and programmes in a few key areas of the economy. Programmes relevant to all sectors of the economy

are being worked out by the concerned Ministries in the Central Government and State Governments and these will be considered at the time of the preparation of the Draft Plan later in the year. It is important in designing the programmes for different sectors to build into the programmes adequate arrangements for their effective implementation.

3. The formulation and execution of the Five Year Plan is a responsibility both of the Centre and the States. The Draft Plan-frame gives a broad indication of the magnitude of additional resource mobilisation efforts both by Centre and the States as also the measures which will be required for this purpose. I would urge that the mobilisation of additional resources should receive the closest attention of State Governments since without the requisite increase in resources, it may be well nigh impossible to execute the plans which the Government at the Centre and in the States may visualise. It will be necessary to be innovative about resource mobilisation and thought may be given to the possibility of decentralisation, giving district and block authorities scope and encouragement for mobilising local resources for local development. The State Governments have also the responsibility to prepare programmes in the fields of agriculture, irrigation, power, education, health, industry, including village and small industries and so on. The priorities indicated in the Draft Plan-frame subject to approval by the National Development Council, are intended to be observed by the Central Ministries and the State Governments.

4. In view of the tight time schedule, I shall be grateful if all State Governments and Central Ministries will extend their maximum cooperation to us in ensuring that a Plan, which will help to take the country forward in its march towards a more prosperous and egalitarian society, is ready for implementation by early next year.

NEW DELHI:

20th August, 1980

(NARAYAN DATT TIWARI)

I. INTRODUCTION

The launching of the Sixth Five Year Plan synchronises with the beginning of a new decade during which our major goal should be the realisation of an economic and social order based on principles of socialism, secularism and self-reliance. During the 30-years of planned development which we have just completed, we have made impressive progress in developing agriculture and industry, science and technology, health and education and the infra-structure for a wide-range of services. Technological change in agriculture has led to improved production and productivity and a greater stability in the output of several crops. The steps taken during the Fifth Five-Year Plan period for building a national food security system enabled us to face the widespread drought of 1979 without food imports. Wide-ranging advances in industry have enabled us to be self-reliant in many critical areas. We now manufacture an impressive array of both capital and consumer goods. At the same time, progress in the development of new skills and technology in the small and village industries sector has also been considerable. The export base of the economy has been widened and strengthened. In science and technology, our scientists have shown that they can achieve well-defined goals as has been demonstrated in agricultural, nuclear and space research. We can thus enter the new decade with confidence in our capability to face and solve successfully the complex problems confronting the different sectors of our economy.

2. It must be recognised that the Sixth Five Year Plan is being launched under difficult conditions. The acute inflationary pressures which have prevailed since March 1979, the progressive deterioration in the past three years in the functioning of such critical sectors as power, coal, railways and steel and the steep rise in the prices of petroleum products—an inevitable by-product of the rise in import costs—have adversely affected the overall growth prospects of the economy as well as the scope for mobilising additional resources for sustained development. In the wake of the sharp increases in import costs of petroleum and other imports and the rather uncertain prospects for our exports in the background of prevailing recessionary conditions in the world economy, India's balance of payments prospects have deteriorated significantly and on present reckoning, the country may be faced once again with a very difficult foreign exchange situation.

3. Both the positive and negative aspects of our developmental experience will have to be duly taken into account in drawing up a realistic blue print of India's development during the next five years. We

must maximise returns from investments already made through a proper use of human and financial resources. A fuller utilisation of capacities already created is a necessary condition for stabilising the aggregate capital-output ratio at a reasonable level. Our development strategy must also acquire in-built flexibility to cope with the highly uncertain international environment for our development as well as with erratic monsoon behaviour. It would, however, be wholly unwise to respond to the present crisis by cutting back on productive investments. It has to be recognised that if our development prospects are not to be irreparably damaged by the world energy crisis, massive efforts will have to be made to step up programmes for the exploration and development of domestic resources of oil, coal, power and renewable forms of energy. Significant additional investment for modernisation and expansion of transport capacity and development of supplementary means of transport are essential if this sector is not to act as a bottleneck to further growth. At the same time, sizeable additional outlays will be necessary for agriculture, including irrigation and fertilizer production. The revival of industrial growth will be essential to support development in the rest of the economy and to sustain the export effort. Rural development programmes need to be recast so as to secure faster growth of agricultural and non-farm employment and to raise the standard of living of the economically and socially handicapped sections of our population. Above all, the pattern and extent of investment in different sectors should be structured in such a manner that our vast human resource and youth power fully participate in development and derive benefits from accelerated economic growth. Thus, the task before the nation is to sustain and accelerate the tempo of development notwithstanding a highly unfavourable external environment.

4. It would be wrong to minimise the enormity of the task or the difficulties that lie ahead. However, these difficulties can be overcome if a proper blend of political will, professional skill and people's action can be generated. We must renew our determination to wage an all-out war on poverty and mobilise all our latent energies for the creation of a more dynamic and more equitable society.

II. OBJECTIVES OF THE SIXTH PLAN

5. The main objectives of the Sixth Plan should be the following:—

- (i) a significant step up in the rate of growth of the economy, the promotion of efficiency

in the use of resources and improved productivity;

- (ii) strengthening the impulses of modernisation for the achievement of economic and technological self-reliance;
- (iii) a progressive reduction in the incidence of poverty and unemployment;
- (iv) a speedy development of indigenous sources of energy, with proper emphasis on conservation and efficiency in energy use;
- (v) improving the quality of life of the people in general with special reference to the economically and socially handicapped population, through a minimum needs programme whose coverage is so designed as to ensure that all parts of the country attain within a prescribed period nationally accepted standards;
- (vi) strengthening the redistributive bias of public policies and services in favour of the poor contributing to a reduction in inequalities of income and wealth;
- (vii) a progressive reduction in regional inequalities in the pace of development and in the diffusion of technological benefits;
- (viii) promoting policies for controlling the growth of population through voluntary acceptance of the small family norm;
- (ix) bringing about harmony between the short and the long term goals of development by promoting the protection and improvement of ecological and environmental assets; and
- (x) promoting the active involvement of all sections of the people in the process of development through appropriate education, communication and institutional strategies.

III. THE GROWTH RATE

6. Meaningful solutions to the problems of poverty, under-employment and unemployment can be found only in the framework of a rapidly expanding economy. To that end, every effort has to be made to step up the aggregate growth performance of the economy. In the medium term, the growth rate will depend on the combined interaction of a large number of factors of which the following are amenable to control in varying degrees:—

- (i) the degree of efficiency in the use of the existing stock of capital;
- (ii) the rate of investment;
- (iii) the pattern of investment; and
- (iv) the balance of payments.

7. As is well known, there is at present considerable idle capacity in several sectors of Indian industry.

Even in agriculture, the irrigation potential which has been created is not being fully utilised. Yield levels in most parts of the country are far below what can be attained with known technology. Improved functioning of the infrastructure consisting of coal, power and transport will no doubt help to accelerate the tempo of industrial activity. In the same manner, more efficient utilisation of the irrigation potential which has been created and increase in double cropped area and *Zaid* cultivation where relevant will enable us to secure additional agricultural output. In the short run, the extent to which we can activate existing idle capacity will thus be the most important influence on the overall performance of the economy. Thus high priority is to be attached to analysing and identifying the problems which come in the way of greater utilisation of existing capacities and for devising effective remedial steps.

8. As regards the rate of investment, this will depend both on the availability of domestic savings and the expected inflow of external resources. Although the climate for external assistance is not very favourable, the increase in the last six years in the domestic savings rate, which is currently estimated at about 23 per cent of gross domestic product, is a hopeful feature of the current economic scene. As regards the pattern of investment, particularly the balance between quick yielding and long maturing projects, the effective choice in the next few years is rather limited in view of the large requirements of ongoing projects, and the urgent need to step up investments in relatively capital intensive sectors such as energy and transport in which projects have a long gestation lag. Nevertheless, through careful monitoring and timely execution of projects, it may be possible to reverse the current trend in certain sectors of the economy reflecting regressive capital output ratio.

9. It is the present assessment of the Planning Commission that it will be feasible to plan for an average annual growth rate of 5 per cent during the Sixth Plan. Exercises now in progress in the Planning Commission tentatively indicate the feasibility of obtaining a higher growth rate of 5.3 per cent, and it would soon be possible to take a final view of the matter. In drawing up the profile of investments during the Sixth Plan, it will be assumed that the economy will be able to grow at an annual rate of about 6 per cent during the Seventh Plan.

IV. FINANCIAL RESOURCES FOR THE SIXTH PLAN

10. Savings, Investment and Public Sector Outlays: Preliminary calculations show that the rate of gross domestic savings expressed as a percentage of gross domestic product at 1979-80 prices will go up from 22.8 per cent in 1979-80 to 25 per cent in 1984-85, yielding a marginal savings rate of 31 per cent. The corresponding estimates for gross domestic investment show that it will rise from 22.9 per cent in 1979-80 to around 25.5 per cent in 1984-85. The estimated aggregate investment in the economy at 1979-80 prices will be Rs. 156,000 crores over the plan period.

11. Detailed analysis of financial resources of the public sector shows that taking into account public sector savings at 1979-80 rates of taxation, domestic market borrowings and net external flows, the total amount of resources may be only about Rs. 67,000 crores. On the other hand, preliminary analysis of needed outlays in key sectors indicates a substantially higher requirement of public sector outlays. Allowing for the limits to the scope for additional resource mobilisation and considering the severity of the balance of payments constraint, it would be prudent to plan initially for an outlay of Rs. 90,000 crores. In order to finance an outlay of Rs. 90,000 crores without generating uncontrollable inflationary pressures in the economy, additional resource mobilisation by the Centre and the States and their enterprises will have to be at least Rs. 19,000 crores. Thus hard decisions will be necessary if a viable plan size is to become a practical proposition.

12. *Additional Resource Mobilisation:* Of the total amount of additional resource mobilisation of Rs. 19,000 crores envisaged in the Sixth Plan, the share of the Central Government is Rs. 13,000 crores. The corresponding share of States is Rs. 6,000 crores.

13. The traditional mechanism for mobilising additional resources has been to rely on additional taxation. As a result of progressive increases in tax rates, taxation expressed as a percentage of the country's national income now stands at 20 per cent. There is no doubt considerable scope for reducing tax evasion and improving the collection of taxes, and all possible measures for the purpose will need to be taken by the Central and the State Governments. Even so, the Central and State Governments together will have to undertake to mobilise about Rs. 7,500 crores by way of additional taxation during the Sixth Plan. Considering past trends, this is not an unrealistic target.

