

**REPORT**  
**OF THE**  
**WORKING GROUP**  
**ON**  
**DEVELOPMENT OF**  
**NORTH EASTERN REGION**  
**DURING**  
**THE SEVENTH FIVE YEAR PLAN**

*Macek*  
January, 1985



NORTH EASTERN COUNCIL  
SHILLONG

D.O. NO. NECP/XT/ 2/83

19th March, 1985.

SECRETARY

*Manoj Kumar Das*

It gives me great pleasure to submit the report of the Working Group on Development of the North Eastern Region during the Seventh Five Year Plan.

2. The report covers considerable ground and deals with various important issues of development and makes both general and specific recommendations regarding policies, programmes and schemes. The Report also identifies areas in which further work for studies, investigations and development of skilled and trained manpower is found to be essential.

3. For various reasons arising from its history and geographical situation, the North Eastern Region has continued to demand special emphasis on its development. The partition of the country has made it necessary to develop a new structure of communication linkages and market linkages. We are still in the process of establishing them. In the mean time, considerable extent of migration of populations, both intra and inter regional, takes place bringing about new problems of adjustment and having important effects on the processes of development of the region.

4. The North-east presents a vast reservoir of flora and fauna and a diversity of biological resources, a large part of which has not ever been fully investigated and documented. Its human resources are also very diverse and have skills in handlooms, handicrafts, manipulative and mechanical capability, which have served local people well over centuries in utilising their forest and environmental resources. Considering the large number and diversity of tribes in the North-eastern Region, it may also be rightly claimed to be a rare reservoir of ethnic cultures. Care has to be taken to see that both flora and fauna, the biological resources and the diversity of ethnic cultures, are fully investigated and documented.

5. The approach of the Working Group is that special Central assistance for the development of the North-East ought to be specifically related to those programmes which bring the region at par with the rest of the country, on the basis of a comparison of the backlog to be covered in terms of specific indices of development. Such a backlog should be covered within a specific timeframe. One set of recommendations of the Working Group concerns identification of priority areas like environment, ecology and development of forest, agriculture infrastructure, water and power resources. The thrust of the recommendations of the Working Group is to earmark and pre-empt resources for programmes in such priority sectors so that they do not suffer for want of resources. These programmes are basically an investment for the future which otherwise may be unduly or heavily discounted.

6. It is hoped that the recommendations of the Working Group will provide the basis for evolving a perspective plan and will generate a broad consensus among all concerned with problems of development in the North-East in order to provide a framework for continuing support for policies and programmes over the next decade or so. You will appreciate that without such a broad consensus to support such a perspective plan, durable changes in the desired direction may not be thought about.

7. I thank the Planning Commission for giving me an opportunity to associate myself with the Working Group in the deliberations of which I had the benefit of having advice, guidance and fruitful interaction with a number of experts and administrators in various fields.

*with kind regards,*

Yours sincerely,

*Pravara*  
(P.H. Privedi)

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## INTRODUCTION

The Planning Commission constituted a Working Group on the Development of the North Eastern Region during the Seventh Five Year Plan, 1985-90, with Shri P.H.Trivedi, Secretary, NEC as Chairman and Shri L.P.Gupta and after him Shri R.Vasudevan, Joint Secretary, Ministry of Home Affairs as member Secretary of it. The term of reference of the Group are as follows :-

- i) To review the on-going programme of the Central Plan, NEC Plan and State/UT Plans and pin-point the shortcomings, lacunae, etc. in these programmes.
- ii) To work out a strategy for the accelerated development of the region during the Seventh Five Year Plan period consistent with ecological socio-cultural and other special conditions of the region.
- iii) To suggest definite programmes in the identified sectors of development;
- iv) To suggest coordinated and effective implementation of plans and programmes.

Further, it was enjoined upon the Group to take into consideration the recommendations of some other Working Groups which had also been set up by the Planning Commission on specific subjects, namely, (1) Working Group on Personnel Policy, (2) Working Group on Legal System, (3) Working Group on Community Participation, (4) Working Group on supplies, services and works. A copy of the Planning Commission's Notification constituting the Working Group and laying down its terms of reference (No.PC(P)1/7/1/NEC/83-MLP dated 11th October, 1983) is at Annexure I.

2. The Working Group held its first meeting at New Delhi on 19th November '83. It set up a Nodal Group and Four Sub-Groups for specific subjects. The Nodal Sub-Group had to study various reports and various materials relating to the North East and give

general guidance, approach, strategy, priorities and objectives of development. It also envisaged that Chief Secretaries of some of the State/Union Territories of the North-East should chair the Sub-Groups so that the experience of the State Governments/UT Administrations can be drawn upon. Subsequently, some experts and Heads of Departments, dealing with subject concerned were also coopted as Members of the Sub-Groups.

3. Notifications relating to the setting up of the Sub-Groups are given in Annexure II.

4. The terms of references of the Sub-Groups are as follows:

Sub-Group on "Land utilisation and Allied Activities"

- (i) To study the existing land utilisation pattern with special reference to community ownership of land, shifting cultivation and other aspects relevant to the development of agriculture and allied activities and ecology and environment keeping in view the socio economic and cultural characteristic of the population, and
- (ii) To suggest suitable strategies/action plans for development of agriculture, horticultural and economic plantations, forestry, social forestry, pasture land, animal husbandry, bee keeping and other programmes for promoting human welfare and ecological restoration on and integrated watershed management basis in the North East.

Sub-Group on "Industry, Handloom and Sericulture in the North East."

- (i) To study the present status of the Industry handloom, handicraft and sericulture and identify the various constraints, and

- (ii) To suggest new strategy and programmes for development of these sectors in the region.

Sub-Group on "Infrastructure in the North-East."

- (i) To study the existing bottlenecks in the development of infrastructural facilities such as power, transport, communication, storage etc., and
- (ii) To suggest strategy/action plans for infrastructure development for accelerating the pace of development in the North Eastern Region.

Sub-Group on "Social Services in the North East."

- (i) To study the present status of social services viz., education, health, drinking water supply, maternity and child health care, family planning and other social infrastructure like manpower development etc., and
- (ii) To suggest strategies/programmes suiting the local conditions for development of minimum level of social services in the North-East.

5. In the first meeting of the Working Group, it was decided that experts from the Planning Commission and representative of the Ministries and its technical agencies may prepare a subject paper and Chief Secretaries of the North Eastern States and Union Territories may prepare an area paper concerning their respective subject or State/UT. Besides, the NEC had several papers prepared dealing with various subjects within the scope of the study of the Working Group. Some experts like Vice-Chancellor, Assam Agricultural University also prepared paper at the request of the Chairman. A list of such papers with names of the authors is given in Annexure III.

6. The Working Group held three meetings, the Nodal Group held five meetings and the Sub-Groups held two meetings (excepting sub-groups on Industries

which had only one meeting). It was found that the four Working Groups the reports of which had to be taken into consideration, had not, in some cases, finalised their reports. However, Chairman or Members of these Working Groups were available and the main recommendations of the four Working Groups or their thinking on the subjects were taken into account. Based on background papers, deliberation in the meetings of Nodal Group and Sub-Groups and other material, a 'Compendium' on the Work done in connection with Working Group was prepared and discussed in the Second Meeting of the Working Group. Taking into accounts discussions and comments received, a Draft Report was prepared and discussed in the third meeting. This Report is the revised version of Draft Report which takes into accounts comments/observations made by different members in third meeting of the Working Group.

7. The Working Group has been much assisted by various officers of the North Eastern Council, Planning Commission, Ministries of Government of India and other institutions and individual experts. Advisers of the North Eastern Council had prepared working papers for facilitating discussions. Secretariat assistance has been provided by Shri Pratap Narain and Shri T.P.Khound. Shri N.L.Meena, Deputy Adviser of the Planning Commission has made arrangement for holding meetings at Delhi from time to time. The staff of the North Eastern Council Secretariat has provided assistance for typing, cyclostyling and editing the Working Group Report. The help, cooperation and assistance given by all of them is gratefully acknowledged.



## CHAPTER - I

### NORTH EASTERN REGION IN FIVE YEAR PLANS

"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 masses leading to the eradication of poverty and unemployment and provide the material base for self-reliant socialist economy" as stated in the Sixth Five Year Plan, 1980-85, Govt. of India, Planning Commission (p.17). Under such a national perspective, the North Eastern Region drew special attention of the planners. The share of the total national plan outlay for the region steadily rose from 2.39 percent in the First Five Year Plan to 5.43 percent in the Sixth Five Year Plan (Statement 1). A view on per capita outlay for the region compared to national average also shows that although the per capita outlay for the region was less than the national average in the First Five Year Plan, it went on increasing over subsequent plans and it was 44 percent higher than the national average in the Sixth Plan.

2. The statement also reveals that the area was under special focus from the Fifth Five Year Plan. Due to special geographical and topological considerations, the need for integrated development of the North East Region was felt for fostering of an awareness for common linkages and fostering of modalities for coordinated development for the benefit of all areas of the North East as well as for all sections of the people.

3. It will be appropriate to discuss the Fifth Five Year Plan in general and Sixth Five Year Plan in particular for this region to understand the present stage of development.

4. An analysis of the sectoral priorities derived from the allocations in the Plans shows that in the Fifth Five Year Plan of Rs. 1020 crores the highest priority was given to irrigation, flood control, and power followed by agriculture and allied activities, this in turn followed by social and community services, transport and communications and industries.

and minerals. When analysis of State/UT plans is made, three units viz , Meghalaya, Mizoram and Tripura gave highest priority to Agricultural and Allied Activities. In case of Assam and Manipur attention was centered around Irrigation, Flood control and Power. In case of Arunachal Pradesh the major share of outlay was given to transport & communications while in case of Nagaland to social and community services. However, the other two sectors namely social & community services and Agriculture and Allied Activities received nearly the same high priority in case of Arunachal Pradesh and Agriculture & Allied Activities and Transport & Communications in case of Nagaland. Distribution of funds between sectors within each constituent unit and within sector between constituent units are given in Statement 2.1 and 2.2.

5. . In the Sixth Five Year Plan it was realised that development by its very nature is a long term process of structural changes, which in turns are derived from the basic objectives a nation sets for itself. Thus in the Sixth Five Year Plan a long term perspective covering the period upto 1995-96 was drawn keeping the removal of poverty as the foremost <sup>ob</sup>jective. Along with objectives the Plan also listed major areas of efforts which will be required to fulfil these objective. In the National Plan the total plan outlay of Rs. 97,500 crores, major share (Rs.38,695 crores) has gone to irrigation, flood control and Power. Next to this comes Transport & Communications (Rs. 15,546 crores) Industries and Minerals (Rs.15,018 crores) and social & community services (Rs.14,035 crores) respectively. In comparison to this the total plan of the NE Region is Rs. 3093 crores giving similar priorities (Statement 3). However, in the region second priority was attached to social & community services (Rs.692 crores). This also follows from the fact that five units of region, Manipur, Meghalaya, Mizoram, Nagaland and Tripura have assigned the top priority to the Social & Community Services. The other two units have given priority to Transport & Communications (Arunachal Pradesh) and Irrigation, Flood control and Power (Assam). A comparison of changing pattern of plan outlay in constituent units in Fifth and Sixth Plan is given in Statement 4. The sectorwise

and State/UT wise distribution of Sixth Plan Outlay in the region are given in Statement 3.1 and 3.2 respectively.

STATEMENT 4 : PATTERN OF FIFTH AND SIXTH PLAN OUTLAYS OF N.E. REGION

Sectors	Arunachal Pradesh		Assam		Mizoram		Meghalaya		Nagaland		Tripura		Total		N.E. Region						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
	v	vi	v	vi	v	vi	v	vi	v	vi	v	vi	v	vi	v	vi	v	vi	v	vi	v
1. Agriculture & Allied activities	3	3	2	3	4	3	1	3	1	3	2	1	2	2	3	3	4	2	4		
2. Co-operation	6	6	6	6	7	8	7	6	7	6	7	6	6	6	6	-	-	6	6		
3. Irrigation Flood control & Power	4	4	1	1	1	2	3	4	4	5	4	3	3	1	1	1	2	1	1		
4. Industry & Minerals	5	5	5	5	5	5	6	5	5	6	4	5	5	5	5	5	5	5	5		
5. Transport & Communication	1	1	1	4	2	4	2	2	2	3	3	4	4	4	4	4	2	1	4	3	
6. Social & Community services	2	2	3	2	3	1	4	1	3	1	1	2	1	3	2	4	3	3	3	2	
7. Economic Services	7	8	8	8	8	7	5	8	7	8	7	7	8	7	8	7	8	7	8	7	
8. General Services	-	7	7	7	6	6	8	6	-	5	-	6	8	7	8	7	6	6	8	7	

NOTE : 1. v and vi indicates the Fifth and Sixth Five Year Plans.  
 2. Numbers in the body of the statement indicates rank determined by outlays in each plan of the constituent unit for different sectors of economic activities.

6. Although the nature of the schemes taken-up in various sectors in the constituent units have been discussed in the report of the four Sub-Groups, it is necessary at this stage to look into the distribution of Funds sub-heads wise along with physical developments. Statement 5 gives the percentage distribution of approved outlay during the Sixth Five Year Plan

of the constituent units and the Statement 6 indicates the physical development in States/UTs. In case of Arunachal Pradesh length of pucca roads per thousand sq.km. is very low, but length of pucca roads per lakhs of population is more than Assam and Mizoram for the period ending 1979-80. Keeping in view the low density of population in the Union Territory and problems of exploitation of forest resources, adequate utilisation of infrastructure already created should enjoy the same high priority as new schemes for development infrastructure in the Seventh Plan. In the Assam where per capita consumption of power is higher than in other constituent units, it is noticed that domestic consumption has a much higher share, but what is needed is the stepping up of industrial consumption. Further in case of Assam which is the biggest unit in the region and has a substantial portion of area as plain land, there are immense opportunities to develop agricultural production which can play a big role in making the region self sufficient in food. However percentage of net irrigated area to net area sown is quite low. Similar scope for increasing food production exists in Manipur and Tripura also. In view of the fact that disruption of communication due to floods presents an unsurmountable hurdle on transportation of food grains during the summer months it is all the more necessary to achieve self sufficiency for the region in food and for the same reasons a reasonable level of food production in individual States/UTs of the North East also. To that extent agriculture sector should receive higher priority. It has been noticed that in terms of allocation of fund under plan agriculture and allied sectors has been receiving third/fourth priority. Keeping in view the level of food grain production likely to be achieved by the end of 6th Plan (as projected in the State/UT Plans) the sector calls for greater attention. Manipur has also given top priority to Irrigation, Flood Control & Power in the Fifth Plan and second priority in the Sixth Plan. Funds have been provided for Medium Irrigation Projects and Power development. However, keeping in view development of infrastructure and industries in the state, the priority in the

sector could be at slightly lowered. Development of command Area for Loktak amy, of course, require special attention in the State.

7. The social and community development sector has been receiving higher priority in the successive Five Year Plans in the region. There are a number of factors necessitating such attention. In the all-India perspective, the percentage of urban population to the total population is low in all the units except Assam. This is also indicative of the dependence of the population on primary sectors. In the field of education the gross enrolment ratio drops down substantially from Primary classes to Middle Classes. Similarly, there are considerable variation among the States/UTs in terms of total area served by Post Offices, population per hospital bed, number of veterinary hospital per cattle population. The position, therefore, need to be further strengthened.

8. The other areas which will require relatively greater attention are animal husbandry, Forestry and fishery, the Industry and Mineral sector has got, all along, fifth priority. However, in the interest of more rapid economic development, higher provisions may be allocated to this sector. It appears that utilisation of infrastructure already created for greater productive use should enjoy a very high priority in the Seventh Plan. Already a reasonable level of roads and communications has been created. A reasonable level of institutional infrastructure through opening of Bank Branches, P.H.Cs, administrative centres etc. has also been created. Unless production programmes of various sectors are also planned to keep pace with this physical and institutional infrastructure,, investments made will not be put to their best use. On the other hand, the meeting of the requirements of the region's need from outside will continue to comprise a wasteful desire on the strained network. This conclusion will need modifications for some of the units like Arunachal Pradesh, Mizoram and Nagaland where the creation of infrastructure is yet only at the initial stage. But even in these areas there is scope for putting the infrastructure created to greater use.

PLAN OUTLAY - N.E. REGION Statement-I  
(Plan Outlays in RS. in Crores and Per Capita Outlays in Rupees).

State/UT	1st Plan Outlay	2nd Plan Outlay	3rd Plan Outlay	Annual Plan Outlay	4th Plan Outlay	5th Plan Outlay	6th Plan Outlay
Assam	28.00 (32)	63.15 (63)	132.24 (120)	87.12 (70)	198.41 (146)	473.84 (303)	1115.00 (609)
Manipur	1.08 (18)	6.22 (94)	12.82 (152)	7.20 (80)	31.15 (315)	92.86 (825)	240.00 (1909)
Meghalaya	@	@	@	@	36.24 (368)	89.53 (845)	235.00 (1985)
Nagaland	@	@	10.79 (287)	15.96 (360)	38.52 (793)	83.63 (1569)	210.00 (3621)
Tripura	1.62 (25)	9.41 (114)	15.51 (134)	11.44 (84)	34.66 (237)	69.68 (427)	245.00 (1345)
Arunachal Pradesh	2.31 (78)	3.74 (119)	7.31 (212)	7.79 (198)	21.12 (491)	63.30 (1291)	212.00 (3876)
Mizoram	@	@	@	@	9.30 (298)	46.59 (1335)	130.00 (3258)
Total for NE Region. N.E.C.	33.01 (32)	82.52 (69)	178.68 (122)	129.53 (78)	369.40 (203)	919.43 (441)	2387.00 (990)
	-	-	-	-	-	90.00 (44)	340.00 (141)
Total :	33.01 (32)	82.52 (69)	178.68 (122)	129.53 (78)	369.40 (203)	1009.43 (485)	2727.00 (1131)
Percentage to All India.	(2.29)	(3.86)	(4.09)	(4.02)	(4.64)	(5.35)	(5.58)
All India	1442.18 (40)	2138.02 (55)	4365.59 (99)	3225.33 (66)	7952.70 (154)	18918.28 (329)	50250.00 (783)

@ Was not State/UT during these period.

- N.B. 1. Outlay denote actual expenditure upto 4th Plan.  
2. Per capita outlay calculated with the reference to the mid-year population of the plan i.e. 1965 mid-year population used for 1966-69, 1973 mid-year population used for 1974-78 etc. is given in the bracket.