14. Additional taxation, however, can make only a limited contribution to the additional resource mobilisation effort, and other ways and means will have to be found to raise resources. It is well known that the resource base of the Indian fiscal system has been considerably eroded, among other things, due to the inability of the public sector enterprises to generate adequate resources for expansion of public sector investment. In our strategy of development, the commanding heights of the economy have rightly been assigned to the public sector and its role will need to be expanded and strengthened so as eventually to help create a socialist society. However, it has to be recognised that, if the public sector is to play its assigned role, conditions have to be created to enable it to generate larger resources for financing further expansion and development.

15. It has been estimated that in the Central Sector, subsidies on fertilisers, food, exports and other items amounted to Rs. 1,930 crores in 1979-80, and at 1979-80 rates they would absorb Central resources worth Rs. 12,400 crores over the Sixth Five Year Plan period. In order to finance a viable development Plan, determined efforts will have to be made both by the

Centre and the States to contain and reduce the extent of subsidies. The Government of India has already taken a decision in June, 1980 to reduce the net burden of fertilisers subsidy by Rs. 2,100 crores. It is recognised that it may not be possible to eliminate wholly the budgetary subsidies now in existence. Nevertheless, a significant reduction in the amount of subsidies from the level contained in the budgets for 1980-81 is essential for the implementation of the Sixth Plan.

16. A large number of Central and State public sector enterprises are not yielding the returns which could be normally expected from them. Deficiencies in management as well as lack of appropriate pricing policies are responsible for this outcome. Major Central public enterprises including railways, steel and coal will have to generate much larger internal resources than they have done in the past.

17. In the States, determined efforts will need to be made to improve the financial returns of irrigation, State Electricity Boards and Road Transport Corporations. It is well known that gross receipts from irrigation are currently insufficient to cover even working expenses. If irrigation rates are adjusted to achieve the modest objective of covering only working expenses, the State exchequer will save nearly Rs. 400 crores over the five year period.

18. Similarly, the commercial losses of State Electricity Boards which amounted to Rs. 103 crores in 1973-74 had risen to Rs. 418 crores in 1979-80. At this rate, the cumulative loss of electricity Boards during 1980-85 will amount to about Rs. 3,000 crores. Considering the massive investments which are envisaged for the power sector during 1980-85, it is essential to take early steps to eliminate the losses of the State Electricity Boards. The minimum objective is to eliminate such losses.

19. The performance of the State Road Transport Corporations is also not satisfactory. Most of them are making losses. The aggregate loss during 1979-80 was Rs. 62.35 crores and is estimated at about Rs. 600 crores during 1980-85 period. Effective measures, including adjustment in fares, will be necessary to eliminate such losses.

20. To sum up, reduction of budgetary subsidies and higher financial returns from public enterprises both at the Centre and the States offer the only substantial scope for generating additional resources for financing the investments contemplated in the Sixth Plan. There is a strong case both on grounds of efficiency and equity to reduce these subsidies and to charge economic prices for supply of water, electricity and transport services. Utmost restraint would be required to contain possible increases in non-Plan and unproductive expenditures. More effective mechanisms would have to be evolved to contain such expenditures.

21. It should also be noted that the magnitude of additional resource mobilisation in nominal terms may have to be higher than indicated in the preced-

ing paragraphs if prices continue to rise leading thereby to a rise in project costs. Studies in the Planning Commission show that the Indian fiscal system does not have adequate built-in elasticity to generate automatically additional resources for financing higher project costs in the wake of inflation. If the real size of the Plan is not to be reduced there will be need to step up the outlays in money terms beyond Rs. 90,000 crores, requiring further efforts at additional resource mobilisation.

22. As already indicated, the aggregate investment in the economy is estimated at Rs. 156,000 crores over the Plan period. Of the public sector outlay of Rs. 90,000 crores, current outlay will be of the order of Rs. 13,000 crores and public sector investment Rs. 77,000 crores. The balance of investment will be in the private sector, the resources for which will have to be mobilised by the private sector through corporate savings, new issues, and borrowings from the public financial institutions. New investments in the private sector will have to give high priority to exports and production of essential commodities of mass consumption.

23. *The Balance of Payments Constraint:* As pointed out earlier in this paper, the steep increases in prices of imported petroleum products are likely to lead to a sharp deterioration in India's balance of payments. In the short run, we have no alternative but to finance the growing deficit. Thus, apart from securing such additional external assistance as is available, we shall have to draw down our reserves. However, prudence demands that foreign exchange reserves should not be reduced below the equivalent of 2½ months' imports. Thus reserves can be drawn down only by about Rs. 1,500 crores and this route of financing our deficit will not be available after two years.

24. The climate for concessional aid, both bilateral and multilateral, is also not very favourable. There is undoubtedly considerable excess liquidity in the international capital markets and if we have sound bankable projects it should be possible to mobilise moderate amounts by way of commercial borrowings. However, it must be emphasised that borrowing on commercial terms with relatively short maturities can be resorted to only if the projects yield a return higher than the interest cost of the debt. Moreover, international capital markets usually categorise countries according to country risks and if India's external reserves decline sharply or debt service ratio (debt service expressed as a percentage of our exports) goes up significantly, the attitude of commercial banking abroad could change suddenly. Thus as of now, it would be prudent to count only on moderate amounts of commercial borrowings. At the same time, efforts will have to be made to secure larger inflows from OPEC countries on mutually beneficial terms. In order to preserve India's credit rating in the international capital market, debt service ratio will have to be stabilised at less than 20 per cent.

25. It is clear that in order to restore a measure of viability to our external payments, India will have to pursue a vigorous export promotion policy. The minimum objective has to be to secure a volume growth rate of about 10 per cent per annum. To achieve this objective, export oriented industrial and agricultural activities will have to be given all possible facilities to expand their capacities. While it is clearly not possible or desirable to expand the scope of export subsidies, all other measures, including the use of fiscal policy and exchange rate, will have to assist actively in enhancing the competitiveness of our exports. Simultaneously, active steps will have to be taken to promote tourism and to maximise the inflow of remittances from Indians overseas.

26. Since the rising cost of imported petroleum is the most important factor in the deterioration of India's balance of payments, the long run viability of our external payments is crucially dependent on our ability to reduce our dependence on imported energy. Measures to conserve energy and to develop domestic substitutes for oil such as coal and electricity will have to be pursued vigorously. At the same time, efforts for exploration and development of the domestic resources of oil will have to receive the highest priority. In order to curb the growth of oil consumption, pricing policies for oil products will have to be so adjusted as to reflect the true opportunity cost.

27. In recent years, there has been a steep increase in imports of vegetable oils, fertilizers, steel and cement. It is necessary to adopt effective steps to reduce our dependence on imports for these products. Thus increased production of vegetable oils has to receive priority attention in agricultural planning. Capacity utilisation in fertilizers, steel and cement which has been affected for want of power, coal and feedstock will have to be improved on a priority basis.

28. *Price Policy:* It has to be recognised that the Indian economy has to contend with a highly inflationary international environment. Even though foreign trade is only about 10 per cent of India's national income, imports being of strategic importance to the economy, an increase in import costs lends strong support to cost push elements in inflation. However, given effective monetary and fiscal policies, it should be possible to ensure reasonable price stability. Both fiscal and monetary policies will have to be so designed as to encourage incentives for savings and discourage conspicuous consumption. Farmers will have to be provided with remunerative prices paying due attention to their cost structure, to ensure that they have an adequate incentive to produce more, particularly foodgrains, pulses and oilseeds. In order to minimise the impact of weather fluctuations on prices of foodgrains, a buffer stock of about 15 million tonnes is absolutely necessary.

29. *Public Distribution:* Public distribution of commodities such as foodgrains, sugar, vegetable oils and kerosene will have to play a major role in ensuring supplies of these commodities to consumers at

reasonable prices. The emphasis has to be on efficient and socially relevant marketing techniques taking advantage of the economies of bulk handling, procurement and distribution. The public distribution system will be so developed that it will hereafter remain a stable and permanent feature of our strategy to control prices and to achieve equitable distribution.

V. PROGRAMME THRUSTS DURING THE SIXTH PLAN

A. Removal of Poverty

30. An increase in the productive potential of the economy is an essential condition for finding effective solutions to the problems of poverty. At the same time, recognising the constraints which limit the scope for higher growth rate in the medium-term, more direct means of reducing the incidence of poverty in the stage of transition would have to be employed. It is well known that the hard core of poverty is to be found in rural areas. The poorest sections belong to the families of landless labour, small and marginal farmers, rural artisans, scheduled castes, scheduled tribes and socially and economically backward classes. The household will remain the basic unit of poverty eradication in target group oriented programmes. Families differ in such vital respects as dependency ratios, asset holding, skills and even the ability to perform manual labour on public works. Hence each household below the poverty line will have to be assisted through an appropriate package of technologies, services and asset transfer programmes. Even for those who are already employed as wage-earners the problem may be one of low wages, which makes strict enforcement of minimum wages legislation all the more essential.

31. The rural and urban poor also require facilities at reasonable costs in many other areas like an efficient public distribution system, public transport system to places of work, and community kitchens and other forms of providing clean and nutritious food. Past experience has shown that by lumping the very poor along with the relatively better off sections of the community in development projects, the percolation of benefits to the most deprived sections of the community is hampered. This is why a household approach is desirable in realising the goal of improving the quality of life among the poor.

32. **Land Reforms:** An effective land reforms programme designed to redistribute surplus land among the landless and farmers with uneconomic holdings could make a significant contribution to raising the incomes and productivity of the rural poor. However, in spite of the adoption by all States of the ceilings on land holding, all surplus land has not in fact become available for redistribution. Thus vigorous efforts are necessary to plug the loopholes and ensure more effective implementation of the ceiling legislation and other laws providing security of tenure to the cultivator. Consolidation of holdings for better land and water management and village planning

should also be continued vigorously. It will be necessary to supplement these measures by several other programmes in order to secure a significant reduction of poverty in the near future. The problem of poverty requires attack on a number of fronts not the least of which is the promotion of opportunities for gainful employment. This is dealt with in a later section.

B. Accelerated Rural Development

33. The First Five Year Plan referred to the need for an integrated development effort in rural areas, "since the peasant's life is not cut into segments in the way the Government's activities are apt to be." The approach to the village has, therefore, to be a coordinated one. While advocating the community development movement, Jawaharlal Nehru said in 1954: "The Community Projects envisage coordination of a number of activities. They cannot be separated or viewed as isolated activities. The object is to build the human being and the group and to make him and the group advance in many ways. Therefore, the activities in the Community Project must be closely coordinated and worked to this end." In spite of this clear policy enunciation, there has been a proliferation of independently managed projects over different plan periods.

34. Experience has shown that uncoordinated efforts by a multiplicity of agencies do not lead to the desired results. The unexceptionable concepts underlying many of these programmes have often tended to remain unrealised. It has, therefore, become obvious that the goal of rural development designed to minimise rural poverty can be achieved to any satisfactory extent only through a multi-disciplinary apparatus at the local level. The infusion of extra funds alone may not carry us far, if all overlapping programmes are not made to coalesce functionally and generate a mass flow of developmental activity.