FIFTH FIVE YEAR PLAN (1974-79) OUTLAYS

Statement-2

Sectors	(Rs. in Crores)									
	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	Total State/JT	NEC	Total Region
-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-
Agriculture & Allied Services.	15.85	88.59	15.09	19.79	15.13	22.26	20.35	197.04	18.56	215.60
Co-Operation.	1.10	11.23	1.26	2.18	1.34	1.32	1.39	19.73	-	19.73
Irrigation Flood Control & Power.	4.35	132.32	23.71	16.42	4.49	4.51	16.33	202.13	40.81	242.94
Industry & Minerals.	1.30	27.96	6.91	5.46	1.83	6.96	4.74	55.16	3.51	58.67
Transport & Communications.	20.90	33.94	18.76	18.84	12.81	22.03	9.65	136.93	31.26	168.19
Social & Community Services.	19.52	83.79	16.95	15.29	10.48	25.96	17.03	189.04	5.32	194.36
Economic Services.	0.28	1.13	0.63	5.70	0.51	0.44	0.15	8.84	-	8.84
General Services.	-	1.44	3.39	2.18	-	-	0.13	7.14	0.95	8.06
Unallocated.	-	93.46	6.16	3.67	-	0.13	-	103.42	0.55	103.97
<b>Total:</b>	<b>63.30</b>	<b>473.84</b>	<b>92.86</b>	<b>89.53</b>	<b>46.59</b>	<b>81.63</b>	<b>69.68</b>	<b>919.43</b>	<b>100.96</b>	<b>1020.39</b>
Per Capita Outlay	1291	303	825	845	1335	1569	427	441		

N.B. : Mid-year population projected for 1973 used in calculating per capita outlay.





FIFTH FIVE YEAR PLAN(1974-79) OUTLAYS  
Percentage Distribution by Sectors

Statement:2.2

Sectors	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	Total State/UT	NEC	Total Region
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
Agriculture and Allied Services.	7.4	41.1	7.0	9.2	7.0	10.3	9.4	91.4	8.6	100.00
Co-Operation.	5.6	56.9	6.4	11.0	6.8	6.7	6.6	100.0	-	100.00
Irrigation, Flood Control & Power.	1.8	54.5	9.8	6.8	1.8	1.9	6.7	83.2	16.8	100.00
Industry & Minerals.	2.2	47.7	11.8	9.3	3.1	11.9	8.1	94.0	6.0	100.00
Transport & Communications.	12.4	20.2	11.1	11.2	7.6	13.1	5.7	81.4	18.6	100.00
Social & Community Services.	10.0	43.1	8.7	7.9	5.4	13.4	8.6	97.3	2.7	100.00
Economic Services.	3.2	12.8	7.1	64.5	5.8	5.0	1.7	100.0	-	100.00
General Services.	-	17.8	41.9	26.9	-	-	1.6	88.3	11.7	100.00
Unallocated.	-	84.9	5.9	3.5	-	0.1	-	99.5	0.5	100.00
<b>Total :</b>	<b>6.2</b>	<b>46.4</b>	<b>9.1</b>	<b>8.8</b>	<b>4.6</b>	<b>8.2</b>	<b>6.8</b>	<b>90.1</b>	<b>9.9</b>	<b>100.00</b>

SIXTH PLAN APPROVED OUTLAY : SECTORS X STATES/UTS

Statement-3

(Rs. in lakhs)

Sectors	Arunachal Pradesh	Assam(1)	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	Total	N.E.C.	Total for NE Region.
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
I. Agriculture & Allied Services.	4,125	20,925	3,717	5,038	2,966	5,131	6,071	49,998	2,429	52,427
II. Cooperation.	393	2,582	158	489	190	136	570	4,519	-	4,519
III. Irrigation Flood Control & Power.	4,017	55,948	6,604	4,516	2,565	2,565	6,446	92,663	14,429	1,07,092
IV. Industry & Mineral.	477	5,916	1,387	1,172	414	1,437	1,155	11,960	1,523	13,483
V. Transport & Communications.	7,116	10,574	3,600	5,151	3,826	5,009	3,591	38,868	18,398	57,266
VI. Social & Community Services.	6,202	25,197	7,571	7,081	4,194	6,275	9,368	65,890	2,423 <sup>(2)</sup> 871	69,184
VII. Economic Services.	68	215	211	77	133	93	47	845	---	845
VIII. General Services.	99	546	564	777	638	1,139	279	4,033	413	4,446
IX. Total.	22,504	131,906	23,812	24,302	14,950	21,775	29,529	2,68,780	40,486	3,09,266

- Notes :
1. For 1984-85 we have taken figure recommended by W.G. for Cat.A
  2. Manpower Development.
  3. Totals may not tally due to rounding.

STATEMENT : SIXTH FIVE YEAR PLAN OUTLAY, 1980-85 - NE REGION

Statement:3.1

Sectors	(Percent)										Total State/UT	NEC
	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	1	2	3		
I.	2.	3.	4.	5.	6.	7.	8.	9.	10.			
I. Agriculture & Allied Services.	7.9	39.9	7.1	9.6	5.7	9.8	15.4	95.4	4.6			
II. Cooperation	8.7	57.1	3.5	10.8	4.2	3.0	12.6	100.0	-			
III. Irrigation, Flood Control & Power.	3.8	61.6	6.2	4.2	2.4	2.4	6.0	86.5	13.5			
IV. Industry & Minerals	3.5	43.9	10.3	8.7	3.1	10.7	8.6	88.7	11.3			
V. Transport & Communications.	12.4	18.5	6.3	9.0	6.7	8.7	6.3	67.9	32.1			
VI. Health and Community Services.	9.0	36.4	10.9	10.2	6.1	9.1	13.5	95.2	3.5			
VII. Economic Services	8.0	25.4	25.0	9.1	15.7	11.0	5.6	100.0	-			
VIII. General Services.	2.2	12.2	12.7	17.5	14.3	25.4	6.3	90.7	9.3			
IX. Total:	7.3	42.7	7.7	7.9	4.8	7.0	9.5	86.9	13.1			

## SIXTH PLAN APPROVED OUTLAY: SECTORS &amp; STATES/UTS

(Percent)

Sectors	(Arunachal Pradesh)	(Assam (1))	(Manipur)	(Meghalaya)	(Mizoram)	(Nagaland)	(Tripura)	Total	N.E.C.	Total for N.E. Region
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
I. Agriculture & Allied Services.	18.3	15.9	15.6	20.7	20.0	23.6	27.3	18.6	6.0	16.9
II. Co-operation	1.7	2.0	0.7	2.0	1.3	0.6	1.9	1.7	-	1.5
III. Irrigation, Flood Control & Power.	17.9	50.0	27.7	18.6	17.2	11.8	21.8	34.5	35.6	34.6
IV. Industry & Minerals.	2.1	4.5	5.8	4.8	2.8	6.6	3.9	4.5	3.8	4.4
V. Transport & Communication.	31.6	8.0	15.1	21.2	25.6	23.0	12.2	14.5	45.4	18.5
VI. Social & Community Services.	27.6	19.1	31.8	29.1	28.0	28.8	31.7	24.5	16.0 <sup>(2)</sup>	22.4
VII. Economic Services	0.3	0.2	0.9	0.3	0.9	0.4	0.2	0.3	-	0.3
VIII. General Services.	0.4	0.4	2.4	3.2	4.3	5.2	0.9	1.5	1.0	1.4
IX. Total.	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Notes : 1. For 1984-85 we have taken figure recommended by W.G. for Cat. A.

2. Manpower Development.

3. Totals may not tally due to rounding.

Distribution of Sixth Plan Approved Plan Outlay by Head/Sub-Head of Development.

Statement-5

(Percent)

Head/Sub-Head of Development	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura
1.	2.	3.	4.	5.	6.	7.	8.
Research & Education		0.81	0.50	0.54	0.07	-	0.17
Crop Husbandry	3.92	4.44	3.75	3.42	7.38	4.05	4.43
Soil & Water Conservation.	4.01	0.67	2.29	2.98	5.29	2.86	2.84
Animal Husbandry	1.63	1.48	1.10	2.21	3.69	2.50	2.98
Dairy Development.	0.20	0.36	0.15	0.30	0.15	-	0.58
Fisheries.	0.37	0.54	1.14	0.38	0.45	0.33	1.36
Forests.	4.49	2.26	1.98	2.13	4.23	3.24	5.06
Investment in Agricultural Financial Institutions.	-	0.11	0.08	0.02	-	-	0.06
Marketing.	0.17	0.22	0.02	0.17	0.19	-	0.82
Storage & Warehousing.	-	0.09	0.17	0.09	-	-	0.24
Special Programme for Rural Development	-	3.79	-	-	-	-	-
IFDP	-	2.00	2.92	1.28	-	1.90	1.29
NREP	-	1.79	-	-	-	1.19	1.39
Other Programmes (Assistance to SF/MF).	-	-	-	-	-	-	-
Community Development & Panchayats.	1.32	0.89	0.83	1.02	1.62	3.33	1.83
Land Reforms.	0.07	0.76	0.17	0.64	0.23	0.48	1.16
Areas Development of Backward Areas.	-	-	-	4.25	-	2.38	-
Civil Supplies	-	-	-	2.21	-	-	0.51

Pondhi

1.	2.	3.	4.	5.	6.	7.	8.
I. <u>Agriculture &amp; Allied Services.</u>	<u>16.20</u>	<u>16.42</u>	<u>15.00</u>	<u>19.00</u>	<u>23.26</u>	<u>22.26</u>	<u>24.70</u>
II. <u>Cooperation.</u>	<u>1.89</u>	<u>2.30</u>	<u>0.75</u>	<u>1.39</u>	<u>1.54</u>	<u>0.71</u>	<u>2.04</u>
Medium Irrigation Projects.	0.94	5.71	16.17	0.42	-	-	7.75
Minor Irrigation.	6.13	6.64	3.75	2.55	2.31	4.76	5.35
Command Area Development.	-	0.14	-	-	-	-	-
Flood Control.	0.47	2.06	2.29	0.42	-	-	2.04
Power.	11.41	33.24	7.77	19.15	13.85	7.26	9.02
III. <u>Irrigation.</u>	<u>18.95</u>	<u>29.86</u>	<u>30.48</u>	<u>22.55</u>	<u>16.15</u>	<u>12.02</u>	<u>24.17</u>
<u>Flood Control and Power.</u>							
Village & Small Industries.	1.30	2.94	5.21	1.70	3.08	2.38	3.47
Medium & Large Industries.	3.54	1.97	2.92	1.91	0.35	2.10	2.19
Mining.	-	0.25	0.21	0.42	0.09	1.24	0.04
IV. <u>Industry &amp; Minerals.</u>	<u>4.84</u>	<u>5.16</u>	<u>8.33</u>	<u>4.04</u>	<u>3.52</u>	<u>5.71</u>	<u>5.70</u>
Civil Aviation.	1.32	-	-	-	-	-	-
Roads & Bridges.	23.58	7.23	13.33	17.02	22.23	23.81	11.43
Road Transport.	1.42	1.14	1.25	3.40	2.31	2.62	1.51
Inland Water Transport.	-	0.49	-	-	0.23	-	-
Tourism	0.14	0.19	0.21	0.85	0.23	0.26	0.24
V. <u>Transport &amp; Communications.</u>	<u>26.46</u>	<u>0.06</u>	<u>14.79</u>	<u>21.28</u>	<u>25.00</u>	<u>26.69</u>	<u>13.18</u>
<u>Education</u>							
General Education.	16.57	6.83	6.75	4.24	5.85	5.00	5.88
Art & Culture.	0.24	0.29	0.33	0.19	0.31	0.38	0.20
Technical Education.	0.16	0.71	0.42	0.25	0.69	0.17	0.24
<u>Scientific Services &amp; Research.</u>							
Health.	3.80	2.78	4.04	3.02	5.38	3.81	3.49

-Contd-

1.	2.	3.	4.	5.	6.	7.	8.
Sewerage and Water Supply	6.02	4.08	11.40	18.89	8.46	7.96	7.05
Housing.	X 3.42 X	1.79	X 1.75	0.46	3.00	4.25	X 3.45
Police Housing.	X	X -	X	0.42	1.54	1.19	X
Urban Development.	-	0.21	0.67	0.68	0.96	1.98	1.61
State Capital Projects.	-	-	-	-	-	-	-
Information & Publicity.	0.19	0.07	0.21	0.06	0.27	0.24	0.37
Labour & Labour Welfare.	0.05	0.29	0.17	0.21	0.10	0.29	0.14
Welfare of Sc/St & OBC.	-	0.98	1.04	-	-	-	3.43
Social Welfare	0.26	0.18	0.56	0.28	1.00	0.48	0.65
Nutrition.	0.24	0.24	0.46	0.53	0.38	0.62	2.37
Other Social & Community Services.	-	-	-	0.38	-	-	-
<u>VI. Social &amp; Community Services.</u>	<u>30.90</u>	<u>18.47</u>	<u>27.79</u>	<u>29.65</u>	<u>27.95</u>	<u>26.41</u>	<u>28.91</u>
Secretariat Economic Services.	0.07	0.08	0.06	0.08	0.07	0.09	0.04
Economic Advice & Statistics.	0.21	0.07	0.17	0.12	0.07	0.24	0.09
Weights & Measures.	X 0.07 X	0.05	0.04	0.04	0.07	0.14	0.04
Other General Economic Survey.	X	X ---	0.42	-	0.77	-	
<u>VII. Economic Services.</u>	<u>0.35</u>	<u>0.21</u>	<u>0.69</u>	<u>0.24</u>	<u>1.00</u>	<u>0.48</u>	<u>0.17</u>
Stationery & Printing.	0.12	0.13	0.08	0.12	0.31	0.29	0.10
Public Works.	-	0.43	2.08	1.06	1.11	4.99	1.02
Others-Grants-in-aid.	0.24	-	-	1.06	0.15	0.29	-
<u>VIII. General Services.</u>	<u>0.35</u>	<u>0.57</u>	<u>2.17</u>	<u>2.24</u>	<u>1.58</u>	<u>5.71</u>	<u>1.12</u>
<u>Grand Total:</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>

I. SOCIO-ECONOMIC INDICATIONS

Statement-6

State/UTs	Percentage of Urban Population to the total population (Percent)		Density of Population (Person/Sq.Km).		Literacy Rate		Net Area Sown (1000 ha)		Workers as percentage of total population.	
	1971	1981	1971	1981	1971	1981	1972-73	1977-78	1971	1981
	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Arunachal Pradesh.	3.70	6.32	6	7	11.3	20.09	115	115	57.65	52.59
2. Assam.	8.82		186	253	28.1		2335	2679	27.95	
3. Manipur.	13.19	26.44	48	63	32.9	41.52	140	140	34.57	46.02
4. Meghalaya.	14.55	18.03	45	59	29.5	33.35	164	178	44.17	45.70
5. Mizoram.	11.36	25.17	16	23	53.8	59.50	65	77	45.61	44.66
6. Nagaland.	9.95	15.54	31	47	27.4	41.99	104	182	50.75	54.14
7. Tripura.	10.43	10.98	149	195	31.0	41.78	236	246	27.79	32.24



INDICATORS SHOWING LEVEL OF ECONOMIC DEVELOPMENT

State/UTs	Percentage of workers in						Per Capital Food grain production (Kgs/Year)	Per capita con- sumption of El- ectricity(unit)	Consumption of NPK Per Hectare			
	Primary Sector	Secondary Sector	Tertiary sector						1973-74	1979-80		
	1971	1981	1971	1981	1971	1981	1973-74	1979-80	1973-74	1979-80		
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. Arunachal Pradesh.	80.44	74.85	0.45	0.30	19.11	24.85	110	175	Negligeble	9	0.35	0.70
2. Assam.	77.04		4.20		18.76		133	102	26	36	2.47	2.06
3. Manipur.	71.30	67.19	12.24	10.93	16.46	21.88	224	171	11	12	8.86	14.60
4. Meghalaya	81.84	73.48	3.30	1.15	14.86	25.37	114	110	16	35	1.23	8.30
5. Mizoram.	84.17	74.77	1.76	1.37	14.07	23.86	212		2	5	0.31	0.70
6. Nagaland.	79.46	72.32	2.38	1.43	18.16	26.25	95	126	10	31	0.97	0.50
7. Tripura.	76.58	67.42	4.25	1.67	19.17	30.91	214	144	9	11	3.67	5.50

III INDICATORS SHOWING LEVEL OF INFRASTRUCTURAL DEVELOPMENT

States/JTs	Percentage of net irrigated area to net area sown.		Percentage of villages electrified		Length of Pucca Roads per thousand sq.km of area (in kms)		Length of Pucca Roads per lakh of population (in km)		Number of veterinary Hospital per lakhs of cattle population.	
	1972-73	1977-78	1973-74	30-9-80	1979-80	1984-85	1979-80	1984-85	1973-74	1977-78
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Arunachal Pradesh.	20.00	20.00	2.7	9.9	2.14	3.81	30.00	45.71	32	40
2. Assam.	24.50	21.40	7.5	20.4	45.33	85.56	18.84	30.58	4	5
3. Manipur.	46.42	46.42	11.1	16.5	64.09	105.77	102.36	147.81	25	27
4. Meghalaya.	29.27	26.40	5.6	13.5	72.92	102.49	110.23	164.64	7	9
5. Mizoram.	6.15	10.40	1.3	11.8	2.14	25.27	11.25	133.25		31
6. Nagaland.	30.77	29.70	18.5	36.0	77.19	90.80	182.28	187.63	22	47
7. Tripura.	12.29	11.90	3.6	17.0	118.70	251.05	62.20	114.39	6	6

IV. INDICATORS SHOWING LEVELS OF SOCIAL SERVICES

State/UTs	Gross Enrolment Ratios				Population per hos-		Area served by a		Population covered by	
	Primary Class		Middle Class		pital bed(Persons)		Post Office		Fair Price/Ration shop	
	(1976-71)	(1978-79)	(1970-71)	(1978-79)	(1973-74)	(1979-80)	(sq.km)	(1980-81)	(1984-85)	(1974)
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Arunachal Pradesh.	33.1	71.8	11.5	19.9	NA	805	447	355	1.5	1.5
2. Assam.	66.6	72.2	34.8	37.4	2592	2204	26	23	150.3	212.8
3. Manipur.	132.5	115.7	45.5	55.3	1290	1221	47	42	9.4	13.5
4. Meghalaya.	97.5	118.0	24.3	41.0	1471	1005	56	52	11.7	15.9
5. Mizoram.					1051	743	90	77	3.3	4.2
6. Nagaland.	139.5	124.8	52.6	54.5	530	734	80	68	2.7	1.1
7. Tripura.	75.2	78.7	34.6	34.8	1320	1890	18	17	15.9	18.0

CHAPTER - II

REVIEW OF THE ON-GOING SCHEMES

To facilitate review of the on-going programmes of the Central Plan, NEC Plan and State Plans and to pin-point the short-comings, lacunae etc. in these programmes the Working Group in its first meeting held on 1<sup>st</sup> November, 1983 in Yojana Bhawan, New Delhi, proposed that Chief Secretaries of the constituent units of the region may prepare an area paper for their respective State/UT. The papers, apart from giving the current status of development in their State/UT was also expected to carry on assessment of progress made in the execution of the plans/programmes under the Central/NEC/State/UT Plans in the constituent units. Further, the Working Group also suggested that experts in each Ministry/Department of Govt. of India/Planning Commission might prepare a paper covering the subject matters dealt with by the Departments/Ministries giving present status of implementation of the schemes and policy framework in which the programmes were formulated, the problems which have been encountered and incorporating suggestions for necessary alterations and modifications of the policy or programmes. Three area papers from Assam, Arunachal Pradesh and Manipur have only been received - there has been no response from the other constituent units. However, it is necessary that the Area papers contain a general review of the on-going schemes indicating, among other things, the deficiencies and difficulties so as to enable the Working Group to come to some conclusions in this behalf. The Working Group also noted that Programme Evaluation Organisation of the Planning Commission has not evaluated any of the Central Programme in the region in recent time. Therefore, the Working Group is handicapped to come to conclusions in this regard. However, on the basis of the limited information available in North Eastern Council Secretariat some of the short-comings in the execution of plan-programmes are indicated below :

(i) Development of Infrastructure:

2. The region has difficult topography and rugged terrain. Many of the areas are remote and inaccessible. Topography poses a problem in the selection of site for projects. The executing agencies tend to give much greater consideration to easier access and availability of facilities to staff than to the benefit to the target population. The norms of cost on various heads also set a limit to the scope of consideration because locations in remote and inaccessible areas mean much higher costs of the schemes which would not be sanctioned easily.

3. No guidelines for selection of locations of schemes are evolved. In their absence location of schemes becomes a matter of adhoc decisions taken often for quite extraneous considerations, which do not fully take into account the requirements of the schemes. These defects are later on discovered and in devising measures to overcome these, like providing access roads, putting up buildings, providing water supply and electricity etc. cost and time overrun has been experienced.

(ii) Manpower shortage :

4. Although the overall literacy rate in the region is high, skilled manpower required for taking up projects in different sectors is not available. Even the few people who are trained, are not suitably employed on projects for which they have been trained. There being relatively high demand for trained manpower, trained personnel find alternatives jobs on high salaries. Even for projects involving substantial investment a precise manpower requirement analysis is not done with the result that no programmes for advance requirement and training are undertaken and for long periods commissioning of projects is deferred or due to frequent transfers, efficiency of projects is affected.

(iii) Project formulation :

5. In many cases projects are formulated without keeping in view the totality of the situation and as a result the total cost of the project and the benefits which are likely to flow are not adequately assessed. This is primarily due to lack of proper technical appreciation of schemes at the formulation stage. Formulation of such project reports, which are not complete in many respects need to be revised very often and result in time over-run/cost over-run.

6. In some cases proper selection of site in advance is not made and detail project reports not prepared. Therefore, necessary cost-benefit analysis can not be undertaken. Seldom a cost benefit study is undertaken. Even in irrigation projects the methodology for cost benefit study is highly selective and compartmentalised so that the full spectrum of benefits and costs is not fully appreciated resulting in highly optimistic assessment.

7. One of the general lacunae noticed in regard to schemes, particularly schemes in the State Plans and those suggested for NEC Plan, is that targets, both physical and financial, are suggested rather casually. These are not determined, on the basis of availability of critical inputs, absorption capacity of the executing agency, locational advantage/disadvantage of the project, demand generation etc. consequently, the suggested time-frame of the scheme become unrealistic.

(iv) Availability of Inputs :

8. Due to transportation and communication difficulties frequent floods and because of the hilly terrain, inputs required for various development projects do not reach the programme site timely and adequately. Due to uncertainty in supply of inputs very often either it is not possible to draw and Programme Evaluation And Review Technique Chart or even, if it is drawn, effective coordination of various activities are not feasible.

9. The geographical situation and absence of an efficient and cheap transport system, cost of inputs and contingencies required for implementation of the programmes goes up considerably in most cases. This makes proper assessment of the cost of the projects difficult.

(v) Financial Institutions

10. In view of Land Tenure System in the region and uncertainty of supply of inputs, non availability of manpower, the financial institutions hesitates to come forward in big a way to finance various developmental activities in the region. The scope for internal resource mobilisation being limited, inadequacy of institutional finance creates bottleneck.

(vi) Planning Commission/Central Ministries Guidelines on Schemes.

11. Schemes like Integrated Rural Development, are drawn for the region, on the all-India pattern. The realities in the field are very often not taken into account. As a result, many schemes when implemented do not produce desired results. As an example take the case of Integrated Rural Development Programme. The Central guideline is to provide 10% of the total budget for development of infrastructure. In view of the utter lack of infrastructure in the rural areas of the N.E. Region, the budget for development of infrastructure is inadequate. In remote and inaccessible areas this provision need to be raised to atleast 50%. In case of North Eastern Region, it may be necessary to draw separate guidelines and frame objectives keeping in view the local conditions in specific areas. Planning Commission/Central Ministries may issue appropriate guidelines.

12. Availability of finance is rendered chancy sporadic inadequate and often delayed due to adhoc cuts in Plan or budget and outmoded procedures for sanction as well as inadequate delegation of the field agencies.

(vii) Administration of Plans and Programmes.

13. Administration is not only an important input for effective implementation of Plan Schemes, but in the context of the N.E. in which political leadership has yet to develop adequate traditions, finds itself by virtue of its security and experience in a position of such advantage as to afford a specific dimension of local leadership. Its orientation, accountability and motivation on the one hand, and its training for various jobs it is called upon to perform are important problem areas. There is a pressing need to have the existing staff to undergo refresher training, and also to expose it to modern management methods procedures and equipments relating thereof. In fact the personnel policies of the various sectors may need a thorough overhaul, and the whole area of qualifications for eligibility needs to be reviewed.

(viii) Community participation.

14. North Eastern region being tribal to an overwhelming extent in its composition had evolved important traditions of community participation. But their full involvement in developmental process has thrown up problems. As no fruitful strategy has yet been evolved this important tradition has not yet been adequately utilised. It is also likely that the approach and methods adopted for various development schemes might erode rather than strengthen the traditions of community participation.

(ix) Financing of development.

15. As regards financing of the development plans it is worth noticing that for the North-Eastern States and Union Territories, Himachal Pradesh and Jammu & Kashmir, there is a special pattern of Central assistance as envisaged under Gadgil Formula. For the remaining States of India, there is some proportion of contribution from the States on the basis of which Central assistance is determined. For the North-Eastern States and Union Territories, Himachal Pradesh and Jammu & Kashmir, Gadgil Formula envisages that the Planning Commission after determining feasible plans on the basis of the State Plan proposals will assess the contribution from individual States of these special category and provide for Central assistance which is required to meet the balance to make up the feasible plans of each State.

16. This approach has worked satisfactorily in the past but suffers from certain defects :-



- i) There are no criteria to determine the deficiencies which render it necessary for the States in the special category to remain eligible for this special treatment. No definite indices are available for ascertaining the backlog that has to be made up.
- ii) There is no definite time-frame in which the backlog has to be made up after which special category States will be treated as other States.
- iii) The contribution of resources of individual States varies greatly. There is no in-built incentive to provide or develop more resources for contribution to the plan.
- iv) There is a special pattern of Central assistance for the plans of the North Eastern States and Union Territories. There are, however, no definite criteria for determining deficiencies of the special category States/UTs, in order to fix a time frame for making up the backlog, to provide incentive to these States/UTs for developing additional resources and to create psychological confidence and sense of equality among these States. A perspective plan with the definite strategy of bringing the North East to a comparable stage of development with the rest of the country within certain time frame is necessary. It will ~~give~~ give direction and focus to the programme of economic development of the region. For this purpose, specific indices of development should be evolved. The national obligation to provide for more than proportionate resources to special category States in order to bring about their advancement rendering them comparable to other States should be accepted as a national planning objective and commitment.

(v) There are no doubt programmes for development based on the local requirements and also in the context of national targets and priorities; also from time to time in certain cases comparisons with the status of progress with all India norms or averages are made to show the backlog in particular sectors like rural electrification or poverty lines but there is no perspective plan to bring the North East to a comparable stage of development, judge on the basis of a specific set of indices of development, with the rest of the country, within one or more specific time frames for the region as a whole or separately for its constituent units. Even less has there been any attempt to earmark direct or pre-empt resources to programmes related to the achievement of such comparative development within such one or more time frames. Without such a strategy the development process, while achieving worthwhile results in other ways, remains without direction focus or impact.

17. In order to remove these deficiencies, it should be accepted policy that specific indices of development should be evolved and agreed upon with reference to which programmes are devised and resources are pre-empted in respect of plans of special category States so as to render them comparable with the conditions in other States with a specific reference date or period. It may not be possible to have the criterion of completing this process for all the special category States uniformly in a particular time frame. It is a matter of study to devise a single or more than one time frame for different special category States.

18. The national obligation to provide for more than proportionate resources to special category States in order to bring about their advancement rendering them comparable to other States should be accepted as a national planning objective and commitment.

19. Besides the historical lack of development, another compelling reason for developing a specific time frame within which communications network has to be developed for the North-East is to restore the break down of communications that the region suffered due to partition of the country which completely ravaged the linkages with the rest of India and which causes, as an urgent and compelling necessity, the task of development of new and adequate linkages. This requires a programme of railway, road and inland water transport development so that the economy of the North-East does not suffer with the special handicapped caused by the partition.

CHAPTER-III  
STRATEGY FOR SEVENTH PLAN

The Region:

Lying between 22°N-29°30'N latitude and 89°47'E-97°25'E longitude the North Eastern Region comprises the five States of Assam, Manipur, Meghalaya, Tripura and Nagaland and the two Union Territories of Arunachal Pradesh and Mizoram. The Region accounts for 7.7 percent of total land space of India and contains 6.89 percent of total population of the country. The northern side of the North Eastern Region is guarded by hill ranges forming part of the Himalayan mountains. In fact, the area is made up of mountains above snowlines to plains a little higher than sea level. Total area of the region is 2.55 lakh square km., of which 70 percent is hilly terrain. Consequently, the topography is undulated in the bulk of the region. The region has a considerably large international boundary with China in the North, Bangladesh in the South, Bhutan and Nepal in the West and Burma in the East. Partition of the country in 1947 broke the natural and age old linkage of the area with rest of the country and this land locked region is now virtually cut off from the rest of India with which it is connected only through a narrow corridor in the North Bengal having approximate width of 33 Km on the eastern side and 21 Km on the western side.

2. Physically the region consists of four distinct geographical areas:

(i) The Brahmaputra Valley:

This valley lies in Assam varying in width from 80-100Km in Upper Assam to about 55 km near the Mikir Hills. The Brahmaputra river has a number of tributaries and riverine islands.

(ii) Eastern Himalaya:

These are the eastern most parts of the Himalayas and lie within Arunachal Pradesh.

(iii) Eastern Mountain Region:

This region covers parts of Arunachal Pradesh (Tirap and Lohit districts), Assam and all of Nagaland,

Tripura, Manipur and Mizoram. Most of the inhabited areas lie either in valleys or valley slopes. The important low-lying areas are Tripura - Cachar plain and Imphal valley. Numerous rivers and tributaries inundate the area.

(iv) The Meghalaya-Mikir Table Land:

It covers the outlying Mikir Hills and Garo, Khasi and Jaintia Hills in Meghalaya. This region is, however, an extension of the Indian Peninsular shield.

Diversities of Soil and Climate:

3. The major types of the soil in the region are alluvial soil in Brahmaputra valley and Cachar-plains, laterite soil in parts of Garo and Khasi Hills and red and yellow soil in Arunachal Pradesh, Nagaland, Mikir Hills, Manipur and Mizo Hills, central strip in Meghalaya and the hilly region of Assam. The soil in Brahmaputra valley is largely alluvial and is subject to renewal due to floods. It is suitable for rice, jute, pulses, mustard, potato and vegetables. The hill soils are generally loamy. These are usually acidic and suitable for cultivation of fruits and potatoes. The laterite soils, having been highly leached, are acidic and poor in plant nutrients. In such areas, erosion is an acute problem. The temperature of the region varies between the level of below freezing point ( $-10^{\circ}\text{C}$ ) in the upper Arunachal Pradesh and  $35^{\circ}$  centigrade in the plains of Assam, Manipur and Tripura. The average rainfall of 2500 mm. per annum is considerably high as compared to the all India average (1000 mm). In Khasi and Jaintia Hills the annual intensity of rainfall reaches the maximum of above 10,000 mm around Cherrapunjee and Mawsynram (having the highest rainfall in the world). About two third of the total annual rainfall occur during the four monsoon months of June to September. The climate of the region varies from the temperate in the hilly region to tropical in the valleys and plains.

Prominent Hydrological features:

4. The region has two main river systems viz. the Brahmaputra and Barak fed by numerous tributaries and streams all of which together constituting a good network of surface water-ways. There is however, considerable variation in the ground water distribution of the hills and the plains containing a good number of aquifers.

Population:

5. According to 1981 census, the population of North Eastern Region is 26.58 million. About 90 percent of this population live in the villages. Three important characteristics of population which stand out most prominently are:

(i) Rapid growth rate. Between 1971 and 1981 : the population of this region increased at the rate of 3.73 percent per annum as compared to the all India growth rate of 2.47 percent per annum.

(ii) Very low density of population (exception Assam and Tripura) : In the North Eastern Region the density of population is 102 per square km. as against the density of 211 per square km. found at the all India level; and

(iii) Remarkable concentration of Scheduled Tribes in the region : According to 1981 census the Scheduled Tribe population form about 45 percent of the regions total population while scheduled tribes form 7.5 percent of India's total population.

6. So far as spetal distribution of population is concerned, one constituent unit i.e. Assam alone has about 75 percent of the region's total population. Mizoram with only 0.49 million people has the smallest size of population in the North Eastern Region. According to 1981 census, the male population is 13.92 million while female population is 12.66 million. The sex ratio is calculated as 909 females per thousand males.

7. The State-wise figures of density, decennial growth rate and sex-ratio are given in table-4.

Table - 3.1

Density, Decennial Growth and Sex -ratio of Population

State/UT	Population (1981 in 000)	Density (persons per Km)	Decennial Growth (1961-71 percenta- ge)	Decennial Growth (1971-81 Percenta- ge adjus- ted.	Sex-ratio (Females per 1000 males.
Arunachal Pradesh	628	7	38.91	34.63	870
Assam	19,903	253	34.95	36.09	900
Manipur	1,411	63	37.53	31.83	973
Meghalaya	1,328	59	31.50	31.56	955
Mizoram	488	23	24.92	47.14	936
Nagaland	733	47	39.88	50.15	867
Tripura	2,047	195	36.28	31.81	948
Total :	28,578	104	35.04	35.73	909
All India	6,58,141	201	24.80	24.64	936

Source : Registrar General of India.

§: Worked out from projected population. £: Estimated.  
(Source Basic Statistics of NE Region 1982).

8. From the latest available data relating to 1980 for urban areas it is found that the birth rate (per 1000 population) is 31.8 in Assam, 31.4 in Manipur, 33.5 in Meghalaya 20.9 in Nagaland 26.3 in Tripura and 25.9 in Arunachal Pradesh. The death rate is 10.7 per 1000 in Assam, 6.2 in Manipur, 12.3 in Meghalaya 7.1 in Nagaland 8.1 in Tripura and 14.8 in Arunachal Pradesh. However, the figures of birth rate/death rate for Mizoram are not available.

The Task.

9. The basic tasks before the region, in accordance with the objective set at national level are (a) attainment of self-sufficiency in food, (b) a higher level of social consumption particularly in education, health, nutrition, sanitation, water supply and housing (c) reduction in infrastructural bottlenecks (d) industrial development and

generation of productive employment and (f) ecological and environmental consideration. Simultaneously, such resources of the region which enjoy locational advantage will have to be appropriately exploited for use not only within the region but also for the country at large. However, before a strategy is set for development of the north-eastern region, it would be necessary to analyse the current status of the region in regard to above aspects.

10. According to 1981 census the population of the North-Eastern Region is 26.58 million. On the basis of available information from Planning Commission for Assam, Manipur, Meghalaya and Tripura approximately 52.63 percent of the population in rural area and 33.37 percent in urban area is living below the poverty line, as compared to national average of 50.82 and 38.19 percents for rural and urban areas. The poverty line for such an exercise has been fixed at nutritional requirement of 2400 calories per person per day for rural areas and 2100 calories per person per day for urban areas. However, for understanding the need for the region (or for any State/UT) the other consumer needs like minimum clothing requirements should also be taken into account keeping in view the local customs, culture and differences in climatic conditions. A comparison of per capita income (table 3.2) for the region and its distribution also indicates that the region is backward in many respects. Table 3.2 Comparable estimates of per capita income at current prices, 1974-80.

	Rs.					
	Assam	Manipur	Megha- laya	Naga- land	Tri- pura	All India
1. Total	1031	1163	1092	1100	1202	1316
1.1 Primary Sector	601	575	559	373	684	5111
1.2 Secondary Sector	151	159	169	232	97	321
1.3 Trade & Transport	145	156	152	74	201	264
1.4 Others	134	373	212	421	220	220

Note: Primary Sector: Agriculture, Animal Husbandry, Forestry, Fishery and Mining.

Secondary Sector: Manufacturing, Electricity and Construction.

Trade & Transport: Transport, Trade, Storage and Hotels & Restaurants.

Others: Real Estate, Banking, Public Administration & Community & Personnel Services.

Source: Monthly Abstract of Statistics Central Statistical Organisation (April '84).



Per capita income of all the States in the NE Region is lower than all India average. Moreover, a sectoral comparison indicates that the income originating from secondary sector and trade & transport sectors is far below the national average. The income originating from other services is higher in case of some states mainly because of larger contribution from public administration. A substantial share of per capita income originating from primary sectors indicates the dependence of the region on Agriculture. This calls for detailed analysis of the role of primary sector in the development of the Region and reasons for inadequate growth of other sectors.