35. The situation thus calls for an operationally integrated strategy which will aim on the one hand at increasing production and productivity in agriculture and allied sectors based on better use of irrigation and improved technology, and on the other, at resource and income development of vulnerable sections of the population in all the blocks of the country.

36. For this purpose village communities/panchayats will have to be enabled to prepare plans through which they can optimise the returns from their resource endowments in agriculture, animal husbandry, fisheries and allied sectors. The philosophy, purpose and methodology of accelerated rural development programmes can be summed up as below:

- (a) Implement vigorously the various plan schemes intended to generate self-employment in rural areas and to help agricultural labourers, share-croppers, marginal and small farmers and rural artisans, particu-

larly those designed to assist landless labour families to acquire productive assets like land and livestock and share croppers of security of tenure and fixity of rent.

- (b) Improve the agrarian structure speedily in such a way that the optimum utilisation of irrigation facilities and improved agricultural technology is promoted.
- (c) Promote effective credit recycling through suitable insurance schemes
- (d) Introduce special programmes for the rehabilitation of bonded labour.
- (e) End the current stagnation in rural occupations which has led to the opportunities cost of family labour to remain far below the prevailing wage level, through diversified income earning opportunities and preparation of value-added products and develop family income enhancement plans and monitoring systems through family pass books for credit and input supply.
- (f) Introduce public policies, including personnel and fiscal policies, which will ensure an expanded flow of financial resources and technical and managerial skills to rural areas.
- (g) Promote cooperative organisations which can help to provide the needed services and insulate the rural poor from exploitation in the marketing of their products.
- (h) Locate new technical and vocational colleges and training institutions as well as industries in rural areas.
- (i) Ensure that the rural development blueprints lead to:
 - (1) promotion of gainful employment through the scientific utilisation of local resources;
 - (2) the programmes being simple in operation and economically viable so that they are quickly capable of achieving self-reliance and self replication; and
 - (3) the total involvement of local community in all phases of programme implementation.

37. Given the diversity in resource endowments, agroro-ecological conditions and socio-cultural milieu of different areas in the country, it is obvious that no uniform model of rural development would be adequate. However, if the basic aim, namely that the real benefit to be derived by the poorest person should be the primary yard-stick for measuring the utility of plan proposals and investment decisions is rigorously adhered to, we would have taken the first step essential for an accelerated rural regeneration movement.

38. *Credit for Weaker sections:* Credit is a key input in programmes of production and self-employment and in creation of productive assets. While over the years there has undoubtedly been an impressive step-up in credit availability to the weaker sections, its dispersal among various strata of the rural poor has been extremely disparate. Among them the main beneficiaries have been the small and marginal farmers, the former distinctly more than the latter. The least to benefit have been the landless and the rural artisans, who as a category account for as much as one-fourth of the rural work force. The present policy of stipulating a minimum percentage for the entire target group of weaker sections has done little to prevent glaring intra-group distortions. It, therefore, appears imperative that the strategy of credit deployment should be so oriented as to equitably serve the needs of each category. This will call for more effective credit planning involving earmarking of credit for the landless and the artisans.

39. While attempting to do this, it needs to be stressed that the credit delivery systems, of both co-operative and commercial banks, will require considerable toning up. Simplification of procedures, systematic identification of the most needy among the target group and preparation of appropriate investment projects for them, and re-orientation from security-based lending to project-based lending are some of the important aspects of an improved delivery system. Credit-cum-input supply melas or other effective credit and input delivery systems will have to be adopted on a large scale before the onset of *kharif* and *rabi* sowings. Full support will also need to be given by the extension agency in building up the awareness and motivation of the rural poor in respect of their production and investment needs. Alongside, fullest emphasis needs also to be given to recovery disciplines. Pressures which have lately developed in some parts of the country for writing off overdues can only be viewed with extreme concern, for the consequences of this will be disastrous for the credit system as a whole. The aim of the Sixth Plan is to secure a high rate of rural credit expansion to serve the productive needs of all, with priority being given to the credit needs of the various economic groups among the poor. Re-cycling of credit is an imperative of the process of expansion. Suitable credit insurance schemes may hence have to be devised for insulating weaker sections from total loss due to factors beyond their control, without disrupting the credit re-cycling system.

C. Promoting Opportunities for Gainful Employment

40. The most challenging task facing the country today is the generation of adequate opportunities for gainful employment for all sections of the population. Inadequate purchasing power rather than non-availability of food in the market has become a major cause of under-nutrition and malnutrition in the country. Therefore, the ability to provide opportunities for the optimum development of the physical and mental potential of children will depend upon the extent to

which poverty is reduced. The major aim of both of our developmental and social security strategies should hence be the enhancement of the purchasing power of the rural and urban poor.

41. In the past, special programmes for solving the problem of unemployment and under-employment often tended to be developed and implemented in isolation of the on-going developmental projects. Normally, only that activity should be regarded as employment which results in value added at least equal to the wage paid. It is, therefore, necessary to view employment as an indivisible component of development and ensure that both in concept and implementation, employment and development become catalysts of each other. During the Sixth Plan period, efforts should be made to end the prevailing operational dichotomy between employment generation and infrastructure and area development programmes so that the benefits to the community from the limited resources available can be maximised.

42. Some of the unique features of our economic and demographic situation are: (a) for the country as a whole during the 30 years of planned development, there has been no significant change in the proportion of labour force dependent on agriculture, (b) over 60 per cent of our population is below the age of 30, thereby providing enormous opportunities for capitalising upon the vitality and versatility of young people and (c) the country has a large reservoir of educated unemployed persons whose know-how is available for accelerating the pace of development. On the other hand, the resource back-up available to utilise effectively this manpower is extremely limited.

43. During the Plan period additional opportunities for employment will become available through the large number of developmental projects to be undertaken by State and Central Governments. In addition, industrial growth both in the public and private sector will also help to generate employment opportunities. Such opportunities will, however, by and large confer benefit only upon those who are qualified to enter the salaried professions as well as organised labour. The large segment of the unorganised rural poor will still need special attention. For this purpose, the rural population who are in need of help could be classified into the following three major functional groups:—

- (a) those engaged in agricultural occupations, including crop and animal husbandry, fisheries and forestry;
- (b) rural artisans of various kinds; and
- (c) landless labour.

The special needs and potential of each of these major occupational groups will have to be met through appropriate programmes. The following approaches will give an indication of the broad direc-

tions in which employment generation programmes could be developed:

44. (a) *Small and Marginal Farmers*: Increase in agricultural productivity and introduction of producer-oriented marketing must constitute basic elements in any viable strategy for the reduction of poverty in rural areas. The virtual stagnation in rural occupations has to be ended and rural communities helped to prepare and market value-added products through the introduction of appropriate post-harvest technology and agro-based industries. A majority of farmers cultivate holdings less than one hectare in size. Such small farmers need more area-specific and vocation-specific services rather than subsidies. Hence it is proposed to extend the coverage and content of the on-going small farmers' programme. This programme would cover farmers in all the blocks of the country having two hectares or less in irrigated areas and five hectares or less in unirrigated areas. In irrigated areas, the emphasis will be on the efficient use of water, better care of the health of the soil, plants and animals and on marketing. Obviously the precise composition of the service package will vary depending upon the farming system, the nature of the terrain, such as hill areas, desert areas, etc., and the stage of evolution of the marketing infrastructure, including rural communication. Farm level production plans supported by an effective extension service like that envisaged under the Training and Visit system will have to be provided for the farmers covered under the programme. Land levelling and consolidation as well as effective land reform measures will be essential to stimulate a long-term interest in farming on the part of the cultivators. Agro-service centres managed by self-employed rural youth should become the major mechanism of providing the necessary services, so that the concept of self-help can be fostered. The dairy development programme—Operation Flood II already initiated will cover about 10 million rural families. This can be further extended in order to cover in all 15 million families. Among the other projects which are proposed to be introduced for assisting farmers and fishermen are: (i) Dry-land farmers Programme in all drought prone and arid and semiarid areas. This will include provision for individual and community water harvesting and water shed management, scientific land use planning and contingency production plans to suit different weather conditions; (ii) Projects for promoting dairy, poultry, sheep, goat, piggery, yak and mithun production; (iii) Intensive Forestry Development Programme and (iv) Inland and coastal aquaculture programmes for promoting inland fish culture and integrated sea farming based on a blend of culture and capture fisheries.

(b) *Rural Artisan*: Promotion of village and small industries has been and will continue to be an important element in the national employment generation strategy. In the contribution to the net domestic product by the manufacturing sector as a whole, the share of the village and small industries sector (VSI) was around 49 per cent at the end of the year 1978-

79 and its share in the country's exports was nearly a third of the total. This sector also provides full time and part time employment to some 24 million persons. The VSI sector with its low capital-output ratio and high employment potential will, therefore, play a dominant role in improving the income of rural poor. Programme designed to subserve the following objectives will be introduced through an effective functional integration of numerous, small on-going projects and programmes:

- (i) Creation of employment opportunities particularly through projects in the handloom, handicraft, sericulture, apiculture and allied sectors.
- (ii) Organisation of raw material supply of the needed quantity and quality.
- (iii) Provision of designs based on consumer preferences and market research.
- (iv) Establishment of wider entrepreneurial base and upgrading the skills of the artisans through a system of recurrent training.
- (v) Organisation of producer-oriented marketing both within and outside the country.
- (vi) Expanded efforts in export promotion.

The programme for improving the economic conditions of the handloom weavers and other artisans will be revitalised. Measures would be taken to improve the levels of capacity utilisation and capital efficiency in this sector. Steps would be taken to check the growing phenomenon of sickness in the sector and to revive the potentially viable units through a package of assistance to be provided in cooperation with financial institutions. Measures would be taken to augment the flow of institutional finance to the village and small industries sector as a whole and in particular in favour of the cottage units. The facilities of the proposed National Bank for Agriculture and Rural Development would be utilised for the benefit of the rural artisans. Steps would also be taken to rationalise the interest structure in relation to the economic status of the beneficiaries. Legislative support will need to be extended to facilitate the flow of risk capital into the sector through innovations like 'limited partnerships'. The traditional skills of rural women constitute a national asset of inestimable value. Every effort should be made for taking advantage of the growing opportunities for international trade in hand-made products and for ensuring that the profits from such enterprises go to the actual workers. The Industrial Estates Programme will be revitalised and new functional estates set up for groups of artisans and craftsmen. Suitable incentives and facilities would be provided to widen the entrepreneurial base including induction of first generation entrepreneurs. For this purpose, the Entrepreneur Development Programme (EDP) meant for the technically qualified and educated unemployed persons would be strengthened further. Steps will also be taken to impart training in improved methods and technologies to upgrade the skills, productivity and earnings of the artisans through the na-

tional programme for Training Rural Youth for Self-Employment (TRYSEM).