Unlike most other parts of India the population being sparse, any economic activity in which labour input is higher is not desirable since the sparse labour has to be diverted from present occupations which have been found very taxing and create apprehensions in respect of induction of labour from outside. On the other hand the social conditions and economic development level being very primitive, most of the labour is applied to rudimentary occupations, yielding very little surplus for investment on account of low technology. Agriculture is the mainstay of the people of this region. The net sown area is 3.3 million hectares and the net irrigated area is 0.8 million hectares. Rice, maize, wheat, gram and pulses are the principal food grains grown in this areas. Among the non-food grains ground nut, oilseeds, fibres (jute and mesta), plantation crops (tea, coffee and rubber), sugar cane and potato are important as will be seen in the following table :

Table-3.3  
Production of Principal Crops

Crops	Units	Production		
		1980-81	1981-82	1983-84 (Anticipated)
-1-	-2-	-3-	-4-	-5-
A. Foodgrains	1000 tonnes	3741.4	3066.4	4371.40

	-1-	2-	-3-	-4-	-5-
<b>B. Non-foodgrains:</b>					
i) Oilseeds (Mustard)	1000 tonnes	83.2		60.8	105.8
ii) Sugarcane (Cane)	-do-	1993.9		2196.9	3573.7
Sugarcane (Gur)	-do-	198.8		219.4	358.4
iii) Cotton	1000 Bales of 170 kg each				
iv) Jute	1000 Bales of 180 kg each	785.4		607.1	962.8
v) Mesta	1000 Bales	135.5		132.7	134.8
vi) Potato	1000 tonnes	277.3		285.4	358.4
vii) Sweet Potato	-do-	54.8		58.2	54.8

Source: Basic statistics of NE Region 1982 and annual Plans 1984-85 of States/UTs.

12. Requirement of food grains in the region can be estimated by taking into account the population in each constituent unit and consumption norms. Estimated requirement of food grains in 1985 and 1990 is given in table 3.4. Similar estimate for the year 1983-84 works out to 4797 thousand tonnes. Putting the information of the two tables together it can be seen that the region made an effort to reach the level of self sufficiency in foodgrains during the Sixth Five Year Plan, but import of food grains in the region by Food Corporation of India in the year 1983-84 was still of the order of 10.94 lakh tonnes against the production-consumption gap of about 426 thousand tonnes. Balance of the import (10.94 - 4.26 = 6.68 lakhs tonnes) can be associated with either of the following factor:

- (i) The region does not have a sound system of collection of agricultural statistics and there may be large errors in actual production and estimates projected in the annual plan documents.
- (ii) There may be hidden/transitory population and wide spread smuggling of food grains in the region.

13. However keeping in view the anticipated additional requirement of foodgrains in the Seventh Five Year Plan and

Date: ..... ESTIMATED POPULATION AND REQUIREMENT OF FOOD GRAINS IN THE BASE AND TERMINAL YEAR OF SEVENTH PLAN.

Table-3.4

States/UTs	Estimated Population (000)		Estimated requirement of food grains in 1000 tonnes				Anticipated addition to requirement of food grains in terminal year	
	1985	1990	1985		1990		TOTAL	RICE
	-1-	-3-	TOTAL	RICE	TOTAL	RICE		
	-2-		-4-	-5-	-6-	-7-	-8-	-9-
1. Arunachal Pradesh	719	851	180	109	213	129	33	28
2. Assam	22936	27384	3830	3349	4573	3998	743	641
3. Manipur	1598	1866	340	334	397	390	57	56
4. Meghalaya	1502	1753	250	219	293	256	43	31
5. Mizoram	586	736	111	107	139	135	28	28
6. Nagaland	939	1196	157	137	200	175	43	38
7. Tripura	2318	2707	471	422	550	493	79	71
<b>Total NE Region:</b>	<b>30598</b>	<b>36493</b>	<b>5339</b>	<b>4677</b>	<b>6267</b>	<b>5576</b>	<b>1026</b>	<b>895</b>

Note : Estimated requirement of food grains given in Colms. (4) to (7) have been derived by multiplying estimated population (Col.2 & 3) and per-capita consumption norms given by NCERP in the Report "The North Eastern Region : Regional Transport Survey for 1981-84 and 1986-89 (P.24)".

shortfall in the Sixth Five Year Plan, a target of increase of 2000 thousand tonnes will have to be set which will be 50 percent of increase in present level of production.

14. For development of agricultural activities, irrigation is an important factor. Irrigation was not practised to any appreciable degree in the past in the North Eastern Region. On the basis of the information presented in the reports of central teams and the data available in CWC statewise details of land use, water resources potential, irrigation potential and utilisation is given in Table 3.5. Table 3.6 gives the comparison of the status of land and water resources development of the NE Region with all India. As compared to national average of 27.45 percent gross irrigated area to gross cropped area, the region has only 20.17 percent.

15. Among the other allied activities mention may be made of horticulture and animal husbandry which are traditionally carried out all over the region. The major fruits grown in the area are, Pineapple, orange, lemon, guava and banana. Livestock-rearing is an essential part of tribal life. People in the plains are increasingly adopting it as an important means of livelihood which can improve their economic condition. It is an important source of protein in their food. In the five units other than Assam and Tripura the number of pigs and poultry is far higher than the all India norm. For instance, the number of pigs per 100 people ranges from 11 per 100 in Mizoram to 40 per 100 in Nagaland as against the all India average of 1 per 100. The position regarding livestock and poultry is shown in the table below:

Table 3.5

WATER RESOURCES DEVELOPMENT FEATURES OF STATES IN NORTH  
EASTERN REGION

Items	Name of State		
	Assam	Arunachal Pradesh	Mizoram
<u>I. LAND (000 ha)</u>			
Geographical area	7853	8360	2109
Reporting Area	7853	5550	2101
Forests	1996	5150	1303
Not available for cultivation	2414	10	211
Total culturable area	3442	377	588
Fallow land	N.A.	130	430
Net sown area	3568	112	77
Total Cropped area	3087	128	106
Net irrigated area	581	16	8.18
Gross irrigated area	581	16	8.18
<u>II. WATER POTENTIAL (Mm<sup>3</sup>)</u>			
Surface water potential	558776*	366000	31291
Ground water potential	14820	787	-
<u>III. IRRIGATED POTENTIAL (000 ha)</u>			
Major/Medium projects	970	N.E.	N.E.
Minor projects			
i) Surface water	1000	166	75
ii) Ground water	700	100	5
<u>IV. IRRIGATION UTILISATION (000 ha)</u>			
Major/Medium projects	142	Nil	Nil
Minor projects	7	35	8.18
<u>V. HYDROPOWER POTENTIAL &amp; UTILISATION (MW)</u>			
Potential at 60% load factor	998	28850	384
Installed capacity including ongoing Micro Hydel Scheme		Nil	Nil
Installed capacity Micro Hydel Scheme		10.420	1.0

\* Includes contribution of rivers coming from other states.  
source : Central Water Commission (Sec.text)

Table 3.5 (Contd.)

Items	Name of the States			
	Manipur	Meghalaya	Nagaland	Tripura
<b>I. LAND (00 ha)</b>				
Geographical area	2236	2249	1557	1047.7
Reporting area	2211	2249	1042	1047.7
Forests	602	812	286	408
Not available for cultivation	1445	815	49	120.2
Total culturable area	164	1122	163	273.5
Follow land		312		4
Net sown area	140	193		253
Total cropped area	213	223		422
Net irrigated area	55	48	62	29
Gross irrigated area	75	50	62	29
<b>II. WATER POTENTIAL (Mm<sup>3</sup>)</b>				
Surface water potential	19794	67216	14090	7616
Ground water potential	44	357	Negligible	588
<b>III. IRRIGATION POTENTIAL (000 ha)</b>				
Major/Medium projects	135	20	10	100
Minor projects				
1) Surface water	100	85	80	100
ii) Ground water	5	15	N.E.	15
<b>IV. IRRIGATION UTILISATION (000 ha)</b>				
Major/Medium projects	41	Nil	Nil	1
Minor projects	29.3	29.8	61.8	37.11
<b>V. HYDROPOWER POTENTIAL &amp; UTILISATION (MW)</b>				
Potential at 60% load factor	1729	1311	812	43
Installed capacity including ongoing Micro Hydel Schemes	105	134	Nil	12
Installed capacity micro Hydel schemes	5.8	1.51	1.5	1

Comparison of Status of development of Irrigation North-  
Eastern Region with All India

( Figures as on 1978-79 )

Description	Unit	North eastern states except Assam	North eastern states incl. Assam	All India	% for N.E. states except Assam %	% for States incl. Assam %
Geographical area	M.ha	17.66	22.51	328.68	5.37	6.85
Reporting area	M.ha	13.153	22.05	304.68	4.32	7.24
Population(1981)	Million	6.711	26.608	683.81	0.98%	3.89
Culturable area	M.ha	2.69	6.13	185.79	1.45%	3.30
Net sown area	M.ha	0.74	3.30	142.94	0.52%	2.31
Gross cropped area	M.ha	0.985	4.07	175.18	0.56	2.32
Gross irrigated area	M.ha	0.240	0.821	48.09	0.50	1.71
Net irrigated area	M.ha	0.218	0.80	37.96	0.57	2.11
Density of population	persons/ Sq.k.	38	82.10	221		
Gross irrigated area to gross cropped area	percent	24.37	20.17	27.45		
Irrigation potential						
Medium/Major projects	M.ha	0.255	1.235	58	0.44	2.13
Minor projects						
a) Surface		0.616	1.606	15	4.10	10.71
b) Ground Water		0.140	0.840	40	0.35	2.10
Total	M.ha	1.011	3.681	113	0.89	3.26

Source : Central Water Commission (See text ).

Table-3.7

(Figures in thousand)

State/UT	(Cattle)	(Buffa- loes)	(sheep)	(Goats)	(Horses & pon- ies)	(Pig)	(Other live- stock)	(Total)	(Poultry)
Arunachal Pradesh.	158	11	21	74	5	113	@	382	1,170
Assam	6604	730	59	1657	18	514		9584	10449
Manipur	533	94	7	34	1	176	32	878	2745
Meghalaya	477	40	20	119	6	151	@	813	1,073
Mizoram	49	3	(a)	23	2	43	@	120	1,088
Nagaland	93	8	@	24	2	238	10**	375	715
Tripura	592	14	3	198	@	45	@	853	665
Total NE	8506	900	110	2179	34	1280	44	13005	17905
All India	180.0	62.0	40.9	75.3	0.9	NA	9.9	369.0	152.2

Source: Basic Statistics of NE Region 1982 and Directorate & Economics & Statistics Assam, Manipur;

Notes : Reference year for Arunachal Pradesh and Assam-1979, and for others - 1977 @ Below 500\*\*relates to Mithuns (a) 584.

16. There is a wide variety of forest with great diversity in climate and soil. According to National Remote Sensing Agency out of the total forest area of 123134 square km (1980-82) which is 48.28 percent of total geographical area of the region. 84.83 percent (i.e.104449 sq km) is under closed forests, 15.21 percent (i.e.18730 km<sup>2</sup>) under open/degraded forests, By ownership classification 81.67 percent of forest are owned by Forest Department and 14.60 percent are under corporate bodies.

17. There are variations and disparity in the data made available by State/UT Government and Ministry of Agriculture. However, apart from this, several national and international organisations have challenged the figures on vegetation cover in forest. The cover area includes blanks, river-beds, snow capped mountains, grass land and pastures etc. The forests of these types have little value for soil and water conservation.

18. For assessment of vegetation cover in North-East India, the Forest survey of India(FSI) made visual interpretation of land set imageries. The findings from the analysis



of data revealed that shifting cultivation has depleted vast areas of vegetation. The recession of forests over the period of five years may be seen from the Table 3.8. The similar inferences drawn by NRSA in Table 3.9 are different from results derived by FSI.

19 The region's hitherto unexploited mineral resources for which exploration research and exploitation are being undertaken, hold out bright prospects of industrialisation. Among the available mineral resources particular mentioned may be made of coal, limestone, sillimanite, marble, crude oil and natural gas. Table 3.10 gives the data on availability of mineral resources.

Table-3.10  
Availability of Mineral Resources (1977)

Minerals	Unit	Resources	State in which occur
Coal	Millions tonnes.	927.902	Arunachal Pradesh, Assam, Meghalaya & Nagaland.
Limestone	-do-	2998.9	Arunachal Pradesh, Assam, Manipur, Meghalaya and Nagaland.
Crude Oil	-do-	70.46	Assam
Natural Gas	Million cu. mt.	23000.00	Assam and Tripura.
Fuller Gas	Million tonnes.	17.04	Assam
Marble	-do-	73.80	Arunachal Pradesh.

Source: Basic statistics of NE Region 1982.

20. Besides, deposits of sillimanite, kyanite, dolomite and glass sands found in Meghalaya, Assam, Tripura and Nagaland have a bright prospect of development. Recent survey have revealed some deposits of metallic minerals as well.

21. In spite of a high resource potential, the North Eastern Region is industrially backward because of lack of essential infrastructure facilities and entrepreneurial as well as managerial ability. Large and medium industries which have already started are of relatively recent origin. Among the existing industries in this category mention may be made of sugar factory (4 units), paper mill (4), cement factory (2),

Table - 5.1

State	Land Sat II Imagery of 1975-76				Land Sat Imagery in Band 5 Black & White 1980-82			
	Closed forests	Degraded forests	Closed forest with shifting cultivation	Open forest with shifting cultivation	Closed forests	Degraded forests	Closed forest with shifting cultivation	Open Forest with shifting cultivation
Assam	19411	5587	2504	1662	13150	4060	3300	3160
Manipur	2771	-	13292	4476	3480	50	12660	2400
Meghalaya	4353	1601	5233	5008	4860	900	4710	3800
Nagaland	4494	283	2444	8531	5260	210	2610	6270
Tripura	2855	170	4378	1838	1450	160	4450	960
Mizoram	4188	12	13521	2592	1530	-	17290	1150
Arunachal Pradesh	57024	468	3315	4629	30830	540	10700	1580
<b>TOTAL</b>	<b>95056</b>	<b>8521</b>	<b>44687</b>	<b>27736</b>	<b>65310</b>	<b>5920</b>	<b>55720</b>	<b>19320</b>

Between 1975-76 & 1980-82, an area of 8054 Sq.km. of area has been denuded of vegetation cover. 3642 Sq.km. of closed forests have been made degraded.

Table

Area under different forest classes in North Eastern States and Union Territories during 1972-1975 and 1980-82 based on visual interpretation of Landsat data.

States/U.T.	Period	Total Geographical area	Area in Sq. Km. Closed forest	Open/degraded forest	Other (Snow cloud area fog etc.)	Total forest area	Percent forest area of Total geographical area
<b>STATES</b>							
Assam	1972-75	78520	18691	2364	221	21056	26.81
	1980-82		15590	4206	56	19796	25.21
Manipur	1972-75	29360	13678	1412	578	15090	67.49
	1980-82		11295	2277	1076	13572	60.70
Meghalaya	1972-75	22490	10083	4307	62	14390	63.98
	1980-82		7448	5010	746	12458	55.97
Nagaland	1972-75	16530	7067	1087	1509	8154	49.33
	1980-82		4921	3174	1303	8095	48.97
Tripura	1972-75	10480	5972	350		6322	60.40
	1980-82		4554	629		5183	49.03
<b>UNION TERRITORIES</b>							
Arunachal Pradesh	1972-75	83580	50460	978	19628	51438	61.54
	1980-82		49486	2618	9081	52104	62.34
Mizoram	1972-75	21090	13206	654	56	13860	65.72
	1980-82		11155	816	326	11971	56.76
Total NER	1972-75	253050	105951	11152		140317	55.02
	1980-82		104449	18730		123134	48.28

Jute mill (2), distillery (1), plywood and wood products manufacturing industries (18) fertilizer factory (2), chemical industries (including petro-chemical industries 14), hard board factory (2), spunsilk mill (2), cycle factory (1), oil refinery (3) and miscellaneous industries (7). The maximum concentration of industries of this category numbering 43 is found in Assam. In other States/UTs of this region the existence of very few industries of this kind (numbering merely 1 to 5) shows that they are at the very nascent stage of industrialisation. Some of the key statistics relating to selected industries falling within the purview of factories Act are presented in Table 3.11 below :

Table-3.11  
Selected Industrial Statistics, 1976-77

State	Factories No.	Employees No.	Output Rs (in lakhs)	Income generated & value added (Rs. in lakhs)
Assam	1,569	1,21,064	54,279	14,931
Manipur	33	1,020	82	28
Meghalaya	30	4,159	730	291
Tripura	64	2,680	395	81
All India	81,277	66,49,250	34,09,065	7,31,070

Source: Annual Survey of Industries, 1976-77, C.S.O.

22 . In regard to small scale industries as well, the region has not so far been able to make good progress. The reasons for this may be ascribed to the paucity of adequate infrastructural facilities and lack of entrepreneurship, lack of marketing facilities and inadequate technical know-how and special higher cost of development of infrastructure in NE also come in the way. Of course, the small scale industries are growing both in number and diversity and cover a wide range of product-lines and belong to agro-based, forest and other resource based, demand based and servicing categories. The recent growth of various large and medium industries in the region hold out the prospect of development of different ancillary industries in the small scale sector.

The distribution of different types of small scale industries is given in Table-3.12.

Table-3.12

Small scale Industries - 1971 (value of output, value added and Employment).

State/UT	Total Working	Gross Value	Value added	Employment
	Unit	of output	"	"
	Number	Rs. in crores	Rs. in crores	Number
Arunachal Pradesh.	11	0.11	0.07	187
Assam	1,648	22.64	9.12	19,652
Manipur	485	3.32	1.38	3,409
Meghalaya	165	1.20	0.45	1,138
Mizoram	61	0.30	0.16	336
Nagaland	38	0.48	0.21	446
Tripura	246	1.45	0.54	1,698
Total:	2,654	29.50	11.93	26,910
All India	1,39,577	2,602.75	841.00	16,53,178

Source : All India Report on Census of Small Scale Industries, Vol. I, 1976.

23. The North Eastern Region has a rich tradition of village industries and crafts which are well known for their colourful design and artistic craftsmanship. It has a large concentration of handlooms forming about a quarter of the national total. For instance, the cane and bamboo work of Tripura, Naga shawls, handloom products of Manipur, woolen carpets of Arunachal Pradesh and silk sarees and chaddars of Assam are some of the well-known products which have captured markets at home and abroad. In an attempt to stimulate the development of these industries the NEC has taken up schemes for organising crafts exhibitions to give state recognition to the master craftsmen. North Eastern Handloom and Handicrafts Development Corporations has also been set up to provide training, raw-material and to help in marketing. Besides, sericulture industry covering all the 4 components of Eri, Muga, Tassar and Mulberry has flourished in this region as a traditional activity providing employment to a considerable number of people. From the statistics available for 1978-79 it is found that sericulture activity provided

employment to 7,500 families in Arunachal Pradesh, 58,058 families in Assam, 500 families in Manipur, 1854 families in Meghalaya, 150 families in Mizoram, 3600 families in Nagaland and 2500 families in Tripura. The numbers of Muga rearing families are found to be 10,166 in Assam, 20 in Manipur 365 in Meghalaya and 12 in Nagaland. The number of rearer families in the field of Tassar culture are 20,000 in Manipur, 5 in Mizoram 120 in Nagaland. The numbers of rearer families in the field of Mulberry culture are 195 in Arunachal Pradesh, 12096 in Assam 30 in Manipur, 432 in Meghalaya, 120 in Nagaland and 450 in Tripura. Varieties of silk fabrics including wrapper, shawl and scarp ladies wear, shirting etc. are produced in the different States/UTs of this Region.

24. The region's installed capacity of power in 1984 is estimated at 627.70 MW as against the assessment of immense hydel potential roughly estimated at 30000 MW. Proper utilisation of the rich power potential of the region holds the key to economic development. The region is rich in petroleum, water, natural gas and coal, out of which the last three resources are expected to provided the basis for a balanced regional power development. In 1973, the NEC, decided to formulate an integrated regional plan for power generation, transmission and distribution. Following the recommendations of the concerned Technical Committee in 1975, the NEC decided that three power generation schemes viz., Kopili Hydro-electric Project (150 MW), Kameng Hydro Electric Project (for which the project report envisaged 600 MW) and Garo Hills Thermal Power Project (60 MW) should be taken up for implementation. The public sector undertaking named North Eastern Electric Power Corporation which is the implementing agency for NEC's power projects has been able to start generating power for the first time in the Kopili Project from March, 1984.

25. The NEC's perspective plan for power development envisaged the creation of 12500 MW of hydel capacity and 110 MW of thermal capacity over a 25 year period starting from 1980. This plan drawn up within the frame-work of

national energy policy has obviously taken into account the possibility of substantial export of power outside the region. However, it is expected that the installed capacity of the power plants in this region will reach about 894 MW level by 1985-86 and at that time a balance between demand and supply may be nearly achieved.

26. Further the region has a good potential for energy which can be derived from the renewable resources such as solar energy and biomass energy. Some demonstration devices have already been installed and it should be possible to utilise this potential in a much bigger scale in years to come.

27. Inadequate transportation is the biggest handicap to the development of NE Region. The coverage and capacity of existing railway lines and road network are too inadequate to meet the growing requirement of this infrastructure within the region and essential transport link with the rest of the country. The distribution of road length in the Constituent units of the region is shown in Table-3.13.

Table-3.13

Total Road Length (As on 31-3-1979)

State/UT	{ Total (km) { Road length	{ Surfaced(Km) { Road	{ Road per 100 Sq.Km. {
Arunachal Pradesh.	11,553	2,396	13,82
Assam	56,983	8,396	12,59
Manipur	8,842	1,520	39,47
Meghalaya	3,690	1,475	16,40
Mizoram	2,916	1,086	13,82
Nagaland	5,785	1,392	35.06
Tripura	7,836	1,220	74.63
Total NER.	97,605	17,485	38.28
All India	1604110	623402	48,90

Note : There is a wide difference in total road length given by Ministry of Shipping and Transport and data available in Annual Plan documents of States and UTs.

Source : Basic Road Statistics Ministry of Shipping and Transport.

28. The progress of road development in the North East has so far been tardy primarily because of hilly terrain interspersed with numerous rivers and streams and large stretch of the plains being susceptible to flood. At present the total length of roads in this region is 97,605 km. The percentage of surface road length to the total road length is 18.08 as against the all India Highways all over India is 31,000 km, out of which the share of NE Region is only 4000 km under the Sixth Plan. NEC has taken up about 2000 km more roads of regional importance apart from 2370 km of more roads of economic importance.

29. At present the rail route in this region is virtually confined to Assam Valley with just nominal coverage for Nagaland and Tripura, Meghalaya, Manipur, Arunachal Pradesh and Mizoram are outside the railway map of our country. At the instance of NEC, engineering-cum-traffic surveys have been carried out in ten proposed routes, out of which six new lines linking the constituent States/UTs of the North East have already been sanctioned for construction of BG line from Bongaigaon to Gauhati has been completed while the construction of BG line from Panchratnaghat to Gauhati and road-cum-rail bridge over the Brahmaputra at Jogigopha are also going to be completed in near future. There is also a proposal to extend BG system upto Dibrugarh and also improve the system upto Badarpur with exploration of the possibility of a new link to Badarpur. Thus, railway development in this region will be accelerated substantially.

30. In regard to waterways, the region's potential has so far been only partially exploited. Out of 14,544 km of navigable waterways in our country, this region share is 1983 km. The Brahmaputra river provides the principal waterway in which the major operating agencies are the Assam Inland Water Transport Corporation and Central Inland Water Transport Corporation. The former agency has a total cargo handling capacity of about 1500 tonnes while the latter agency, after the acquisition of the proposed new vessels, will be able to handle about 15,000 tonnes of inter-regional



cargo. Inadequate infrastructural facilities at the ports being the main operational problem, the NEC in its Sixth Plan, has envisaged the development of 6 ghat stations with floating jetties which can be adjusted to the changing river flow. A scheme for mechanical cargo handling at Pandu has also recently been agreed by the NEC.

31. In the NE Region, air transport is very important but totally inadequate. Besides, serving the three State capitals viz. Gauhati, Agartala and Imphal, the Indian Airlines network also includes a few other towns viz. Dimapur, Tezpur, Jorhat, Lilabari, Dibrugarh and Silchar. The coverage by Vayudoot which was created essentially for isolated region like NE has not come up to the desired extent but it is hoped that with procurement of smaller aircrafts, the service will be able to cover a much larger number of isolated towns.

32. Some areas, with good promise of industrialisation have very difficult hilly terrain with dense forest cover and intercepted by streams flowing along steep gradient which render the construction of roads extremely difficult and expensive. In such areas ropeways may be found to be the most economical means for transporting bulk materials. The NEC sponsored schemes for execution of ropeway projects will provide the essential transport-links to the specific industrial projects such as cement plants in Garo and Phasi Hills.

33. Among the other means of communication, postal service (including telephone services) need to be improved to a great extent to meet the region's growing requirements. In this region there are 5159 post offices. The population served by a post office varies from 4761 in Assam to only 24 in Nagaland while the telephone connections per 1000 population is roughly 1.94. It has to be, however, appreciated that population basis cannot be a satisfactory yardstick in this regard in such sparsely populated areas. The Development of popular media viz. radio and television is already engaging the attention of the Central and State Governments.

34. A good number of schools, Colleges and Universities existing in this region provide a considerable scope for general education. As regards technical education, there are however, gaps which are expected to be removed through adequate planning for manpower development. There are 175 Higher Secondary Schools (10+2 pattern), 13 Higher Secondary Schools (Old pattern), about 2500 High Schools-Middle Schools, Primary Schools and Pre-Primary Schools. The total number of arts/science/commerce/colleges in this region is 100 and there are 5 universities located in Assam(3), Manipur (1), and Meghalaya (1). Among the institutions imparting technical education and vocational training mention may be made of 4 Engineering Colleges, 4 Medical Colleges, 3 Agricultural Colleges, 57 Technical and Industrial Schools, 50 Teacher's Training Schools and 18 Teacher's Training Colleges. A Central Agriculture University with campus in various constituent units is also likely to come up.

35. Though considerable progress has been made in the field of health and medical care, the existing facilities are inadequate to meet the growing requirements of this region. This is borne out by the fact that the Doctor-population ratio varies from 1:2841 Arunachal Pradesh to 1:8283 in Assam. In 1960 there were 217 hospitals (as against 6596 hospitals in India) with 15081 beds (as against 460886 beds in India). In 1980, there were 337 Primary Health Centre functioning in this region while the total number of sub-centres was 1480.

36. Urbanization at a fast pace has been a world wide phenomenon from which our country has also not remained untouched. The situation in North East may not, however, be following the national pattern in so far as urbanisation is concerned. The following table indicates the growth of towns from 1901 to 1981:

Table No. 3.15

States/UTs	Number of towns								
	1901	1911	1921	1931	1941	1951	1961	1971	1981
Assam	12	14	22	22	24	25	53	72	81
Manipur	1	1	1	1	1	1	1	8	30
Meghalaya	1	1	1	2	2	2	6	6	12
Nagaland	1	1	1	1	1	1	3	3	3
Tripura	+	+	+	+	+	+	6	6	7
Arunachal Pradesh	-	-	-	-	-	-	-	4	10
Mizoram	-	-	-	-	-	-	1	2	6
	16	18	26	27	29	30	72	101	149

Source: Registrar General of India.

37 For one thing, the area is as yet isolated and we have no cities which are reaching breaking point. Further, due to availability of land for expansion of urban areas, availability of house sites is not yet a grave problem. Employment opportunities has also by an large, kept pace with the growth of urban areas. However, as years pass, the problem of finding gainful employment for all the growing and migrating population will be becoming graver, particularly in view of the migration from across the borders. Further, formulation of such an urban development plan is all the more essential for the North East as the existing urban areas have only rudimentary facilities and the growth of new urban areas has not followed any plan.

38. The quality of administration makes a material development in the process of administration in the context of the North-East in a very special manner. Most of the North-East has traditionally been governed by local traditional communities largely based on tribal or clan structures. Such tribal or clan structures have either elected, hereditary or traditionally appointed authorities performing several functions. Although nominally one or another authority like Chief or Syiem, etc. may claim overriding powers, actually different powers and authority are vested in different individuals or offices and they are expected to be exercised according to the well-understood precedents and practices.

The system of accountability is also traditionally and often directly exercised through the relationship between the community and the office holders. Sanctions against abuse of such authorities are also through traditional forms of graded penalties in cash or in kind. In spite of various other developments described in preceding paragraphs, the traditional authorities and their relationship with community as a whole and its individual members continue to be powerful in day-to-day life.

39. In this scenario the thrust for democratic institution as understood by modern administration has made for new changes. Firstly the institution of chiefship and similar offices has been sought to be abolished or eliminated. In some parts like Mizoram, like princely principalities elsewhere, chiefship has been abolished under legislation and compensation has been given on the lines of zamindari abolition. In some other parts as in Khasi Hills, the Chiefs have been made appointees of the District Councils and their status has been reduced to that of officers serving as such. Everywhere there is a strong thrust for overriding authority being vested in bodies like State Legislature or District Councils elected on the basis of adult franchise of tribals in the area and the traditional authorities of the village are coming to a level being made subordinate to the authority of such elected bodies at the State or District level. There is of course the question of the elected bodies at the District level having to work out the problems of exercising their authority vis-a-vis that of the elected authorities at the District Council level where the Sixth schedule of the constitution operates or where analogous statutory provisions have been made where the Sixth schedule does not strictly operate.

40. In practice it has been experienced on the ground at the village or community level that the elected authorities at the District or State level have either to come to terms with the traditional authorities of the village or community level by accepting their authority and mode of functioning or by giving them official status by recognising them or by effectively infiltrating them by making appointments of persons who are in practice required to carry out

the wishes of the elected authorities at the State or the District level. Wherever these problems have not been resolved village communities find themselves to be divided in respect of loyalty as well as obedience. Sometimes it is found that the state or District Council authorities make appointments on their own of functionaries at the village or community level and actually there are cases in which such functionaries act parallel to the customary authorities at the village or community level.

41. In this process many measures which have important development import are found to have suffered. Such measures include rights in land, rights of cultivation, rights of drawing water, rights of exploiting forest wealth and as in the case of coal bearing areas of Khasi Hills and Jaintia Hills, rights of mineral exploitation. In the many cases of forest or mining, coordinated action by way of legislation at the State or the District level is called for. The old tribal rights vested in the community to take the wealth of the forest or mine was conceived in the context of personal use and did not envisage exploitation of such wealth in large quantities especially forest wealth for export out of the area. With increasing network of rights and penetration of market in the interior much of this wealth has now assumed a high marketable value and the traditional mores of exploitation of such wealth for limited family use have lost their relevance. Instead, there is an increasing thrust from the transportation and contracting interests for taking such wealth out of the areas without due regard to their re-generation or without establishment of any definite proportion of the wealth exploited and the wealth to be re-generated in a particular time frame. The customary authorities vested with the "trust" of preserving community wealth and utilising it for the purpose of community often find that they are disposing of such wealth at seemingly reasonable return but fail to realize that they are squandering away the social capital with certainty of leaving nothing for future generation.

42. Another dimension of this problem is the increasing tendency for decision making to be centralised. Much of the abuse of making decisions for disposing of community wealth can be checked if such decision were made at the village level under the direct scrutiny of community, public opinion overseeing the operations of such decisions. It is, in practice, much easier to camouflage the abuse and the corruption and the squandering away of social wealth involved in wrong decisions of this nature if such decisions could be taken away from the State or District headquarters in the secrecy of the office work centred there. Besides this factor, uniform legislation to be operated upon by a limited number of technical personnel also helps the process of centralisation of decision making at the State or District levels. On many subjects which were administered locally by customary authorities according to traditions and customs evolved over a period of time legislation has been enacted and accordingly administration thereof is done through officials appointed at State level. These officials are transferable. Their administration is supervised centrally at State level or district level. The autonomy at the village level becomes a casualty.

43. There is no doubt that the process of development involving use of large funds has made for a class of people having relatively better access to education and jobs in government with the added advantage of familiarisation of government procedures to concentrate the benefits of development in their hands and their group interest. The limited number of well-to-do tribal families bind themselves in the development process and occupy positions of responsibility trust and power in government echelons of service. A number of this group of people become more powerful relative to their community leaders and politicians either at the village or District or State levels. They have the advantage of continuity, stability, security and length of tenure. In many States and UTs the local administration is much more powerful than the political "masters" under whom they are supposed to work. The tradition of impartiality which

govern the structures of public service elsewhere are found to work in the North East to a much more limited extent. With individual exceptions apart, too much power to high authority available at too early a stage without adequate preparation of training or opportunity of developing the ethos or tradition of public service have made for the structures of the tribal areas to be both powerful and irresponsible. In this context, a process of rapid development involving elaborate programmes in special fields creates inevitably the situation where more attention is given to limited present scope of such responsibility. Most of the programmes of development which will make a difference in the quality of life in the North East relate to agriculture, horticulture, animal husbandry, health and public health, sanitation and water supply, preservation of tribal culture and food production. Such programmes involve committed administration with strong tradition of public service, adequate familiarisation with modern technology, a high degree of orientation for efficiency and considerable tradition of participation with village community life. Unless such an administration is available, the plans drawn up would not be implemented.

44. Fresh thought has to be given to method of recruitment, terms and conditions of service, better training and securing orientation towards community life in the North East. A study for this purpose can be made by employing the expertise of the bodies like Indian Institute of Public Administration, Indian Institute of Managements, Administrative Staff College, Hyderabad, Tribal Institute, etc. Special personnel policy for the North-East has to be devised.

45. Inevitably for a considerable period, the North East will have to be served by experts and administrators from outside. Already induction of "outsiders" is found to create some problems. Without a permanent stake in the area, such "outsider", administrators and experts find difficulty in their work and also develop purely

transitory approach keeping an eye to get out of the North East. Some incentives in the North East have been offered, but in practice, they are not sufficiently large and in operation much of the impact has found to have been frustrated because the government gives with one hand and takes away with the other. It is true that more incentives for service in the North East will not create the required change. What is wanted is a material change which will enable administrators and experts to come and serve in the North East coupled with a feeling that service in the North East is to be considered necessary as a matter of national commitment for its development and that every expert or administrator must consider it to be a part of his service career to spend a period of service in the North East. A measure of psychological dedication and commitment are necessary if the human impact of administration on developmental process is to be brought about in a worthwhile manner.

46. Traditionally women and children in the North East bear a large brunt of load of work. Most of the work is to be carried out in the forest and in the field and in the access to water supply. Tradition of tribal way of life has made for men having lesser responsibility except seasonally during agricultural operations or for the purpose of food gathering in the forest or in hunting operations. The normal drudgery of cultivation, harvesting of grain and storing has fallen on the shoulder of women supplemented by labour scarce tribal economies. It can be safely said that men feast but women labour. In such a situation in which about 60 to 70% of the work load falls on the women and children, the problem of their health, their nutrition, their diseases and their treatment become more relevant. Also improvement of technology access to education and knowledge involves specially challenging problems. A small improvement in technology or improvement in health of such groups as women and children would add much more than proportionately, perhaps dramatically, to the generation of a just social structure



in the North Eastern tribal communities. Programmes for this purpose, therefore, which are simple in nature but important in effect would be very relevant for developmental strategy in the North East.

Investment Strategy for Certain Core Sectors:

47. For historical reasons, until a little before the advent of the British, the North East had remained a closed book in regard to accessibility to the rest of India. Most of the development had taken place along with riverine routes as the climate and the terrain made movement across the country difficult for most of the year. The British developed a limited amount of infrastructure, largely centred around the requirements for transportation of tea and coal and later jute and oil. Much of the North East was kept inaccessible to outsiders as an act of deliberate policy. Prior regulation of entry under the Inner Line permit system and settlement of land was forbidden to non-tribals in many parts of the North East. Most of the infrastructural development of roads communications, health and public health, education etc was taken up by the Government only after 1947 when the country became independent. In this background, people and administrations in the North East have laboured under a long standing grievance of historical neglect of development and experienced great disparities in levels of development, due to relatively sparse population. This disparity is reflected not so much in per capita norms of income or economic deprivation, as in comparative lack of development of infrastructure and organised facilities in the domain of health, public health, drinking water supply, education, etc. It is, therefore, necessary that an attempt should be made to evolve a strategy for the development of the North East, by adopting programmes which will reduce this disparity within a definite time frame in order to remove the sense of grievances of continuing neglect. It has been found on the basis of this approach that the following priorities should be considered. An attempt has also been made to project approximations of investments required for such priority programmes. The details about such approximations and the basis of their estimation have been brought out in Appendix to this Chapter. If the approach is found acceptable a detailed exercise will have to be made by an expert body to frame a detailed programmes.