(c) *Landless Labour*: Agricultural labour constitutes about one-fifth of the rural work force and fifty percent of the agricultural labour households are landless and have as such no asset base. The landless labourers are the most under-privileged and malnourished sections of the population and for them, it is a compounded problem of unemployment, low and uncertain income and nutritional deficiencies. Even a target of 5 percent rate of overall economic growth will not by itself help to cope with the problem of providing full employment to this category of population unless there is a very carefully planned tie-up between programmes for rural asset formation and development. It is proposed to initiate a National Rural Employment Programme (NREP) where development projects and target group-oriented employment generation projects will be closely intertwined. In this project employment will be viewed as an integral component of development and hence it should be ensured that both in concept and implementation, employment and development become catalysts of each other. NREP will be implemented as a Centrally Sponsored Scheme on a 50:50 sharing basis between the Centre and the States. State Governments could use some of the procedures adopted in Maharashtra for raising the Employment Guarantee Fund for generating the additional resources needed for implementing such a project. Wages could, depending upon possibilities, be paid partly as cash and partly as grain. Mobile fair price shops may be organised at the centres where rural works are in progress so that cloth, vegetable oil, salt and other principal requirements of the families can be made available. Block Development Committees and the Village or Community (Tribal) Panchayats along with the Village Yuvak Mangal Dals (Rural Youth Clubs) could be entrusted the responsibilities to plan and execute such programmes of self-sufficiency at the village and block level to ensure peoples' participation and grassroot leadership. Even if this programme initially covers on an average one thousand unemployed in every block, about five million people could be involved in a nation-wide developmental and production endeavour in about five thousand blocks. There would be other millions who would be working in projects of multi-village, multi-block, multi-district and State-level development. Thus, the National Rural Employment Programme will aim at achieving concurrently (a) employment opportunities which will help to provide to all citizens their daily bread, (b) planned utilisation of manpower for economic development, and (c) an efficient public distribution system for the essential commodities needed by rural poor.

Further, the National Rural Employment Programme will help to promote a much more aggressive approach to rural public works. If the wage rate is properly set it will pull slack season agricultural wages up, another desirable objective. Attendance will fall off automatically in the busy season. Rural works should act in this manner as a residual category of

employment, absorbing over a period of time able-bodied persons seeking work. The wage thus earned could help to supplement the income derived from self-employment avenues, as in animal husbandry, sericulture, village and small industries projects, etc., where members of landless labour households will be preferentially inducted. In order to ensure appropriate technological back-up for this programme, it is proposed to initiate an all-India coordinated research project for technologies for landless labour families to be jointly undertaken by major scientific agencies, State Universities, colleges and technical institutions and mobilise professionally qualified young persons for service in rural areas.

(d) *Urban Poor*: The various programmes for enlarging the opportunities for gainful employment in rural areas so far outlined, if implemented speedily and effectively will check the unplanned migration of the rural poor to urban areas. There are, however, already varying numbers of unorganised labour looking for daily employment in many towns and cities. Therefore, wherever appropriate, suitable urban works programme with the highest priority for environmental sanitation, slum improvement, tree planting and community housing should be undertaken. The programme should be so developed that infructuous and non-essential expenditure is not incurred. For this purpose, a shelf of projects in conformity with the master plan of the town or city should be prepared by the Municipal Corporation with special emphasis on eliminating various forms of air, water and environmental pollution.

(e) *Physically and Mentally Handicapped*: Programmes of training, rehabilitation and employment for those unfortunately afflicted by physical and mental deformities as well as diseases like leprosy will be considerably expanded. Special tax incentives will be given to promote interest in the employment of blind and other physically handicapped persons.

(f) *Educated Unemployed*: The issue of unemployment among the educated needs to be viewed in the medium term context of the Five Year Plan as also in the long term perspective so that a mutually beneficial relationship can be promoted among education, employment and development. The nature of the problem is such that no single pattern would provide the needed solution. A decentralised approach is called for and a District Development Centre could become the focal point for employment planning. It is necessary to set up at the district level an Employment Generation Council consisting of peoples' representatives, concerned government functionaries and representatives of credit institutions and of professional and academic bodies in the district. This Council should prepare an integrated district employment plan which will help to provide jobs in the industrial, agricultural and services sectors and which will also ensure that the district employment plan and the district credit plan are mutually supportive of each other. In the district employment plan, there should be special component plans for scheduled castes, scheduled tribes, backward classes and women.

Besides linking the provision of credit with self-employment projects for the educated youth, it will be necessary to provide relevant training on the model of TRYSEM programme. The success of self-employment projects will ultimately depend upon the efficiency of marketing. Therefore, the projects should be taken up only on the basis of a careful analysis of marketing opportunities.

(g) *Intergated Rural Urban Employment Strategy*: Through the multi-pronged strategy outlined above, it should ultimately be possible to ensure gainful employment to at least one adult member per family. With the active involvement of Universities, industrial undertakings, scientific establishments and local training and educational organisation, it should be possible for the Gram Panchayats, Municipal Corporations and local administration to utilise the funds available both with developmental departments and institutional financing organisations in such a manner that essential social security measures also serve as instruments of rapid economic growth.

D. Agriculture and Allied Activities

45. The achievement of an overall annual rate of growth of the economy at around 5 per cent during the 1980-85 Plan is crucially dependent upon an acceleration in the performance of the agricultural sector. From the broad inter-sectoral linkages observed in the past, it would appear that a rate of growth of agricultural production of around 4 per cent would need to be aimed at. This is also necessary considering the fact that the medium term possibilities of labour absorption in sectors other than agriculture are somewhat limited and bulk of the backlog of the unemployed/under-employed and net additions to labour force would have to be provided with productive employment within agriculture and allied sectors. This apart, for the country to be able to fulfil a volume growth rate of about 10 per cent in exports, there is utmost need to tap the export potentialities of primary products.

46. Agricultural production during 1967-68-1978-79 has grown at an annual compound rate of 2.8 per cent. The task is one of moving on to a new trend line and this will require a determined effort considering that it will involve programmes extending to difficult crop segments and also difficult agro-climatic regions/locations. Moreover the increase has to accrue mainly from a substantial step up in the yield levels and from multiple-cropping in view of the virtual exhaustion of the scope for increases in the net cropped area. This is apart from the problem of inter-year fluctuations and the need to stabilise yield levels and production performance.

47. Unevenness in technological progress in different regions, crops and farming systems, slow pace of implementation of land reforms, inadequacies in the arrangements for assisting small and marginal farmers to take to new technology, lack of effort in land consolidation and levelling, poor soil health

care and on-farm management of water, lack of an area approach in fighting the triple alliance of weeds, pests and pathogens and inadequate arrangements for producer-oriented marketing are some of the factors responsible for the growing gap between potential and actual farm yields. In addition, the prevailing mismatch between production and post-harvest technologies is leading to situations where not only post harvest food losses may be high but also where small differences in production lead to either an uncomfortable glut or an acute scarcity. Lack of progress in the production of oilseeds, which are predominantly grown under rainfed conditions, has necessitated the import of large quantities of edible oil. Special stress also needs to be laid on improving the production of pulses by introducing pulse crops in all irrigated crop rotations. It is clear that further progress in agriculture will depend upon the introduction of appropriate location-specific remedies to the maladies prevailing in each farming system. Adequate investment in the following sectors will hence be necessary during the Sixth Plan period.

48. *Flood Production targets:* Detailed production targets for different agricultural commodities are being prepared. It should, however, be emphasised that the increased production will largely have to come from improvements in productivity and cropping intensity. For this purpose, there has to be greater emphasis on improved farm management with as much attention being paid to non-cash inputs as to cash inputs. In particular group/community endeavour in the areas of water management, pest control and post-harvest technology will have to be promoted. The step up in the production of pulses and oilseeds of the order necessary for meeting our needs may be attainable only if these crops could also be included in irrigated farm rotations. In addition, the twin maladies of inadequate plant population and plant protection will have to be remedied through stepping up efforts in seed production and pest proofing on an area basis.

49. *Oilseed Production:* We can meet our requirement of oils and fats from the following four major sources:

- (a) Perennial oilseed plants like coconut and oilpalm.
- (b) Annual oilseeds like groundnut, rape, mustard, sesamum, safflower, niger, sunflower, soyabean, castor and linseed.
- (c) Minor oilseeds like sal, neem, karanja, kusum, mahua, etc.
- (d) Oil obtained through technological process such as extraction from rice bran, maize germ, cotton seed and mango kernel.

We are at present tapping less than 25 per cent of the available potential for production in the above sources. The availability of a vast untapped production reservoir even at current levels of technology is thus the major strength of our oilseed economy.

Plans should be developed to become self-reliant in our edible oil requirements within the shortest possible time.

50. *Water utilisation and management:* Upto 1979-80 we have created an irrigation potential of 56.7 million hectares consisting of 26.7 million hectares under major and medium projects and 30 million hectares covered by minor surface and ground water sources. According to the best available estimates we have scope for bringing about 38 million hectares more under surface water irrigation and 18 million hectares through ground water use. The return from the investment made in the irrigation sector so far is, however, disappointing. With our sunshine resources, an irrigated land should yield at least 5 tonnes of grain equivalent per hectare per year. The highest priority during the Sixth Plan period should hence go to the improvement of productivity per unit of water in the areas already covered with irrigation arrangements, including attention to the problems arising from salinity, alkalinity and water logging. Command area development, the introduction of the warabandi system of water distribution and the popularisation of an integrated set of soil-crop-water management practices will be necessary to get the best out of our past investment in irrigation. In the area of minor irrigation, particularly from ground water and lift irrigation sources, there has to be a proper tie-up with energy supply. For areas likely to be brought under irrigation, advance action should be taken for research by Agricultural Universities for developing cropping and land management systems for effective use of irrigation water, so that water could become a blessing and not a curse.

51. *Extension of Irrigation:* During the Sixth Plan every effort will have to be made to mobilise resources for expanding the area under irrigation and to initiate action for future development of water resources so as to bring about 125 million hectares under irrigation by the beginning of the 21st century. For this purpose, it is proposed to develop a National Water Plan consisting of the following components:

- (i) Effort should be to bring 15 million hectares under irrigation during 1980-85, consisting of 8 million hectares from surface water sources and 7 million hectares under ground water sources. For this purpose, the highest priority should be given to the completion of all unfinished irrigation projects as speedily as possible. Investments in subsequent plans should be of an order which would help in realising the presently assessed utilisable potential of 113.5 million hectares by 2000 A.D. In this context it should be emphasised that the relatively simpler schemes for harnessing surface water have already been undertaken. The more difficult ones will have to be taken up during this decade. A systems approach to project formulation and implementation will be essential for success so that all the links are tied up properly. Also, all inter-State differences of opinion in relation to the use of

river water should be speedily resolved. To facilitate speedier utilisation of the ground water resources, particularly in the neglected areas, it is proposed to develop an effective institutional structure, in addition, the on-going programmes of ground water survey and monitoring will be strengthened.

- (ii) The total surface water resources of the country have been assessed at about 178 million hectare-metres. We are now utilising only about 31 million hectare-metres, the rest flowing into the sea. We should make a beginning in preparing plans for harnessing some of the water which now goes to the sea for irrigating drought-prone and rain shadow regions through inter-basin transfer of water, to begin with, in the peninsular river system.
- (iii) The R & D effort in the field of solar desalination of sea water will be stepped up through Council of Scientific and Industrial Research (CSIR), Indian Council of Agricultural Research (ICAR), the Department of Atomic Energy and other suitable scientific organisations.

52. *Unirrigated areas:* Attention to rainfed farming will be one of the major thrusts of the Sixth Plan since improved technology which can help to elevate and stabilise production in most rainfed areas except during years of drought of unusual severity is becoming available. It is hence proposed to initiate appropriate programmes in dry land farming consisting of the following components:

- (i) Provision of water-shed based services in land preparation, water harvesting, crop life saving irrigation and management and pest control;
- (ii) Arrangements for better care of soil, plant and animal health;
- (iii) Arrangements for the timely supply of credit in the form of inputs for which the credit is intended through mobile credit-cum-input supply melas;
- (iv) Producer-oriented marketing to avoid distress sales by poor farmers; and
- (v) Suitable public policy measures particularly in the matter of providing remunerative price and package of incentives to promote scientific crop and land use planning.

53. *Flood Control:* It has been broadly assessed that the total flood-prone area in the country is 34 million hectares. Till 1979-80, an area of about 11 million hectares has been provided with reasonable protection. Keeping in view the recent recommendations of the National Floods Commission, a broad programme will need to be evolved consisting of flood forecasting and warning systems, new embankments, drainage improvement, soil conservation, reclamation of saline and alkaline soils, afforestation etc.

54. *Contingency plans and disaster preparedness:* Both in flood and drought prone areas, contingency plans to suit different weather probabilities will have

to be developed. Such plans should be supported by appropriate seed and fertilizer reserves. The preparation and the implementation of these plans should be monitored by the State Land Use Boards. It is proposed to make arrangements for training in disaster preparedness at a suitable existing centre.

55. *Fertilisers:* The consumption of chemical fertilisers is expected to go up from 5.4 million tonnes in terms of NPK nutrients in 1979-80 to about 9 million tonnes by 1984-85. It will, therefore, be necessary to plan our investment in the fertiliser sector accordingly. Simultaneously, steps will have to be taken to promote the conservation and use of all organic wastes and biological sources of nitrogen fixation and supply. Bio-fertilizers programme involving the popularisation of blue-green algae, azolla, azotobacter and other sources will have to be greatly expanded. In addition, steps to improve soil fertility and to reduce leaching losses fertilizer will have to be promoted. Training in soil testing and soil care will need to be provided at the village level. Reclamation of saline, alkaline and acidic soils should receive high priority.

56. *Systems approach to agricultural development:*

It is only by linking production, conservation, consumption and trade into an integrated system that we can accelerate agricultural progress. Therefore, during the Sixth Plan period an integrated agricultural strategy should be developed which would include steps for improving production on the lines indicated above. A net work of rural godowns-cum-post-harvest technology centres will have to be established for avoiding distress sales by poor farmers, and these can be linked to the public distribution net work. It should be our endeavour to give an export orientation to agriculture, after ensuring that the basic needs of our population for various food items are fully met. Full advantage should be taken of growing opportunities for international grain trade. For this purpose, it will be necessary to strengthen arrangements for transport and shipping in addition to packaging and forwarding. Simultaneously steps should be taken to improve our export earnings from all the traditional agricultural items. Stability of supply, quality of produce and price competitiveness will determine our success in becoming an important country in international agricultural trade.

57. *Horticulture:* The cultivation of fruits, vegetable and flowers should receive much greater attention, since they can be sources of nutrition, better soil management and employment and income generation. In fact a very significant aspect of the Sixth Plan proposal in agriculture should be an emphasis on horticulture with proper arrangements for the multiplication and distribution of appropriate seeds and planting material. Fruit trees can be introduced in all agro-forestry programmes and in other projects such as hill, desert and tribal area programmes. The potential for the export of fresh and processed vegetable and fruits should be fully exploited.

58. *Forestry*: An Intensive Forestry Development Programme in all the districts of the country would help meet the following three major groups of need if the programme is drawn up and implemented carefully;

- (a) ecological security;
- (b) fuel, fodder and other domestic needs of the population; and
- (c) the needs of small and large-scale industries.

It is proposed to develop such a project in which on-going schemes like social forestry and farm forestry programmes, commercial forestry projects, village fuel wood plantation, etc. will be functionally integrated. The restoration of the Himalayan and Western Ghats eco-systems through a massive afforestation programme will receive high priority. Steps will be initiated for organising the supply of fuel and fodder to the rural poor through the social forestry programme.

59. *Animal Husbandry*: Mixed farming involving crop-livestock integration should be promoted in all parts of the country. There is need for co-operative development projects in dairying, sheep, goat and poultry to cover the entire country. Camel, yak and mithun should also receive attention from the point of view of genetic improvement, health care and nutrition.

60. *Fisheries*: The enormous opportunities available both in capture and culture fisheries in inland and marine waters need to be capitalised fully. More intensive efforts and appropriate public policy measures are needed to take a advantage of our Exclusive Economic Zone. It will be necessary to expand and strengthen programmes for improving inland fish production as well as for promoting coastal aquaculture or mari-culture involving the culture of prawns, mussels, oysters, eels, marine algae and other organisms. A Fishery Survey of India should be organised for the purpose of cataloguing, conserving and monitoring our vast fisheries resources. Timely information on weather conditions and other facilities should be provided to small fishermen.

E. Industry and Infrastructure

61. *Industry*: A major challenge to be faced in the Sixth Plan is to secure a substantial acceleration in the rate of industrial growth. It is envisaged that industrial production in the country will grow at an average annual rate of 8-9 per cent during the Plan period. This is not going to be an easy task considering the energy constraint facing the country. Nevertheless, the substantial step up in public sector investment and the more hopeful prospects for agricultural growth suggest that it is feasible to realise an industrial growth rate of 8-9 per cent. This order of increase is in any case necessary to secure an increase of about 10 per cent per annum in exports.

62. Also, improved functioning of the infrastructure, particularly coal, power and railways, is an essential condition for the realisation of the industrial growth target. In addition, in order to make efficient use of scarce capital, much greater attention will have to be paid to securing greater efficiency and competitiveness in the functioning of our industry. In order to protect employment, all encouragement will have to be given to the growth of cottage, village and small industries. Sectors where efficient production can be secured on a small scale will continue to be reserved for future expansion only by the small-scale units. However, if social costs of protection of the decentralised sector are to be contained within reasonable limits, there must be a greater play of competition in the remaining sectors which are not reserved exclusively for small-scale industry. In industries where the economies of scale are not important, dispersal of industries to secure greater regional balance is both economically efficient as well as socially desirable. However, wherever economies of scale exercise an important influence on the cost of production, expansion of existing enterprises is to be preferred to setting up new plants of uneconomic size. This applies particularly to the expansion of capacities with an eye on export markets. In particular, in specified high priority industries, normal and automatic growth in existing industrial capacities upto a specified percentage should be permitted. Licensing regulations would need to be relaxed to the extent necessary to assist production for export. The leading role of the public sector in the industrial development of the country will be further strengthened. The challenge ahead is to make use of the efficient, the modern large scale public enterprises as pace setters in a giant technological leap forward for industry and the entire economy. Moreover, consistent with the emphasis on technological self-reliance, adequate stress must also be laid on keeping the technology in use upto-date. To that end, import of technology particularly for export oriented and key industries may need to be liberalised.

63. The objective of self-reliance would require that the pattern of investment in the industrial sector should continue to give high priority in the creation of adequate capacity in basic industries such as steel, nonferrous metals, capital goods, fertilizers and petrochemicals. The public sector will have to assume the major role in the expansion of these industries. The Sixth Five Year Plan will provide increased outlay for this purpose in the public sector. In the consumer and intermediate industries, the potential for expansion in the private sector would be fully exploited.

64. The production programmes tentatively under consideration envisage substantial increase in production in key industries. Steel production is proposed to be stepped up from 7.4 million tonnes in 1979-80 to 11.7 million tonnes in 1984-85, aluminium from 190,000 tonnes to 300,000 tonnes, cement from 18 million tonnes to 34 million tonnes, nitrogenous ferti-

lizers from 2.2 million tonnes to 4.3 million tonnes, phosphatic fertilizers from 0.75 million tonnes to 1.3 million tonnes. Considerable increase in output in consumer goods like sugar, vanaspati, cloth and drugs is also envisaged.

65. *Village and Small Industries:* The plan will give a high priority to the speedy development of small, tiny and village industries with a view to enhance employment opportunities in these industries on a large scale. Existing traditional industries will need to be revitalised and their productivity raised by upgradation of skills and techniques. A positive effort will be made to disperse these industries over a wider area, particularly in the rural and semi-urban areas. The programme of ancillarisation and establishment of proper linkages between large, medium and small scale will be specially encouraged. Particular attention will be paid to intensify the efforts for the development of handloom industry with emphasis on the North Eastern Region wherein an Institute of Handloom Technology is proposed to be established.

66. *Transport:* The importance of transport infrastructure for the industrial sector and the general development of the economy can hardly be over-emphasised. Transport capacity should remain ahead of the demand to avoid bottlenecks in the movement of industrial and agricultural commodities. Among the objectives of the national transport policy would be the provision of adequate arrangements for passenger and freight demands at a minimum resource cost, an integrated perspective comprising available transport facilities, special emphasis for remote and isolated areas like the North-Eastern Region, mass transit and para transit systems in urban areas and so on. Transport policy should also aim at an optimum inter-modal mix and conservation of energy. Encouragement will need to be given to coastal shipping, inland water transport, pipeline transportation and ropeways. The plan will particularly provide for substantial additional outlays for roads, railways and ports.

67. Railways will continue to be the backbone of the country's transport infrastructure in the foreseeable future, more so in view of the emerging energy situation. Keeping in view the vital importance of railway transport to the economy of the country, special efforts will need to be made to enhance the capacity of the Railway system through (a) better utilisation of existing assets by greater productivity (b) measures for modernisation necessary for the growing size of operations, like running of heavier and longer trains, greater pace of electrification, containerization and use of modern methods of freight controlling, and (c) adequate investment for creation of additional capacity to match, and to be ahead of the anticipated levels of demand.