A. Policy for foodgrain production in the North East should be aimed at rendering the region as a whole self sufficient and also a reasonable level of production in each unit. This is required not only to use the factor advantages of fertility of soil, assured rainfall and potential for increased production but also to reduce the burden on the transportation system which is already very strained. When considering the actual cost of transportation of foodgrains ~~from elsewhere~~ and after taking into account the various subsidies in production, storage and transportation, possibly the programme of local production of foodgrains may be found to be an economic proposition. It has been estimated that average cost of transportation and subsidy on foodgrains supplied through PDS system is roughly is Rs.500 per tonne and accounts for Rs.50 Crores annually. Added to this are the requirements of military and para military forces and additional safety in avoiding transportation of food stuff through the narrow passage with the rest of India which further justifies taking up of the massive programme of food production to make the North East self sufficient. This is not to say that each constituent unit should aim at self sufficiency, because the climatic and soil characteristics differ and advantage can be taken of relatively sparsely populated areas to grow animal products, horticultural products while the more populated areas could grow foodgrains for themselves and for the rest of the constituent units of the North East. Some projections have been made regarding investments required for such a programme. While funds would be provided under the State Plan or in the Central Sector Plan according to the nature of the scheme, it has been estimated that a sum of Rs.442.00 crores would be required for this purpose.

B. Primary education is another priority programme for the North East. In the long run, no policy of development can be put through without locally available manpower. No programme for manpower building can be successfully worked out without a strong and broad-base of primary education. As the terrain of the North East has wide disparity and as many constituent units have sparse population,

reaching of the facilities for primary education will require adoption of new technologies of tele-communications. Provision of adequately trained teachers and locally appropriate school buildings will also need to be carefully considered. It has been estimated that for this sector of primary and middle education upto the age of 11 years fund of the order of Rs.250.00 crores will be required.

C. Another priority programme is of rural health. Due to the wide spread of diseases like malaria and other water borne diseases, the level of health and health education in the North East has become an important area for improvement. Low levels of income earning potential of labourers has given rise to a considerable handicap in making them reasonably prosperous. In an area in which population is sparse, labour is scarce and has to be intensively utilised gainfully and its income earning potential has to be fully utilised. The extent to which disease and addiction to drugs render it less productive, to that extent its potential for income generation is avoidably eroded. According to the norms adopted by the Govt of India for establishing sub-centre and primary health centres, the disparity in the North East requires to be removed and an estimated amount of Rs.132.00 crores is required.

D. Another priority programme is roads. While some network of national and other roads has been brought about, considerable work for providing access to very large areas remains. In order to reach All India norms of 48 kms of road per 100 sq.kms of area, Rs.2662.00 crores are required for this purpose. Arunachal Pradesh will, however, not be able to come up with this all India standard during the Seventh Plan as the gap is too big to be covered in one plan period.

E. Drinking water supply requirement is another priority programme. To enable the villages to have drinking water supply, an estimated amount of Rs.483.00 crores would be required.

F. Depletion and degradation of forest resources in the North East has taken a heavy toll on environment.

contributing to climatic changes and heavy floods disrupting the economy of several places of the North East. The North East has also become an important timber and fuel-wood supply reserve for the rest of the country. This has caused rapid destruction of forest resources on a scale which might prove extremely hazardous unless counter measures are taken. If a programme of such kind is taken, many measures can be considered on the basis of various approaches. The most conservative approach of making good of the current depletion of such resources alone without going further, namely, to restore the area already depleted or degraded without going further for achieving the norms set up by the Govt of India for forest cover, is estimated to cost about Rs.595 crores.

G. The presence of railway has been felt only in a few areas of the North East. Most of the States and Union Territories do not even now have their capitals connected by railway system. Another group of Railway Reforms Committee has recommended that pending construction of railway lines to various places in the North East, which is a capital intensive and time consuming process, there should be a system of opening out-agencies and essential supply could be reached through out-agencies. <sup>at telescopic rates on the</sup> basis of operations organised as if the railways have already reached such interior places. The subsidies in meeting the difference between the actual cost and the telescopic freight assessed from the point of origin is worked out at an estimated amount of Rs.150 crores for the period of five years.

H. Construction of important railway lines is another important activity to be seriously expanded during VIIth Plan. This system should extend to various state capitals for some of which surveys have been completed, construction of certain important works would require an estimated amount of Rs.592.00 crores. This investment is required to provide effective access among the State/ITs and also to remove the heavy burden on the hilly section connecting Cachar with the Brahmaputra valley.

I. Historically most of the freight movement has taken place on the widely distributed riverine system of the North East. If funds could be provided for keeping the water courses at reasonable operational levels, sufficient advantage can be taken for freight movement of comprehensive system. An investment of Rs.291 crores has been estimated by the Report on Study on traffic potential and economic liability on Brahmaputra and is justified on the basis of socio-economic considerations.

J. Opening of Post of Offices in the interior is another priority programme. It is estimated that 228 post offices in the hilly areas, mostly in Assam, and 5811 post offices in other hilly and tribal areas would be required. An estimated amount of Rs.19.00 crores would be required.

K. One of the most effective means of removing the sense of being distant is the establishment of effective tele-communications in the North East with modern technology available from the satellite etc. It should be possible to establish such effective range of services in order to connect State headquarters with Delhi and Calcutta and district HQs with State HQs. To implement the objective envisages for the tele-communications network in the North East, an estimated amount of Rs.336 crores will be required during the 7th Plan period out of which around Rs.114 crores would be spent on "lossy" schemes which can not be undertaken in the normal course of tele-communications network expansion.

48. To sum up the scale of investments considered essential for priority sectors of food, health, roads, education & drinking water supply would work out to Rs. 4564 crores. It has been found from the experience of the 6th Plan that these sectors account for 40% of the total fund provided in the State Plans in the North East. On this basis if similar growth is assumed in remaining sectors also the total amount required for the State Plans would work out to be of the order of Rs.11416 crores. In the 8th Plan the provision for the constituent units of

the North East accounted for 5.43% of the total plan investment for the States/Union Territories sectors. The proposed investment of Rs. 11410 crores would work out to be 12.30% in case of Seventh Plan if similar pattern of flow of funds to State/UT sector is assumed. For the remaining sectors mentioned in previous paras, which are normally funded from the Centre, investment required works out to Rs. 1388 crores which is about 1.5% of the fund for the Central sector in Seventh Plan on the same assumed pattern. As explained elsewhere, the strategy for removing disparities and taking care of the minimum requirements of the different sectors involve the stepping up of the proportion of fund for the North East but the scale of investment suggested appears to be by and large feasible having regard to the aggregate funds for development in the country.

49. If this scale of investment is taken up and the provision of fund is matched by development of appropriate technology for the programmes and adequate training and motivation, the result achieved would be very significant for the disparities in respect of the core sectors in the North East would be removed and the North East would stand at par with the rest of the country barring Arunachal Pradesh in respect of roads.

50. The estimated requirements are only of an indicative nature and for accuracy detailed exercises would be required before specific proposals or programmes are evolved. The basis for arriving at such estimations is given in the Annexure to this chapter. It is possible that the actual requirement of fund might be found to be less if less costly technology is available. On the other hand, rising costs and difficulty of transportation in remote areas might need increased cost. The estimated amount only present rough approximations in respect of the scale of investment that might be involved and are intended only to provide a focus for consideration of the problem.

General Strategy for development

51. To cover this long path, problems of development of the NE Regions as given below need recognition:

- 1) Spatial isolation of the Region and difficult topographical factors.
- 2) Influx of population from neighbouring areas creating demographic pressure and tensions.
- 3) Large scale prevalence of Jhumming on hill slopes and primitive method of cultivation giving rise to dualism in agriculture (settled and shifting), arrests the agricultural development, Ecological devastation arising out of 'slash and burn' techniques of cultivation is a major problem mostly for the hilly states.
- 4) A substantial part of the raw material sent out of the region which tends to keep its economy backward, in spite of the region being one of the rich areas in the whole of the country.
- 5) Despite vast potential of resources and relatively better participation rates and the quality of human factor, the development of the region is arrested largely due to limited market, lack of easy mobility of labour, raw materials and output.
- 6) Inadequate transport facilities and availability of power in different part of the region.

52. These problems call for adopting more specific strategies for development of the north-east region suiting to its unique character. The strategy for the region should attempt at bringing more and more people and resources at local level into production process which upgrade their skill, raise production and income. This process involves formulation of a planning model in the frame work of multi-disciplinary and multisectoral approach which can make units functioning at different level operative in coordinated

manner. In such a model fixing up of transport, market (of input and output), finance and manpower play a major role in making the process of success.

53. The regional planning model should also be based on integration of decentralised systems. There should be greater decentralisation of economic power to lower level of development administration with a view to incorporate local characteristics in the programmes. This will make an immediate impact on the socio-economic life of the people.

54. Formulation of such a regional plan will need evaluation of resources potential of each district before suggesting a definite programmes. However, detailed strategies for individual sectors would have to be prepared under the following broad measures:

- (a) In many sparsely populated areas like Arunachal Pradesh and Mizoram and Nagaland where food availability of people have a large meat content, we may have animal husbandry programmes with pasture and fodder development as primary measure of food supply and agriculture and horticulture might have to take up a supplementary role.
- (b) Tribal life depends on jhum which is gradually becoming more and more difficult to sustain. Diminishing returns from Jhum cultivation is forcing many jhumias to work as agricultural labourers in comparatively better off valley land. Thus development of settled agriculture in valley



lands supplemented by animal husbandry, horticulture and fisheries activities for generating employment for jhumia families and rural household as well as aiming at self sufficiency in food grain and attainment of nutritional requirement may be taken up on the pattern of watershed management projects. Programmes on the pattern of Command Areas Development could be developed for such valley lands.

- (c) A massive programme of afforestation is necessary not only for providing dependable wage employment and development of village forests but also for preservation of environment, vegetation cover and maintenance of ecological balance.
- (d) Rapid modernisation of agriculture and its commercialisation in the valley lands which will lead to absorption of a much larger number of people in agricultural activities and enable diversification of traditional agricultural economy.
- (e) Development of agro and forest based industries in medium and small towns as also in the rural areas on the fringes of forests and in areas where a particular fruit/commercial crop is grown in a concentrated manner.
- (f) Irrigation in terms of potential to be exploited has a major role. It has a strong potential for raising food production, but it generally is very demanding in labour inputs. It also requires skilled & trained agricultural

practices. For these reasons it has to be selectively taken up in areas where labour availability and training in agricultural practices create favourable atmosphere for its success.

(g) Establishment of mini-growth centres for providing assistance and infrastructural facilities for development of agricultural/industrial base in the region. A programme for local entrepreneurship will also be part of such centres. In rural areas the centre should be planned for (i) development of animal husbandry (ii) horticultural and plant protection <sup>2</sup> advice (iii) fertilizers and other inputs (iv) credit facilities (v) market facilities (vi) purchase, hiring and repair of agricultural implements (vii) training (viii) development of handicraft. Centres in Urban areas may be planned similarly to develop small scale industries.

(h) Development of feeder road connecting remote villages for bringing economic integration and providing movement of inputs. Feeder roads must go through the valleys which are the most potential areas rather than just connect administrative centres located at hill tops.

55 Action on above mentioned programmes will have to be taken at district level to bring about decentralisation in planning process. However, planning for major and medium projects for irrigation, power generation, industries and transport network at central/State/regional level would be necessary. Keeping in view the current status, regional resources and above guidelines specific strategies for individual sectors are outlined in chapter IV.

FIRST APPROXIMATE F.N.E. REGION  
SIXTH PLAN SIZE

Financial requirement for all priority sectors can be determined by preparing and solving a quantitative inter sectoral, intertemporal model which can treat both supply and demand and their interactions between sectors and time. Such a model needs a large amount of data on resource potential, propensity to consume, capacity utilisation factor and incremental capital - value added ratio for working out the effective supply sector vis-a-vis regional demand and surplus. In the absence of such a data base, an attempt to estimate the total financial resources required for the NE Region for important core sectors viz. food requirement, rural health, elementary educations, water supply, roads, inland - water transport, railways, postal services and communication has been attempted. For making such estimates mainly two methods have been used. In cases where components of physical targets (e.g. in case of education details of additional enrolment and requirement of teachers, class rooms etc. can be worked out) along with per unit cost of components are available, a direct attempt to estimate the financial requirement has been made. Such an approach was possible for all sectors except for foodgrains and forest sector. In the absence of such data, an indirect estimate for remaining two sectors have been worked out on the basis of "plan outlay/output" ratio derived from Sixth Five Year Plans of constituent units. While obtaining this ratio although information on physical output achieved (anticipated) during the Sixth Plan is available in plan documents/Adviser(SP) report an Annual Plan discussion, anticipated outlay only is available for total of the sub-sector. Such estimate, thus, on one hand may be on higher side because of including total outlay for sub-sectors, but also, on other hand may be on lower side too as no efforts have been made to adjust the price level. Obviously the estimates so obtained will include both recurring as well as non-recurring costs. data base for estimation of cost is given in different tables at the end of this Annexure.

Food requirement:

On the basis of per capita consumption norms (NCAER), estimated population and anticipated production (State/UT annual plan 1984-85), the region would require to generate an additional capacity of 1705(000) tonnes production of food grains. Taking the 6th Plan outlay in NER Region on Crop husbandry, Soil & Water conservation and land reform per 000 tonnes of additional foodgrains produced as the direct cost and similarly outlay on irrigation and flood control as indirect cost for production of additional foodgrains, the estimated financial resources required for creating additional capacity of 1705(000) tonnes have been worked out in two alternatives. In the first alternative each unit will create capacity required by them. Alternative II assumes that 30 percent of the State/UTs will only be generated in own State/UTs where plan outlay(000) tonnes is higher. Rest of the requirement of the region would be generated in Assam and to some extent Tripura and Manipur where cost of production is lower. Estimated financial resources for these two alternatives works out to Rs. 352 crores and Rs. 441 crores respectively. Such an estimate assumes (a) average cost of plan outlay is at mid-6th Plan period prices and need upward revision and (b) the crop husbandry and other items which have been taken include apart from food grains production other activities like development of horticulture etc. Alternative II takes into account advantageous factor endowments of Assam. However Alternative I has been used for estimation of overall fund requirements. Since Assam may find it difficult to produce foodgrains for attaining self sufficiency for the region in such a short span of time.

Rural Health:

The national health plan envisages a network of PHC and subcentres for whole of the country (rural areas) for meeting basic health requirements. Norms for such a setup have been given as one PHC for every 90,000 population in tribal areas and for every 60,000 population in non-tribal areas. Similarly one sub-centre for every 3000 population in tribal areas and for every 5000 population in non-tribal areas have been proposed. Taking into account tribal and non-tribal population and cost of PHC and sub-centre as Rs. 19 lakhs and Rs. 0.90 lakhs, the total requirement of resources for the region works out to Rs. 131.00 crores. This does not take

into account requirement for higher level health services, which has its own priority.

#### Elementary Education:

The average literacy level in the North Eastern States with the exception of Assam and Arunachal Pradesh is higher than the national average. Considering that literacy in Mizoram is 59.5%, Manipur 41.9%, Tripura 41.5% and Nagaland 41.9%, all above the National average, one may tend to think that the programme for removal of illiteracy may not appear to be of high priority or relevant to North Eastern State. Such a view, however, would stem from assumptions which may appear to be too simplistic by not taking into account the quality of education, the wastage and disproportionate entry into next higher stages of education. Similarly so far as the spread of an elementary education in the age group of 6-14 years is considered, NE States/UTs appears to have achieved the 6th Plan objectives for 90% for enrolment in respect of classes 1-5 and 50% for classes 6-8. But considering the wastage rates particularly in classes 1-5 in Meghalaya (83.4%) Arunachal Pradesh (82.4%), Mizoram (68.3%) and all the other States which have dropped out ratios about 70% against the All India average of 63.6%, utmost priority for improving quality of the programme is required. The school infrastructure in most of the States/UTs is found to be largely inadequate. For achieving the enrolment norms at higher level and reducing drop out ratio in primary schools it will be necessary to create additional school - infrastructural facilities and provisions of text books etc. To assess the financial resources for this activity, estimate of school going population in the age group of 6 to 11 years has been worked out on the basis of proportion obtained from 1981 census and estimated population in 1997. Further, by adopting even existing norms of student per teacher, Rs.30,000 as cost of construction of one class room (30'x10') and Rs.50 per student as cost of books, the estimated additional requirement of funds works out to Rs.250 crores.

#### Water Supply:

Estimated requirement of funds for providing water

supply have been worked out by the Ministry of Works and Housing as Rs.684 crores for the decade 1981-1990 for the NE Region. Certain funds against this total requirement have already been made available during the Sixth Five Year Plan and the balance of Rs. 77 crores would be required for the Seventh Plan. Rs 483

#### Forest Cover:

The requirement of maintaining forest cover can be broadly divided into two groups, viz., to cover up the present rate of depletion to maintain status quo and raising the cover to achieve the national norms of 60%. While in case of first group, data is available to know the present depletion rate from the Summary Report brought out by NRSA for NE Region on the basis of satellite imageries. The estimated present average rate of depletion for the NE Region is 2148 Sq. Km. per year. The estimated requirement of funds for this activity works out to Rs.595 crores.

In case of second group, the NRSA data reveals that the present forest cover is about 48 percent in 1982. Raising this level of forest cover to the norms for hill areas be 60 percent is a very ambitious programme accounting for Rs.2700 crore. Before recommending any action on this part of the programme detailed consideration would have to be made including the question of deriving some appropriate norms for Assam which has a big valley area surrounded by hills.

#### Transport:

Important systems of transportation in North East are road, rail and water. These systems have to be viewed both with respect to their adequacy in linking the region with rest of the country and opening up the region itself for inter-regional flow of traffic and goods; Water transport also has some potentialities but its development is constrained not only because of the nature of the river but also due to the partition of the country which not only comes in the way of developing it further. Each system is discussed below :-

### Roads

As regards the road transportation system, the density of roads in terms of road length per sq.km has been indicated elsewhere. It is, however, emphasised that it is not only to achieve statistical averages in terms of surfaced/unsurfaced roads. What is more important is whether all the major industrial centres and Districts have been connected by either National or State Highways of the standard specifications. In other words, whether these places have been brought on the roads grid of the state and the area.

The total road length in the region works out to R.100691 Km. against the requirement of the region of 124436 Km if we adopt the national average of 48.79 km. road per 100 Sq.km. It is proposed that to meet this basic necessities in all the constituent units so that they all achieve this National average by the end of 7th Plan. The state of Tripura and Assam are already above the National average and no separate addition in these two States have been proposed in this exercise. For Arunachal Pradesh, the requirement of additional length of the roads on the basis of National average works out to 27660 Km which cannot be achieved in one plan period and therefore, it has been assumed to add 13000 Km. in the 7th Plan and the remaining under the 8th Plan. Based on this approach, an outlay of R.2662 crores will be required during the 7th Plan.