68. *Energy:* In an earlier section brief mention has been made of the balance of payment effects of steeply rising import costs of petroleum. In addition, we have to reckon with the possibility that the requi-

site supply of imported oil may not simply be available even if we can find ways and means to pay for it. As of now, it is reasonable to assume that the world will be faced with a growing shortage of oil and countries like India, poor as they are, are in no position to compete with developed countries for available scarce supplies of oil. The means that reduced dependence on imported oil has to be a key element of our development strategy in years to come. The broad outlines of such a strategy are as follows:—

- (i) Through the pursuit of appropriate pricing policies and other related measures, the rate of growth of consumption of oil products must be curbed, particularly of diesel and kerosene which have shown unacceptably high rates of growth in recent years. Utmost economy and maximum efficiency in the proper use of petrol, diesel and petroleum products should be effected and public opinion should be made more aware of the exact nature of the oil crisis and whatever it means for the average citizen.
- (ii) Efforts for the exploration and development of domestic resources of oil have to be greatly intensified.
- (iii) Expansion of the production of coal and electricity and faster exploitation of India's considerable hydro potential and further development of nuclear power have to be pursued with greater vigour.
- (iv) In order to economise in the use of kerosene and diesel in rural areas, setting up of biogas plants and energy plantations under the intensive Forestry Development Programme, using waste land and appropriate timber species which grow rapidly, have to be pushed ahead.
- (v) There is a considerable scope for conservation and economy in the use of several industrial processes. An energy audit should invariably become an annual feature of the activities of all major industrial enterprises in the public and private sectors.
- (vi) Research on the development of renewable sources of energy, particularly use of solar energy, must receive greater attention than in the past. A minimum objective should be to develop extensive use of solar energy by the end of the decade for irrigation.

69. In view of the severity of the energy constraint, massive investments will be necessary in sectors such as coal, electricity generation and distribution and petroleum exploration and development. Coal production target for 1984-85 will involve a substantial step up over the production of 104 million tonnes in 1979-80. The Plan will increase the installed generating capacity of electricity by nearly 20,000 M.W. For this purpose, it will be necessary to establish Super Thermal Power Stations in the Central sector and also to strengthen the regional grids and move to

a national grid so as to secure optimum utilisation of generating capacity in different parts of the country. This investment in transmission and distribution and efforts to reduce transmission losses will have to be given a high priority. Moreover, significant outlays will also be incurred on coal and power projects which will fructify in the Seventh Plan. The production of crude oil is expected to go up from 11.8 million tonnes in 1979-80 to around 22 million tonnes by 1984-85. The outlays in this sector have to take into account expenditure on exploration as well as expansion of refining capacity in the country.

70. *Efficiency in resource use:* Because of the paramount need to devote a large proportion of investible resources in such capital intensive sectors as oil, coal and electricity, there will inevitably be a limit on resources which can be devoted to other sectors. However, in many of these sectors, there is considerable excess capacity. Part of it is no doubt the result of shortages of critical inputs such as power. There is urgent need to revamp and strengthen the management structure in such critical sectors as coal, power, transport and other enterprises so that the management has the motivation to give its very best to the enterprise. With the accountability of public sector for higher production and generation of fiscal resources, a strong and effective scheme of delegation of power to public sector management will be ensured; and its functional autonomy safeguarded. Except for policy issues, the operational autonomy of individual public sector managements will be protected. Central and State Governments will have to exercise the utmost care in choosing the personnel of top management so that a professional approach to management is encouraged. For the public sector, it is necessary to arrange for proper induction and training of senior managers.

71. In the State sector, there is urgent need to have a look at the working of the State Electricity Boards and other State Corporations and Boards. In many States, there is growing mismanagement in the administration of power generation and distribution. Effective measures will have to be taken to secure greater capacity utilisation in the vital power sector.

72. In recent years, strained industrial relations have also contributed to inadequate capacity utilisation in several key sectors. It is necessary to devise an effective strategy for reducing the incidence of industrial unrest which causes hardships to the community and also leads to loss of output. As part of this strategy, workers' participation in industry should be encouraged and stress laid on augmenting productivity. Early consultations with representatives of workers and employees will be necessary to work out an acceptable strategy.

F. Human Resource Development

73. Since human welfare has to be the supreme consideration of all developmental plans and programmes, a high priority during the Sixth Plan period should go to the improvement of the quality of life of our people. This needs to be achieved by enabling

the participation of all our citizens in the developmental process. The stress during the plan period would be on the improvement in the living and working facilities in the small and medium towns and other growth centres in order to enable them to serve the rural hinterland and the rural economy in a more efficient and effective manner and with a view to minimise migration to metropolitan and other large cities. Some important components of an integrated approach to human resource development will be the following:

(a) Population stabilisation

74. India's population is currently increasing at the rate of 1.9 per cent per annum. It is anticipated that the population which is estimated at 659 million as on 1.3.1980 will rise to 913 million by 2000. Rapid increases in population become a continuing drag on the resources of the country. Urgent steps are necessary to moderate and reduce the rate of population growth. Unfortunately, in the last few years, the family planning programme has lost the momentum built-up in earlier years. It is necessary to reverse this dismal trend. It should be the objective of our population policy to reduce the net reproduction rate to 1 per cent by 1995. To that end, it will be necessary to draw up an effective family planning programme. Such a programme must be built up as part of an integrated package consisting of measures in health care, water supply, sanitation, infant nutrition; care for the aged, education and extension. The emphasis must be on proper motivation and an "Open-choice" in the promotion of different methods of family planning. Coercion in any form must be ruled out.

75. The State and Central agencies should jointly work out such an integrated population stabilisation programme with built-in-flexibility, so that the contents of the programme and the socio-cultural features of the area to be covered by the action plan are mutually compatible. The programme should concentrate on educating the people of the small family norms, while making the necessary services available on the scale commensurate with the magnitude of the programme.

(b) Minimum needs programme

76. The Minimum Needs Programme which was introduced in the Fifth Five Year Plan (1974-79) included the following components:

- (i) Elementary education
- (ii) Rural health
- (iii) Rural water supply
- (iv) Rural roads
- (v) Rural electrification
- (vi) House sites for the landless labourers
- (vii) Environmental improvement of urban slums; and
- (viii) Nutrition.

77. The minimum needs programme should receive priority in the allocation of resources. The activities covered under the programme will be supplemented by the wider programmes in the various social services sectors. It will be desirable, where possible, to adopt a systems approach in dealing with these social services programmes. Special mention may be made of the following:—

Provision of safe drinking water: Clean drinking water will be provided in all the problem villages in the country. It will be ensured that at least one source of potable water is available throughout the year in every such village. The approach will be to have low cost schemes and the widest coverage with simple arrangements for maintenance which should be left, as far as possible, to the local level. Care will be taken to ensure that drinking water is available to all weaker sections of the community, particularly scheduled castes and scheduled tribes.

Elementary Education: Education should be viewed as one aspect, though a very important one, of human resource development at every age-level. Education and other developmental inputs particularly health, environmental sanitation and nutrition should constitute an integrated system of human resource development (vide Section G below). Some groups and levels will have to receive priority in such a programme. The means adopted may be either formal (through the school system) or non-formal (through other available systems and media). If however the objective has to be stated in quantified terms, the guiding principle should be that no child below the age of 14 should be deprived of elementary education. Those above 14 must take second place.

Health: While the coverage under minimum needs programme has necessarily to be limited, health care as such should be viewed as a total system consisting of appropriate steps in—

1. environmental sanitation
2. supply of safe drinking water
3. nutrition
4. health education
5. immunization
6. family-planning

It would be useful to promote integrated voluntary health service organisations with support from Government. If each village community could organise a voluntary health service to pay particular attention to environmental sanitation and preventive medicine, it should be possible to achieve the World Health Organisation (WHO) objective of "Health for all by 2000 AD", within this decade itself.

Housing and Urban Slums: In rural areas, provision of house-sites and dwelling houses for landless

labour would be undertaken as a time-bound programme accompanied by a low cost rural housing programme on a nationwide scale. In the urban areas, the economically weaker sections and the low income group will need to be given special care. The stress would be on housing facilities based on low cost locally available building materials and socio-cultural and ecological requirements. Group and community housing as well as housing for the homeless would be one of the priority programmes. Special efforts would be made to tackle the problem of slums on a more enduring basis. Conscious efforts will have to be made to check migration from rural to urban areas and plan the location of industries and other economic activities in such a way that economic opportunities and job opportunities are distributed in a way that promotes population dispersal. Efforts will also have to be made to develop small and medium towns which can act as counter magnets to the metropolitan areas.

(c) *Special Programmes for Scheduled Casts, Scheduled Tribes, weaker section and backward areas*

78. From the Fifth Five Year Plan onwards, special emphasis has been given to the economic development of scheduled castes, scheduled tribes and other backward classes through programmes of land reforms, agriculture, animal husbandry, village and small industries, education and other social services. For the scheduled tribes and tribal areas, an area-based approach for their development was taken up. Since 1979-80, formulation of special component plans for scheduled castes has been initiated particularly for States and Union Territories having large scheduled caste population and this approach will be continued.

79. The Sixth Plan approach to the development of scheduled castes, scheduled tribes and other weaker sections and backward classes will be to intensify the existing efforts and keeping in view their basic needs, evolve family and household oriented programmes to ensure that scheduled castes and scheduled tribes derive benefits from plan investments directly. For the scheduled tribes, economic programmes will be enlarged to make them self-reliant without interfering with their traditional ways of life and culture. For other economically backward communities, minorities, women and the socially and educationally handicapped, suitable provisions would be made for educational facilities and other economic programmes.

80. *Hill Areas.* The development focus in these areas has to compensate for the difficulties imposed by topography including transportation and need for ecological and environmental protection. The approach should be consistent with the maintenance of the cultural identity of the people. There is need to develop infrastructure of transport, communication and power. Large scale afforestation to cover the hills made barren by indiscriminate felling is necessary. Since many ex-servicemen come from the Himalayan region, their services could particularly be utilised for afforestation, soil conservation and water

shehedd management in the hills. Alternative land management systems will have to be introduced to make shifting cultivation unnecessary. There is need for introducing high value low volume crops backed by processing and marketing to include horticulture, tea, coffee, spices, etc. in the North-Eastern region. There has to be a considerable extension of plantation crop cultivation in this region. Industry, based on local raw materials to minimise transportation cost and on the locational advantage of cool climate will also need to be developed. A National Hill Areas Development Programme will be launched to ensure planned integrated development of the hill areas of the country.

81.1. *Desert Areas:* The Desert Development Programme will be implemented both in the hot and cold arid zones of the country. The emphasis will be on arresting desertification through activities which restore ecological balance, stabilise sand dunes, and facilitate soil and water conservation. Plantation of shelter belts, adoption of water harvesting techniques and developing pastures to sustain livestock economy will be vigorously pursued. Exploitation of natural resources of these areas will be closely linked to replenishing of these resources. It is proposed to encourage innovative use of land for fodder crops, pastures and fuel and fodder plantations. This diversification can substantially improve the economy of the desert areas in keeping with the ecological requirements of the areas. In the cold arid zones of Ladakh and Spiti, irrigated agriculture and improved animal husbandry practices would be encouraged among other activities.

G. 1. Education

82.2. The main objectives of education development will be:

- (i) to ensure essential minimum education to all children upto the age of 14 years within the next ten years, particular attention being paid to school drop-outs and to those groups which are in danger of getting left behind because of their special circumstances through appropriate programmes such as those designed to promote "learning while earning";
- (ii) to provide for all citizens, literacy, numeracy, basic understanding of the surrounding world and functional skills of relevance to daily life and to local environment;
- (iii) to promote the values of secularism, democracy, national integration and dignity of labour throughout the educational system;
- (iv) to provide relevant technical skills through the agency of *Krishi, Udyog* and *Van Vigyan Kendras*, and other centres where learning should be by doing;
- (v) to lay stress in the creation of new facilities on technical and vocational institutes and locate them to the maximum extent possible in the rural areas;

- (vi) to improve secondary and higher education courses so as to increase the component of learning from real life situations through participation in socially relevant activities;
- (vii) to consolidate existing facilities for higher education and programmes with minimum additional inputs for quality improvement and physical infra-structure and to coordinate higher education with opportunities for employment, specially self-employment and developmental goals;
- (viii) to promote selective growth in educational fields of national importance and social relevance such as the pursuit of scholarship and excellence in basic sciences and humanities, development of scientific and technical manpower, human resources development among weaker sections, socially handicapped groups and women; and to provide essential commodities needed by students at controlled prices;
- (ix) to sensitise academic communities to the problems of poverty, illiteracy and environmental degradation through organised participation in poverty reduction and environment improvement programmes;
- (x) to facilitate development, mobilisation organisation and utilisation of the youth to involve and participate in the process of national development; and
- (xi) to support the growth of arts, music, poetry, dance, drama including folk art as instruments of culture, education and national integration.

83. The approach to achieve these objectives will be characterised by its flexibility for orientation to tasks to be performed and results to be achieved, diversity of models to suit varying needs and circumstances within the framework of priorities and integration of efforts to effect participation and coordination of many sectors and agencies. The means to be adopted will be either formal or non-formal, making full use of all available institutions, systems and media. Inter-sectoral cooperation will be brought about and parallel streams harmonised into a system network at various points and levels so as to achieve beneficial linkages among education, employment and development. For this purpose, it will be desirable to introduce provisions in University Acts which can help to provide structured linkages between general universities and development departments of Government, as has already been done in the Acts of Agricultural Universities.

84. *Sports:* An area which needs particular attention is the provision of adequate facilities for sports and games to students from the young age. Depending on local preferences, adequate facilities for indoor and outdoor games should be provided. Promotion of team work and striving towards excellence should be the major goals of our programmes in sports and

games. It is also necessary to generate wider interest in physical education and nature exploration.

H. Ecology and Environment

85. It is imperative that we carefully husband our renewable resources of soil, water, plant and animal life to sustain our economic development. Over-exploitation of these is reflected in soil erosion, siltation, floods, and rapid destruction of our forest, floral and wild life resources. The depletion of these resources often tends to be irreversible; and since the bulk of our population depends on these natural resources to meet their basic needs, particularly of fuel, fodder and housing material, it has meant a deterioration in their quality of life.

86. There are a number of causes of this state of affairs:

- (i) There is no consideration of costs of environmental degradation at the policy planning level; e.g., construction of roads, mining activities and placement of pylons for the high tension power lines cause large-scale landslides destroying fertile fields in the valleys. Similar is the situation with regard to several hydel projects.
- (ii) There is lack of long-term perspective in our development planning; e.g., soils are tending to get saline or alkaline due to improper use of irrigation and soil organic matter and fertility are tending to get depleted due to use of organic wastes as fuel rather than as manure.
- (iii) All agencies tend to maximise their own profits and ignore the costs they impose on the society at large, including costs of environmental degradation. For example, studies by the Central Board for the Prevention and Control of Water Pollution have shown that the discharge of community wastes and industrial effluents is the major cause of water pollution. At present, 56 per cent of class I cities and 87 per cent of Class II towns do not possess sewerage facilities.
- (iv) While a community depending on a resource for its subsistence generation after generation has a stake in its conservation, an entrepreneur with the option of shifting his investment is only interested in quick profits even if it leads to the destruction of the resource base. The inshore prawn fisheries of Goa, sustainably exploited for centuries by local fishermen, are now being overfished and depleted through the exploitation by trawlers largely owned by entrepreneurs from non-fishing communities. Similarly, with the growth of the fruit industry in Jammu and Kashmir and Hima-

chal Pradesh, felling of trees for making packing cases is proceeding in an indiscriminate manner.

- (v) A large fraction of our population is today being forced to eke out a subsistence by cultivating marginal land, overgrazing depleted pastures, cutting wood from dwindling forests and destroying the base of our natural resources in many other ways.
- (vi) Mining, brick-making and similar activities create scars on the earth and do considerable damage both to soil productivity and scenic beauty. It is important that rehabilitation measures should be strictly enforced in areas subjected to mining, brick-making and similar activities.

87. The situation calls for a bold new approach to development which will be based on techno-environmental and socio-economic evaluation of each developmental project. Major lacunae in our environmental legislation include measures to prevent air and noise pollution, over-exploitation of fisheries, control of impact of mining on environment, a provision for taking over the treatment of industrial effluents by the Government and preservation of landscapes of special significance. Our general public as well as policy makers should be effectively exposed to environmental issues.

I. Science and Technology

88. India has had a long and distinguished tradition in science from ancient times to great accomplishments during this century. But it is essentially since independence largely through the vision and support of Jawaharlal Nehru that an organised effort was made to develop a capability and infrastructure, covering a wide spectrum of science and technology (S&T), to develop a strong and self-reliant nation. In the little over three decades that have gone by, such an infrastructure and capability largely commensurate with meeting national needs has been created. The first objective during the Sixth Plan period will be to strengthen and consolidate this base and ensure work on an inter-disciplinary, inter-agency manner to meet major well defined objectives. As an integral part of this process, facilities for work and housing in the existing scientific institutions will have to be improved.

89. Given clear-cut objectives and defined time-frames, Indian science has demonstrated that it can meet the goals that have been set. With this experience, it is now crucial that in all the important and major sectors of national endeavour clear-cut objectives are laid down for science and technology.

90. There is a tendency to view science and technology as a separate component of the Five-Year Plan. A major effort of this Plan must be to ensure that science and technology permeate and subserve every sector of the national effort and help to achieve

development targets at minimum costs and maximum benefits in terms of energy conservation and employment generation. Science and technology must become an essential and integral part of this development process. The scientific community through its academies and professional associations and particularly the younger scientists and organisations for them must be energised towards this objective. Appropriate assistance will need to be given to science academies and professional societies for this purpose. At the same time, industry, both in the public and private sectors, should build strong in-house R&D facilities.

91. Technology must help to speedily improve production. It should help to create more employment and reduce drudgery, particularly in the occupations of hill and rural women. Location-specific research will be needed for this purpose. Besides these material goals, science through proper communication should be made a powerful force to eradicate old irrational attitudes. A Science Information Bureau may be established for this purpose. Also "Science Sammelans" may be organised at frequent intervals by all stations of the All India Radio and Doordarshan in local languages. Steps will have to be taken to bring scientists and society together through appropriate feedback mechanisms.

92. Self-reliance must be at the very heart of the S&T planning. There can be no other strategy for a country of our size and its endowments. It must, however, be recognised that science and technology in general have a long gestation period to fructify. It is the infra-structure and capabilities built over the past three decades that has to be made use of for obtaining immediate results in the Sixth Plan. The further base built over the Sixth Plan will largely be of value for meeting the objectives of the following Plans. It therefore, needs to be emphasized that the support for S&T is related not only to the objectives of 1980-85 but its time horizons extending for a further 5-10 years.

93. In addition to strengthening the existing infrastructure and correcting its imbalances, a significant effort over the Sixth Plan period will have to be devoted to new areas of thrust. This will include work on: new energy sources; ocean science and technology; new thrusts in agriculture, particularly to develop less energy-intensive strategies; new horizons in material science; eradication of communicable diseases; better and more diversified utilisation of coal; newly emerging areas in the life sciences based on recent developments; in molecular and cell biology; and safe and socially acceptable techniques of family planning. Continued growth and development in the high technology areas of nuclear science, space science and electronics will be needed to meet the various objectives of energy, diversified applications in many areas and the necessity for self-reliance.

94. Manpower of appropriate quality and in adequate number forms the base for any scientific development. India fortunately already has a large community of trained scientists and technologists. To en-

sure the continued generation of such manpower, education, both at higher and school levels, in the areas of science and technology, will need considerable strengthening. Also basic research in selected areas will have to be supported to enable India to fulfil itself at the frontiers of scientific development, and to create self-confidence in the community as a whole through such achievements.

95. There is need for close attention to organisational and institutional matters, and to fiscal policy, import policy and industrial policy to ensure that these are in consonance with the objectives and directions given to the S&T effort. Careful attention to these, and implementation of the necessary measures in relation to these will ensure much higher returns from the S&T effort than has been possible in the past.

96. State Governments will have to pay particular attention to the following:

(i) *State Councils of S&T*: All States (excepting those like Karnataka, Kerala, and Maharashtra which have already set up State Committees/Councils on Science & Technology) need to set up S&T Councils as an integral part of their planning machinery. Such councils should bring together a broad spectrum of expertise, including young research scholars and science journalists and should undertake a continuous review of science and technology priorities and analysis of constraints. Promoting location-specific research and technology development should be the major aim of such State S&T Councils.

(ii) *Association of Young Scientists*: The organisation of Associations of Young Scientists would be helpful in involving the younger generation of students and scholars in promoting an interest in science and in spreading a culture of science tailored to the needs of economic development. Having regard to the conditions in our country, this should focus on the age group 18-24.

(iii) *Women Scientists*: There is greater need for paying attention to the problems of women scientists. Suitable facilities will have to be created for working women engaged in S&T activities. Women trained in home science should be assisted in organising the recycling of all wastes and proper preservation of food material.

(iv) *Involvement in development*: Wherever appropriate, institutional devices should be fostered for involving the S & T community in block level planning and in programmes designed to promote opportunities for gainful employment.