### Railways

Two aspects have been covered while considering development of railways. Firstly, the Working Group set up by Railway Reforms Committee for development of NE Railways in the NE Region has suggested opening of twenty out - agencies in the region. The cost, for subsidising the total operation, has been worked out by the Group on the basis of freight rates of road transport operators, scheduled telescopic freight structure of railways and estimated inward and outward traffic. Subsidy cost for covering this aspects works out to R.150 crores for the whole Seventh Plan. Secondly, the Working Group would like to give high priority to con-

struction activity of railway in the region consisting of (a) completion of on going project (estimated spill over cost Rs.72.5 crores) and (b) construction of Lanka Silchar BG route (completion of 40% of the work in the 7th Plan), Broadguage from Gauhati to Dibrugarh (completion of 50% work in 7th plan) and of the work connected with Jogiqopa Bridge (completion of 60 percent work in 7th Plan). The estimated requirement of these three works would require Rs.420 crores in the 7th five year plan so that these projects which are of vital interest to the region may be completed in two plan period. The Group would also recommend for a lump sum provision of Rs.100 crores for taking up new schemes.

Thus the estimated total requirement for development of railway system in the region would amount to Rs.742 crores on priority projects.

#### Inland Water Transport

A group was set up by Ministry of Transport and Shipping to study traffic potential and economic viability of river services on Brahmaputra. This Working Group would like to support findings of the Study Group and proposal made for Rs.291 crores investment on development of IWT in the region.

#### Postal Services:

An Extra Departmental Branch Post Office is supposed to open in a normal rural area to serve a population of 2,000 provided that (a) the distance separating the proposed office and the nearest existing post office is not less than three kilometers and (b) the income expected to be generated by the proposed office is equal to at least 25% of the anticipated cost. In wholly or predominantly tribal areas, these standards are relaxed to a 1000 population and 10% of the anticipated cost, other conditions remaining unchanged. A minimum of two Extra Departmental Agents would be needed to man an Extra Departmental Branch



Post Office; in several cases, three would be required. At present each Extra Departmental Agent (Branch Post-Master, Delivery Agent and Mail Carrier) is paid a minimum of Rs.175.00 per mensem. The cost of the manpower alone would thus come to Rs.350.00 P.M. or in case three EDAs are employed to Rs.525.00 per month per post office. Further, each post office is granted charges at fixed rates which work out to nearly Rs.26.00 per month. Thus, one Extra Departmental Branch post office would cost approximately Rs.551 per month. The total cost of opening of 6,039 post offices in the region would work out to roughly Rs.22,70,664.00 per month. As against this irreducible expenditure, it would naturally be expected that 228 post offices in normal rural areas (almost wholly in Assam) and 5811 post offices in hilly/tribal areas (mostly in the remaining States/UTs except Tripura) should collectively generate an income of Rs.21,432.00 and Rs.218,993.60 per month, respectively. The net cost for opening 6039 post offices on this basis works out to Rs.19 crores.

SUMMARY OF ESTIMATED FUND REQUIREMENTS FOR NE REGION'S DEVELOPMENT

I. National Plan as NE Region Plan :

Sixth Plan	Rs. Crores	Percent
1. Central Sector	47250	48.46
2. State/UT Sector	50250	51.53
2.1 NE Region in State/UT Plan.	2727	5.43
3. Total Public Sector outlay.	97500	

Proposed size of 7th Plan - Public Sector Outlay 180,000 Crores.

Estimated Share (using 6th Plan ratio) in 7th Plan.

- Central Sector	-	Rs. 87228 crores.
- State/UT Sector	-	Rs. 92772 Crores.
- NE Region out of State/UT Plan.	-	Rs. 5038 crores.

II. Proposed size of NE Region Plan.

1. Foodgrain production	-	Rs. 442 crores.
2. Primary Education	-	Rs. 250 crores.
3. Rural Health	-	Rs. 132 crores.
4. Roads	-	Rs. 2652 crores.
5. Water supply	-	Rs. 483 crores.
6. Forest	-	Rs. 595 crores.
		<u>Rs. 4564 crores.</u>

Share of these sub-sector in 6th Plan = 40%

Estimate for remaining 60% taking growth of six core sector. Rs. 6846 crores

Size of 7th Plan for NE Region : Rs. 11410 crores (12.30 percent of State/UT share).

III. Proposal for special allocation in Central Plan.

1. Railway	-	Rs. 742 crores.
2. IWT	-	Rs. 291 crores.
3. Post offices	-	Rs. 19 crores.
4. Telecom Services	-	Rs. 336 crores.

Total: Rs. 1388 crores.

SOURCE : 1. Sixth Five Year Plan 1980-85, Planning Commission.  
2. Approach for 7th Plan, Planning Commission.

TABLES SHOWING DETAILS OF  
CALCULATION

TABLE A.1  
PRODUCTION OF FOODGRAINS IN NER

State/UT	(000 tonnes)		
	Total Food Grains Produced		Addl. Production during 6th Plan
	1979-80	1984-85	
1. Arunachal Pradesh.	122.57	173.00	50.43
2. Assam.	2014.04	3288.55	1274.51
3. Meghalaya	140.69	182.00	41.31
4. Manipur	300.00	458.00	158.00
5. Mizoram	31.30	71.50	40.20
6. Nagaland	79.30	175.04	95.74
7. Tripura	312.03	490.00	177.97
Total NER.	2999.93	4838.09	1838.16

Source : Report of the Adviser(SP), Planning Commission on the Annual Plan 1984-85.

TABLE-A.2

## DIRECT AND INDIRECT PLAN OUTLAY ON ITEMS RELATED TO FOODGRAIN PRODUCTION IN SIXTH PLAN

(Rs. in lakhs)

	Assam	West Bengal	Madhya Pradesh	Uttar Pradesh	Mizoram	Nagaland	Tripura	Total
1. Crop husbandry	4630.78	958.40	1058.00	953.00	961.59	830.00	1872.31	11264.08
2. Soil and Water Development.	876.16	705.37	665.00	939.00	523.00	585.00	866.51	5220.04
3. Land Reform	868.97	38.98	56.00	164.00	37.37	115.00	383.82	1604.14
Total Agric and Allied Activities.	6375.91	1762.75	1779.00	2056.00	1521.96	1530.00	3122.64	18148.26
	(5.0026)	(34.9544)	(11.2595)	(49.7700)	(37.8597)	(15.9808)	(17.5429)	(9.8731)
4. Medium Irrigation.	7025.84	146.56	3685.00	40.00	-	-	1735.18	12632.58
5. Minor Irrigation	8374.68	1570.30	775.00	630.00	221.87	1030.00	1351.23	13953.08
Total Irrigation	15400.52	1716.86	4460.00	670.00	221.87	1030.00	3086.41	26585.66
	(12.0835)	(34.3444)	(28.2278)	(16.2188)	(5.5192)	(10.7583)	(17.3394)	(14.4632)
6. Flood Control	2155.92	124.58	405.00	123.00	-	-	444.37	3252.87
	(1.6916)	(2.4704)	(2.5633)	(2.9775)			(2.4965)	(1.7696)
Total:	23932.35	3604.19	6644.00	2849.00	1743.83	2560.00	6653.42	47986.79
	(18.7177)	(71.4692)	(42.0506)	(68.9664)	(43.3789)	(26.7391)	(37.3788)	(26.1059)

Source : Same as A.1.

Note : Figure in bracket gives derived plan outlay per 1000 tonnes in Rs. lakhs.

TABLE-A.3

## ANTICIPATED REQUIREMENT OF FUND FOR ACHIEVING SELF SUFFICIENCY IN FOOD GRAIN

(Quantity 000 tonne ; cost-Rs.lakhs)

State/UT	Anticipated production 1984-85	Anticipated Requirement 1989-90	Additional requirement in 7th Plan.	Target for additional production.	Alternative-I					Alternative-II				
					Target	Target	AA	IR	FC	Total	Target	AA	IR	FC
Arunachal Pradesh.	173.00	213.00	40	50	50	1748	1702	124	3574	12	419	409	30	858
Assam	3288.55	4573.00	1285	1300	1300	6503	15709	2199	24411	1581	7909	19104	2674	29687
Manipur	458.00	397.00	(-) 61	120	120	1351	3387	308	5046	40	450	1129	103	1682
Meghalaya	182.00	293.00	111	50	50	2489	811	149	3449	12	597	195	36	828
Mizoram	71.50	139.00	67	40	40	1514	221	-	1735	10	379	55	-	434
Nagaland.	175.04	200.00	25	25	25	400	269	-	669	10	160	108	-	268
Tripura.	490.00	550.00	60	140	140	2456	2428	350	5234	40	702	694	100	1496
Total MER.	4838.09	6365.00	1527	1705	1705	16461	24527	3130	44118	1705	10616	21694	2943	35253

- Note :- (1) Targets have been fixed keeping in view additional requirement, additional production during 6th Plan and 2,00,000 tonnes for meeting hidden requirements.
- (2) Alternative I assumes total targeted foodgrain will be produced in each State/UT whereas in Alternative-II State/UT having larger cost of production have been given about 30% of the target fixed for State/UT. The balance requirement has been given to Assam where cost of production is lower.

TABLE E.1 : Additional Enrolment and number of teacher and Class room

State/ UT.	Proportion of school going popl to total pepl in 6- 11 years age group.	Estimated populat- ion in 1990(000)	Estimated school going po- pulation in 1990 (6-11 Yrs) (00 )	Likely Enrol- ment in Class I-V in the end of 7th Plan (00 )	Adl. In- rolment to be by 1-5 in the end of 7th Plan (00)	Propi- ed teach- er Pu- Ratio	Estimated Requie- ment of Teachers and Class room by the end of 7th Plan.
1	2	3	4	5	6	7	8
Arunachal Pradesh	0.115077	851	979	750	229	30	763
Assam	0.146244	27384	40047	23870	16177	39	41460
Manipur	0.129876	1866	2423	2190	263	38	745
Meghalaya	0.128248	1753	2248	2140	108	34	318
Mizoram	0.010959	736	81	870	-	33	-
Nagaland	0.104054	1196	1244	2140	-	21	-
Tripura	0.135319	2707	3663	3790	-	40	-
Total NFR	0.139152	35493	50685	35750	16797	-	43306

Financial Requirement

Five Year Cost  
(Rs. crore)

1. Teacher Salary @Rs.700/-P.M. $43306 \times 5 \times 700 \times 12$ 2	90.94
2. School Building @Rs.30,000/- per building = 43306 x 30,000	129.92
3. Funds for books etc. for additional Children. @ Rs.50/- per student = $1679700 \times 5 \times 50$ 2	21.00
4. Furniture and equipment @Rs.1000/- per class room. = 43306 x 1000	4.33
5. Improvement of teaching methods and training cost.	3.81
	<u>250.00</u>

Table-H.1

Rural and Tribal Population of the NE Region and requirement of PHCs & Sub-Centres.

(Rs. in lakhs)

	Estimated Rural Population.			Requirement of PHC			Requirement of Sub-Centre			Likely achievement upto 84-85	Balance to be covered in		
	Total	Tribal	Non-Tribal	Total	Tribal	Non-Tribal	Total	Tribal	Non-Tribal	PHC	Sub-Centre.	7th Plan PHC	Sub-Centre
-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-	-10-	-11-	-12-	-13-	-14-
Arunachal Pradesh.	7.97	5.11	2.86	31	26	5	228	170	58	45	-	-	228
Assam	5.74	30.44	215.30	512	153	359	5321	1015	4306	157	1380	355	3941
Manipur	3.65	4.07	9.58	37	21	16	328	136	192	35	275	2	53
Meghalaya.	14.37	12.61	1.76	66	63	3	456	420	36	31	230	35	225
Mizoram.	5.51	4.90	0.61	26	25	1	177	164	13	22	165	-	12
Nagaland.	10.10	9.11	0.99	48	46	2	324	304	20	23	130	25	194
Tripura.	24.12	7.30	16.97	66	37	29	586	246	340	31	180	35	406
<b>Total NER.</b>	<b>371.46</b>	<b>72.59</b>	<b>248.07</b>	<b>786</b>	<b>371</b>	<b>415</b>	<b>7420</b>	<b>2455</b>	<b>4965</b>	<b>344</b>	<b>2360</b>	<b>452</b>	<b>5059</b>

NOTE : In Arunachal Pradesh the health unit do not conform to the staffing pattern of PHC

Anticipated Costs

PHCs 452 - R. 85.88 Crores  
 5059 Sub-Centres R. 45.55 Crores  
 Total : R. 131.43 Crores.

- 55 -

TABLE R.1 FUND REQUIREMENTS FOR ATTAINMENT OF THE NATIONAL AVERAGE FOR EACH CONSTITUENT UNIT

Sl. No.	State/UT	Area in Sq.Km.	Existing		Total road length to bring national average (of 1981) in Km.	Road yet to be constructed for national average in Km.	Cost in Rs crores
			Length in Km.	Density Km/100sqkm			
1.	Arunachal Pradesh.	83,580	13,122	15.70	40,782	27,660 (13000 in VII Plan Rest in VIII Plan)	1040 for 13000 Km
2.	Assam	78,520	59,790	76.15	-	-	-
3.	Manipur	22,360	5,827	26.06	10,309	5,082	406
4.	Meghalaya	22,490	5,869	26.10	10,371	5,102	408
5.	Mizoram	21,090	1,989	9.43	10,291	8,302	664
6.	Nagaland	16,530	6,264	37.89	8,066	1,802	144
7.	Tripura	10,480	7,830	74.71	-	-	-
8.	NE Region	2,55,050	1,00,691	39.48		33,288 Km. during VII Plan	2662
9.	All India	32,87,500	16,04,110	48.79			

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0  
1



TABLE F.1 : Estimated Cost of afforestation in the Region.

State/UTs.	Anticipated achievements during Sixth Five Year Plan (1000 ha)				Sixth Plan Anticipated Outlay (Rs. lakhs)	Estimated cost	
	Plantation of quick growing species	Economic Farm and commercial plantation.	Foresty	Total		Rs. lakhs per 1000 ha.	Rs. lakhs per Sq. Km.
	2	3	4	5	6	7	8
1. Arunachal Pradesh.	5.21	13.49	1.18	14.88	1376.60	92.51	9.25
2. Assam	7.49	8.08	11.76	27.33	4134.42	151.28	15.13
3. Meghalaya	1.03	1.62	3.96	6.61	539.00	81.54	8.15
4. Mizoram	12.35	14.70	45.00	72.00	664.97	9.24	0.92
5. Nagaland	4.00	4.00	4.18	12.18	646.00	53.04	5.30
<b>TOTAL :</b>				133.00	7350.99	55.35	5.54

1  
1  
1

TABLE F.2 : Estimated Requirement for afforestation to replenish the loss in forest cover.

State/UT	Total Forest area in Square Km.		Rate of depletion per year (Sq.Km.)
	1972-75	1980-82	
1	2	3	4
1. Arunachal Pradesh	51438	52104	-
2. Assam	21055	19796	157.38
3. Manipur	15090	13572	109.75
4. Mizoram	13860	11971	236.13
5. Meghalaya	14390	12450	2.42
6. Nagaland	8154	8095	7.38
7. Tripura	6330	5138	149.00
<b>Total NER</b>	<b>140317</b>	<b>123134</b>	<b>2147.88</b>

Thus the forest cover lost during <sup>five year</sup> ~~the~~ period works out to be 107 40 sq.km. and taking the <sup>average</sup> cost of afforestation to be Rs.5.5 lakhs/Sq.Km, an investment of 595 crores would be required to make up this loss.

TABLE :F.3: Financial Requirement of bringing total region at 60% norms plus improvement of degraded area.

1. Total area of the region	= 255037 Sq. Km.
2. Required area to be under forest taking 60% norms	= 153022 Sq. Km.
3. Total Forest area in 1980-82	= 140317 Sq. km.
4. Area under closed forest	= 104449 Sq.Km.
∴ Afforestation plan for the region taking 60% norm	= 153022 - 104449 = 48573 Sq. Km.
5. Open/degraded forest to be restored	= 18730 Sq.Km.
6. New area to be covered	= 48573 - 18730
	= 29843 Sq.Km.
7. Financial requirement for covering 5 and 6	= 48573 x 5.54
	= Rs.2690.94 crores.

TABLE P.1 : No. of Post Offices required to achieve the All India Average (Statewise figure).

State/UT.	Total Area	Average area served (A.I.)	No. of P.O. reqd. in average
1. Assam	78520 Sq km +	22 Sq. km. =	3569
2. Meghalaya	22489 Sq.Km +	22 Sq. Km. =	1022
3. Arunachal Pradesh.	83743 Sq.Km.+	22 Sq. Km. =	3806
4. Manipur	22356 Sq.Km.+	22 Sq. Km. =	1016
5. Mizoram	21090 Sq.Km +	22 Sq. Km. =	958
6. Nagaland	16579 Sq.Km +	22 Sq. Km. =	753
7. Tripura	Average area served 17.03 Sq.Km. Additional P.O.s not necessary.		

TABLE P.1 (Continued)

State/UT	No. of P.O. reqd to get at par with A.I. Average	No. of P.O.s existing	No. of Addl.
1. Assam	3569	3341	228
2. Meghalaya	1022	432	590
3. Arunachal Pradesh	3806	238	3568
4. Manipur	1016	545	471
5. Mizoram	958	276	682
6. Nagaland	753	253	500
		611	

TABLE-P.2: Costing of EDBU,

Average cost of an ED employee	-	175.00
Cost for an EDBU with two posts	-	350.00
Cost for an EDBU with three posts	-	525.00
Maintenance charges etc.	-	
Fixed addition	-	2.00
Indirect overhead	-	2.00
Charges Maintenance allowance	-	20.00
Contingency	-	2.00
		26.00 p.m.

Total :-

Cost of an EDBU with 2 posts	-	350.00
	+	26.00
		376.00 p.m.
Total cost of an EDBU with 3 posts		525.00
		26.00
		551.00

Table P-3 : Requirement of funds for EDBUs

State/UT	No. of addl. PDs required	Average monthly cost.	Average annual cost
Assam	529	x 551.00	x 12 = 15,07,536.00
Meghalaya	590	x 551.00	x 12 = 39,01,080.00
Arunachal Pradesh	3560	x 551.00	x 12 = 235,91,616.00
Manipur	471	x 551.00	x 12 = 31,14,252.00
Mizoram	682	x 551.00	x 12 = 45,09,584.00
Nagaland	500	x 551.00	x 12 = 33,06,000.00
			TOTAL: 3,39,29,868.00

∴ Average annual cost for total plan period = P.10.97 crores.

Income generation in total plan = P.1.44 crores.

Net requirement for 7th Plan = P.18.53 crores.

TABLE-T.1 : Existing Telecommunication facilities in the Region.