J. Other Areas of National Endeavour

97. The above paragraphs have dealt with the key areas of the economy deserving priority attention during the Sixth Plan. Effort in other areas will have to continue for completing and strengthening the programme already developed, introducing innovations as become necessary in the light of experience. Mention may be made of the development of civil aviation.

tourism, communications and information media as also of the social services not covered under the Minimum Needs Programmes. Programmes in these areas as in others are under preparation by various Working Groups and the concerned Ministries.

K. Plan Implementation

98. A successful implementation of the Sixth Plan will require a significant strengthening of the planning machinery at all levels. Arrangements for the preparation and implementation of projects both at the Centre and in the States will need to be revamped. It will also be necessary to provide for regular monitoring of the progress of the projects and programmes and even current as well as post-evaluation. There has to be much greater awareness of the social costs of delay and rules and procedures which come in the way of timely completion of plan schemes and projects must be done away with. The Sixth Plan assigns vast responsibilities to the development administration at the grass roots. This will require augmentation of the capabilities of development administration both at the district level as well as the block level. Finally, planning for rapid economic and social development in a democratic polity can succeed only if there is a conscious and willing acceptance on the part of the common people of various structural changes inevitably associated with a fast changing economy. In the final analysis planning is for the human being and it involves essentially an investment in man. People's participation and their sense of purpose are crucial to an effective implementation of the Plan. Thus arrangements for the people's involvement in the planning process will have to be reviewed and strengthened. The role of the Panchayati Raj Institutions will need to be reviewed in the light of experience and conditions prevailing in various States.

99. Special emphasis will be placed on involving the youth of the nation as the pivot of public participation. More imaginative ways will have to be found to tap the reservoir of idealism and potential for constructive action that the country's youth represents. Rural youth clubs have been found to be a particularly effective means of promoting a variety of village developed activities in the past. These will be strengthened and linked to similar clubs or centres in the urban areas through appropriate organisational links at all levels.

100. In particular, attention needs to be paid to the following:

- (a) There are far too many procedural restrictions; authority and accountability frequently tend to get separated so that no one ultimately becomes accountable. A new management methodology, where authority and accountability are linked at every level, will need to be introduced. A carefully designed concurrent performance audit

system should enable personnel in key positions to be deployed effectively in order to secure speedy implementation of projects

- (b) Frequent shifts of top management personnel needs to be avoided. Those who are doing well in a particular post could be given the higher scales of pay for which they become eligible without having to shift them to other Departments. For example, in some of the command area projects, the project Administrator has been changed almost once in six months. Since the persons appointed to such posts are generalists, it will take some time for them to get to know the nature and complexities of the job. Unfortunately, by the time an officer settles down in the job, he gets transferred to a totally different position
- (c) Current personnel policies tend to penalise those posted in the rural, tribal and neglected areas with regard to allowances and amenities, instead of providing incentives. These policies need to be reviewed with a view to remove such urban bias.
- (d) The tendency to proliferate formal staff positions will need to be avoided. Non-formal staffing pattern involving the mobilisation of suitable members of the local village community on the basis of a fixed monthly honorarium can be introduced wherever possible and without adversely affecting the position of existing staff in the rural development projects. The Minimum Needs Programme, including drinking water supply, elementary education, environmental sanitation, preventive medicine and family planning are all areas which lend themselves to this approach. This would also generate greater avenues for additional income to the families below the poverty line. Appropriate pre-development training could be given under Training of Rural Youth in Self Employment (TRYSEM) and other projects.
- (e) It is desirable to change substantially the present arrangement for delegation of powers for sanctioning investments and clearing contracts in order to facilitate speedy implementation.

VI. SUMMARY AND ISSUES

1. Because of the nationally and internationally difficult economic conditions under which the Sixth Plan is being launched, it would be necessary to ensure that plan priorities and programme thrusts are chosen very carefully. Equally important is adequate attention to all aspects relating to bridging the gap between plan and performance (paras 14).

2. The objectives of the Sixth Plan should be as listed in para 5.

3. On present assessment, an average growth rate of 5 per cent in annual national income would be aimed at during the plan period. Consideration will be given to the feasibility of a higher growth rate of 5.3 per cent. A growth rate of a minimum of about 10 per cent in exports will be aimed at (paras 9 and 25).

4. Considering the resource position and the balance of payments constraint, it would be prudent to plan initially for an outlay of Rs. 90,000 crores (para 11).

5. To finance a plan involving an outlay of Rs. 90,000 crores without generating undesirable inflationary pressures in the economy, it would be necessary to undertake an additional resource mobilisation of Rs. 19,000 crores. The share of the Central and State Governments in such an effort would be of the order of Rs. 13,000 and Rs. 6,000 crores respectively (paras 11-12).

6. Apart from the need to mobilise about Rs. 7500 crores by way of additional taxation, during the Sixth Plan, it would be necessary to reduce budgetary subsidies and secure higher financial returns from public enterprises both at the Centre and in the States (paras 13—21).

7. Removal of poverty and unemployment will be the major thrust of all plan programmes. The on-going rural development programmes will be integrated functionally, so that maximum returns can be obtained from the available Government and institutional financial resources (paras 30—39).

8. The programmes of promotion of employment will be aimed at specific target groups. In the case of small and marginal farmers as well as those engaged in fishing, the objective must be to assist them for increasing their productivity. For this purpose, the on-going small farmers programme, the national dairy project, dryland farmers programme and inland and coastal aquaculture programmes will be expanded and strengthened.

For assisting rural artisans more effectively, numerous small on-going programmes will be functionally integrated.

A National Rural Employment programme will be established in which development projects and target group oriented employment generation will be closely inter-twined.

An Employment Generation Council will be established at the district level to coordinate activities for promotion of employment among the educated unemployed (paras 40—44).

9. The agricultural plan should be so developed that productivity of all major farming systems is improved both in irrigated and rainfed areas. Special attention should be paid to increasing the production of pulses and oilseeds. Horticulture should receive higher priority. The pattern of agricultural growth

should be such that an export orientation can be given to agriculture after ensuring that the basic needs of our population for various food items are fully met (paras 45—49).

10. A national water plan for fuller and speedier utilisation of surface and ground water resources should be implemented. Effort should be to bring 15 million hectares under irrigation during 1980—85, 8 million hectares from surface water sources and 7 million hectares from ground water sources. (paras 50-51).

11. Fertilizer production will be increased, so that a consumption level of about 9 million tonnes of NPK nutrients can be achieved by 1984—85. Organic recycling and biofertilizers will also be popularised extensively (para 55).

12. An intensive Forestry Development Programme has to be drawn up and implemented carefully for ensuring ecological security and meeting the fuel, fodder and other domestic needs of the population as also the requirements of small and large industries (para 58).

13. Mixed farming involving crop-livestock integration should be promoted in all parts of the country. There is need for similar cooperative development projects in the case of sheep, goat and poultry (para 59).

14. Programmes for inland fisheries and coastal aquaculture will be introduced. Steps will be taken to derive maximum benefit from the exclusive economic zone (para 60).

15. Improved functioning of and higher outlays for the infrastructure particularly coal, power, railways and ports will be necessary for the realisation of the industrial growth target (para 62).

16. Significant amounts of outlays will have to be provided for expansion of capacity in steel, non-ferrous metals, capital goods, fertilizers and petrochemicals (paras 63—65).

17. In order to protect employment, all encouragement will need to be given to the growth of cottage, village and small industries (para 65).

18. The broad objectives of national transport policy will be as indicated in para 66.

19. In view of the severity of the energy constraint, massive investment will be necessary in the sectors of coal, electricity generation and distribution and petroleum exploration and development (para 68).

20. There is an urgent need to revamp and strengthen the management structure in the critical sectors of coal, power, transport and other enterprises. (para 70).

21. The major aim of the plan should be to optimise the benefits from our vast human resource and

to improve the quality of life of our people and more specifically those suffering to-day from different forms of economic, social and ecological handicaps. The major components of the human resource development programme will be:

- (a) population stabilisation (para 74).
- (b) minimum needs programme (para 76).

22. Policies for controlling the growth of population should receive a high priority (paras 74-75).

23. The minimum needs programme should aim, among other things, at providing safe drinking water in all the needy villages of the country by 1985. Special attention will also be given to elementary education, health care, housing and the needs of scheduled castes, scheduled tribes, socially and economically backward classes and women (paras 76-77).

24. Special programmes will be developed to deal with the problems faced by the hill areas and desert areas (para 80).

25. The main objective of education development will be to ensure essential minimum education to all children upto the age of 14 years in the next 0 years; other objectives of education development will be as listed in para 82 (paras 82-83).

26. Science and Technology should be promoted and made more relevant to local needs by the organisation of State level science and technology councils and by involving scientific academies and professional societies in preparing reports on themes of local and national relevance. Associations of young scientists should be organised for involving youth more actively in promoting the culture of science (paras 88-96).

27. The key to success in achieving the socio-economic goals of the Sixth Plan will be the generation of the necessary degree of coordination in the formulation and implementation of plan schemes. Personnel policies of Government Departments will need to be reviewed and the constraints imposed by needless inelastic procedures removed. Non-formal staffing patterns involving the mobilisation of suitable members of the local village community should be introduced wherever possible (paras 98-100).

Annexure I

Estimate of Gross Domestic Saving Investment and Aggregate Resources—1980—85

(Rs. crores at 1979-80 prices)

Sl. No.	Item	Amount
1	Public Saving	30259
	(i) Budgetary Resources	11252
	(ii) Public Enterprises	19007
2	Saving of Private Non-Financial Corporate Sector including Cooperatives	9495
3	Saving of Financial Institutions	3618
	(i) Public Sector	2525
	(ii) Private Sector	1093
4	Saving of Household Sector	106275
	(i) Financial Assets	44085
	(ii) Physical Assets	62190
5	Aggregate Gross Domestic Saving	149647
6	Net Inflow from Abroad	6698
7	Total Saving available for Gross Investment	156345
8	Provision for Current Development Outlay in the Public Sector	13500
9	Aggregate Resources	169845

Annexure II

Estimate of Financial Resources for the Sixth Plan—1980—85 : Public Sector

(Rs. crores at 1979-80 prices)

Sl. No.	Item	Amount
1	Balance from Current Revenues at 1979-80 rates of taxes	13602
2	Contribution of Public Enterprises	11007
3	Market Borrowings	18500
4	Small Savings	6337
5	Provident Funds	3564
6	Term Loans from Financial Institutions (Net)	3003
7	Miscellaneous Capital Receipts	3072
8	External Assistance and borrowings from other sources (Net)	7765
9	Additional resource mobilisation	19150
10	Uncovered gap/deficit financing	4000
11	Aggregate resources	90000

NIEPA - DC



15582