	All India	Assam	Arunachal Pradesh	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	Total (NE Region)
1) Direct lines Average/1000 Population	2,66,240 4.05	24,810 1.6	1424 2.2	2391 1.7	4669 3.5	992 2.0	3027 4.0	3035 1.5	40,349 1.8
2) Teleg. Office (including COs) Average/100000 Population.	34,080 5.2	406 2.6	26 4.0	37 2.6	61 4.6	9 1.8	26 3.4	76 3.8	641 2.8
3) LDPCC's Average/100000 Population.	19,627 3.0	276 1.8	18 2.9	36 2.5	51 3.8	9 2.0	21 2.8	45 2.2	464 2.0
4) Telex Capacity Average/100000 Population.	33,585 5.1	310 2.0	- -	20 1.4	50 3.7	. -	. -	20 1.0	400 1.8

During the 7th Plan following additions have been proposed.

- 1) Direct Exchange Lines - 39,309 lines, raising the total 79,657 and raising our average 1.8/1000 to 3.6/1000 population which will be quite near to all India average of 4.0/1000 population.
- 2) Telegraph Offices - 50 rural telegraph offices will be worked through Satellite media giving a better and more reliable and quick services.
- 3) LDPCC's - i) 560 LDPCCs will now be worked under MARR (Multi access radio Relay) system catering to all block and Tehsil headquarters which are not having telecom facilities at present. Apart from these 192 single channel V.H.F. stations will replace the existing C/H PCCs giving better and reliable services.  
ii) Nearly 300 L/D PCCs will be opened in II phase under 5 Km. Hexagonal scheme to provide telecom facilities to remote area with a radius of 5 Km as per policy.
- 4) Telex capacity - It is proposed to open 7 new Telex exchanges and expanding the capacity by 400 lines more. With this addition every State Capital of N.E. will have a telex exchange and the average of N.E. will become double.

1  
X  
5  
1

TABLE : W. 1

Estimates of Capital Cost and Fund available -  
VI Five Year Plan/Decade Programme

( Rs. in crores )

States/Union Territory	<u>Fund available during VI Plan</u>			<u>Capital Cost for Decade Programme (estimated)</u>		
	<u>Water Supply</u>			<u>Water Supply</u>		
	<u>Urban</u>	<u>Rural</u>	<u>Total</u>	<u>Urban</u>	<u>Rural</u>	<u>Total</u>
1. Assam	14.45	61.15*	75.60	32.49	342.34	424.83
2. Manipur	6.60	20.10	26.70	17.98	38.10	56.08
3. Meghalaya	22.25	20.50	42.79	29.54	49.15	78.79
4. Nagaland	4.50	11.55	16.05	14.42	15.53	29.95
5. Tripura	4.22	12.00	16.22	10.94	29.17	40.11
6. Arunachal Pradesh	-	12.77	12.77	0.90	15.02	15.92
7. Mizoram	3.93	6.70	10.63	2.88	35.18	38.06
<b>TOTAL :</b>	<b>55.95</b>	<b>144.77</b>	<b>200.76</b>	<b>159.25</b>	<b>524.49</b>	<b>683.74</b>

SOURCE : Assistant Adviser (PHE), Ministry of Works & Housing,  
New Delhi.

\*Includes Central assistance programmes.

CHAPTER - IV

DETAILED STRATEGIES AND PROGRAMME IN THE IDENTIFIED SECTORS OF DEVELOPMENT

The current Status of the economic development in the North Eastern Region, the shortcomings/lacunae in respect of development schemes and general strategy for development have been discussed in Chapter-I to III of the Report. Although in defining the strategies for development of the region in different sectors the overall requirements of the region are kept in view, it is not always possible to give definite programmes which can be taken up in different sectors. However, based on the background paper and material available from different sources including Central Ministries, the Working Group would like to suggest the following detailed strategies and programmes for some of the identified sectors which might be considered for incorporation in the Seventh Five Year Plan of the North Eastern Council, States/UTs and Central Ministries.

The chapter has been divided into eighteen sections as given below :

1. Agriculture & Allied Sectors.
2. Environmental Protection and Eco-Development.
3. Forestry.
4. Power and Renewable Resources.
5. Flood Control.
6. Minerals & Mining.
7. Industries.
8. Small Scale Industries.
9. Sericulture.
10. Transport.
11. Communications.
12. Manpower Development.
13. Health.
14. Banking Facilities.
15. Urban Development & Migration.
16. Education.
17. Civil Supplies.
18. Science & Technology.

Summary of the main recommendations of these sections is given in Chapter - VI.

CHAPTER IV. 1  
AGRICULTURE & ALLIED SECTOR

A. AGRICULTURE

1. For suggesting a development strategy in the agriculture and allied sector during the Seventh Plan a brief survey of the present status of the sector in the North Eastern Region is necessary. The system of agriculture in the region has been predominantly traditional. The situation is further aggravated by the prevalence of the shifting pattern of cultivation in the hill areas. Although the overall land : man ratio is relatively high in this region, the average size of holding is quite small. It ranges from 0.5 - 2.00 ha with more than 50% holdings being of the size of less than 1 ha. This is because about 2/3 of the total geographical area of the region is hilly. More than 70% of the farmers in the region belong to the small and marginal category. According to a study conducted by the Agro-Economic Research Centre, Jorhat, small holdings in Assam increased by 50% in a period of 7 years.

2. If the yield rate of crops is any indicator of agricultural growth, the growth in the NE Region would appear to be sluggish. The table below indicates the average yield rate of certain major crops in this region :

Table-I

State/ UT	Average Yield rate (in Kgs) per ha				
	Rice	Wheat	Maize	Jute	Potato
Assam	1,109	1,158	593	1,463	5,859
Arunachal Pradesh	1,182	-	1,133	-	-
Manipur	1,448	-	1,798	-	-
Meghalaya	1,389	-	809	1,228	6,994
Mizoram	976	-	-	-	-
Nagaland	900	-	682	-	5,442
Tripura	1,356	-	-	1,201	14,583
All India	1,338	1,649	1,137	1,245	13,113

Source :- Directorate of Economics & Statistics, Ministry of Agriculture.



3. It is true that the above figures for a single year may not project an accurate picture, but it is not possible to make an analysis of time series data as these are not available for all the units. It will be evident from the table that while in case of certain crops the yield rate is much lower than the all-India average, in cases of some others it is satisfactory. It is disquieting to note that Assam, which is relatively more advanced and an important agricultural area in the region, during the period 1950-51 and 1975-76, has recorded a mere 3% simple annual rate of growth in the matter of rice production. In Manipur Nagaland and Tripura, the average yield of rice during the period 1972-73 and 1978-79 recorded substantial increase while it is marginal in Arunachal Pradesh and Mizoram. The same study has indicated decline of the yield rate in Meghalaya.

4. Some of the factors responsible for slow agricultural growth are briefly discussed below. The small size of the operational holdings particularly in Assam, Manipur, Meghalaya and Tripura, need not act as disincentive for development of agriculture although it may not permit introduction of improved cultural practices based on large scale mechanisation. Following table will prove this point.

Table- 2  
Basic data relating to Agri. in NE India (1976-77)

State/UT	Average size of operational holdings ( in ha)	% of irrigated area to gross cropped area	Consumption of fertilisers per unit of gross cropped area
Assam	1.47	17.27	1.8
Arunachal Pradesh	6.19	18.45	-
Manipur	1.15	36.05	11.9
Mizoram	-	7.62	9.9
Nagaland	5.46	34.78	1.8
Tripura	1.01	7.72	2.2
Meghalaya	1.66	22.51	9.9
Total NE India	1.71	17.83	
All India	2.30	25.55	25.0

out of a cultivable area of 6.13 million hectares, the net sown area is only 3.30 million hectares and net irrigated area is as low as 0.80 million hectares.

5. Another major drawback of the region's agricultural system has been the low crop intensity. The following figures in respect of Assam will speak of the situation that obtains in the region :

Table - 3

(1)	( 1978-79 )		( Area in lakh ha )	
	Net area sown	area under double Cropping	Gross cropped area	Cropping Intensity
	(2)	(3)=(1)+(2)		(4)=(2)x100/1
	26.79	6.23	33.11	124%

6. The prevalence of shifting cultivation on a wide scale in the hill areas is another contributory factor towards agricultural backwardness. The table below gives an idea of the incidence of jhuming in the NE Region.

Table-4

State/UTs	Total Geographical area of the State/UT	Annual area under shifting cultivation	Fallow period (in years)	Minimum area under shifting cultivation one time or other
Arunachal Pradesh	33,580 Sq. km	700	3-10	2100
Assam	78,520 "	696	2-10	1392
Manipur	22,360 "	900	4-7	3600
Meghalaya	22,490 "	530	5-7	2650
Mizoram	21,090	630	3-4	1890
Nagaland	16,530	19	5-8	1913
Tripura	10,480	223	5-9	1115
<b>Total :</b>	<b>2,55,050</b>	<b>5865</b>		<b>14660</b>
<b>% of Total Area</b>		<b>1.5%</b>		<b>5.7%</b>

Source :- Task Force Report on shifting cultivation, Ministry of Agriculture (1983)

In recent years due to increase in population the Jhum cycle in most of the States of the region has shrunk to 3 to 7 years. The obvious result among other things has been low productivity.

7. Flood in some parts of the region, particularly in Assam, has been another factor adversely effecting development of agriculture. According to an estimate 2.47 lakh hectares of land are chronically flood prone in Assam. Besides damaging crops, it has stood in the way of better utilisation of irrigation potential.

8. There is also the problem of timely and adequate availability of seeds of high yielding variety. Although the area under HYV has marked increase during the period from 1973-74\* and 1980-81 - from 5.02 lakhs ha it has gone upto 9 lakhs ha - there does not seem to be proper arrangements to ensure the quality of seeds.

9. Finally the tradition and outlook of the farming community have also been somewhat responsible for the unsatisfactory rate of growth in this sector. The average farmer is still tradition bound and the concept of local consumption oriented agricultural operations are still prevalent over a wide area. Initiative of the average a farmer to take to new and modern techniques has, therefore, been lacking.

#### B. SHIFTING CULTIVATION & WATERSHED MANAGEMENT

10. According to available statistics, a total area of about 4693 Sq. Km. are jhumed every year in this region and a little over 4.43 lakh families practice jhum cultivation. Details are furnished in the following table :-

\* Basic Statistics of NE Region, 1982.

States/UTs	Annual area under shifting cultivation in Sq. Kms	Number of families practicing shifting cultivation
Arunachal Pradesh	700	54,000
Assam	696	58,000
Manipur	900	70,000
Meghalaya	530	52,290
Mizoram	630	50,000
Nagaland	1014	116,046
Tripura	223	43,000
<b>Total :</b>	<b>4693</b>	<b>443,336</b>

11. The above figures indicate the magnitude of the problem whose solution is important not only in the context of development of agriculture and the economic development of a large chunk of the region's population, but also in relation to maintenance and preservation of environment. Therefore, control and gradual replacement of this traditional system of agriculture assume great significance. While discussing the problem of jhuming and considering possible alternatives, it may be kept in mind that jhuming has been a way of life with the tribal people in the hills. They had taken to this system because of conditions of geography and social tradition. Any programme to wean away the jhumias from shifting cultivation and to replace jhuming by alternative methods will have to be imaginatively and carefully formulated and effectively implemented.

12. A modest beginning for jhum control in the region was made during the Third Five Year Plan. By the end of the Sixth plan, it is hoped, about 15,000 jhumia families under various State/UT Plans and NEC Plan will have been rehabilitated. This means that a little over 4.28 lakh families will still continue jhuming and a programme for their rehabilitation will have to be drawn up. It may be noted in this connection that the existing schemes for control of shifting cultivation and rehabilitation of jhumia families have three distinct aspects

viz. (a) rehabilitation of jhumia families ; (b) development of their economy; and (c) provision of high technology and capital investment. All these make the schemes very expensive and with the resource constraint, it becomes almost impossible to take up such schemes on a wider scale for larger coverage. In this context the programme of doing away with jhuming has to be pursued realistically. In the immediate future for bulk of the area improvement of production and productivity without necessarily doing away with jhuming has to be studied. Some experiment made support the conclusion that even within the present techniques of jhuming operation, there is scope for carrying out such improvements. Experts may develop necessary programmes based on this approach taking local soil, vegetation, rainfall, crop cycles, complementary programmes of animal husbandry, horticulture, pastures, fodder etc.

13. The Task Force on Shifting Cultivation has estimated package of measures for rehabilitation of jhuming family on the basis of investment pattern of Rs. 30,000/- per family, on an average. The nature of agricultural operations included in the package promises adequate and rising scope for improvement of the standard of living. However, this approach makes the programme considerably capital and technology intensive. For example, on this basis for rehabilitation of 4.28 lakh jhumia families during the time frame of 20 years, a target for rehabilitation of 21,400 families per year would emerge. This implies availability of resources of the order of Rs. 64.20 crores per year aggregating Rs. 1284 crores for 20 years. It is very doubtful if resources of this nature would be available.

14. Apart from the difficulty about obtaining resources, it is also not known whether the technology for the package of measures would not be much in advance of the present life styles of the communities. With all pressure for extension, community participation, etc. the limitation of number of trained workers and also of the delivery system of inputs has to be kept in mind. We have also to consider that an inadequate or halting programme may lead the communities in a state which is even worse than what they are having to undergo at present and would reduce the prospect of success of such measures in the

future. It is, therefore, for consideration whether a package of measures involving considerably less finance and less advanced level of inputs supply, including technology would not have better chances of success. Conceptually the process of rehabilitation of improvement have to be distinguished from that of development and in the former our efforts may be kept limited to providing a little higher standard of living than what the jhumming operation provide leaving it to a subsequent stage for further development of a conspicuous standard of living, for which, in the meantime, due to the success of the measures for rehabilitations and the creditability of the programmes participation by the community might be forthcoming to a greater measure. Experts may then have to devote themselves to evolving a package of measures which is of the order of Rs. 3,000/- to Rs. 10,000/- per family which would reduce the capital investment to about one third. More than the amount of resources to be committed to this programme the nature of the package of the measures would require local variation to be studied in detail and considerable refinement for adaptation and also for innovation.

15. The highest priority should be given for conservation of the natural resources such as land, water, biological resources etc. through appropriate measures. As jhumming is a complex problem it would be necessary to intensify the studies by various research organisations such as ICAR, North Eastern Hill University, Tribal Research Centre, National Institute of Rural Development etc. The models being developed by the ICAR research complex for the six agro-climatic zones identified in the region need careful adoption based on local situations of micro-watersheds. As jhumming will continue for some more years to come, possible improvements in the system of jhumming for more economic benefits and less damage to the eco-system also should be developed and popularised. The techniques to ensure full participation of the jhumming for the gradual change over to modern methods of agriculture should also be developed. The North Eastern Hill University emphasising the need for gradual change has observed that if the rights over land of the community are honoured, which is one of the basic distinguishing features of shifting cultivation, the physical resource-base for undertaking development programmes for these communities will be more than adequate. Though shifting cultivation has been accepted as the major problem in the tribal areas of the North East, the impact of various schemes being implemented are not

readily available. It is essential to evolve a suitable mechanism for evaluation and monitoring of the schemes being taken up in the region by various agencies. As a short-term programme improvement in the different crops grown should be effected with crops having different growth pattern to provide the fields continuous cover, and also which will provide organic matter and help in fixing nitrogen. Introduction of fast growing species suitable for the area also should be tried. Simple soil conservation measures like Puerto Rico system of terracing should also be popularised in the jhum fields. The best practices being followed by some of the jhumias and results of research on jhum practices should be popularised through intensive extension work.

#### Watershed Management

16. The programmes for shifting cultivators should be preceded by careful and detailed planning. Micro watershed units or a group of hillocks may be taken as a unit for detailed project formulation. It would be preferable if ethnically homogeneous habitats are taken for this purpose since it will help in meaningful communication, easier decision-making and effective implementation. A multi-disciplinary planning team should undertake quick and not necessarily too sophisticated project preparation for each micro area in close collaboration with the people, presenting systematically before them the various alternatives and sensitising them about the consequences of soil erosion and desertification which they are already facing or may be facing soon. The team may comprise experts from agriculture, horticulture, forestry and animal husbandry besides a social scientist. The project should envisage comprehensive planning including economic as well as social services. Thus instead of sectoral programme for increasing production by adopting irrigation, high yielding varieties of seeds, soil conservation measures and cropping programme, afforestation etc., a family oriented package of programme based on watershed approach may be implemented in an integrated manner. If the watershed approach, planning is done at the grass root level upwards and all available resources are studied for their well planned development for common good and for economic prosperity of the villages. Optimisation of production of food, fruit, fodder, fuel, timber and welfare of all living beings in the watershed along with prevention/degradation of land or waste of water are the cardinal principles considered under this programme.

C. IRRIGATION :

17. As maximum yield is obtained in case of winter crops, for which irrigation facilities would be required, more attention has to be paid on development of irrigation. The net irrigated area as per CUC, as in 1978-79 was approx 8 Lakh hectare out of which 3.92 Lakh hectares was reported to be from major/medium or minor irrigation projects as under :-

- (i) Under Minor irrigation - 2.08 Lakh ha.
- (ii) Under Medium and Major irrigation - 1.84 Lakh ha.

It, therefore, means that a potential of 32.89 lakh ha. is still to be developed. This is a big gap and only part of it can be removed during the VII Plan. It has been seen from the Plan documents of Assam that only 1.12 lakh ha. is likely to be brought under irrigation during the Sixth Plan period. Capacity of other smaller Constituent units will be much less. In view of this it is suggested that an additional area of at least 2.0 lakh ha. in Assam and 1.00 lakh ha. in other six States/UTs, should be brought under irrigation in the region during the Seventh Plan. Considering the constraints in the development of irrigation greater thrust needs to be given to the following :

- (a) Setting up of a separate organisation for development of irrigation in Arunachal Pradesh, Meghalaya, Nagaland and Mizoram and strengthening of the Irrigation Departments in Manipur and Tripura;
- (b) In those States/Union Territories where small areas are likely to be benefited by minor surface/ground water schemes, it would be advisable to formulate integrated development schemes by combining watershed management, power generation, animal husbandry, irrigation and agriculture;
- (c) higher priority needs to be given to surveys, investigations and planning and designs of new medium and minor irrigation schemes atleast in



the first two to three years of the Seventh Plan, so that adequate number of well-planned and technically sound schemes are available for implementation during the Seventh Plan and beyond ;

- (d) since the areas to be benefited by small surface water schemes are invariably in the valleys and foot hills, and likely to be out of command by gravity flow, it will be desirable to install micro-hydropower plants wherever feasible to take benefit of the head available. This will provide power to lift water for irrigation of high lands. Wherever possible, such schemes could be grouped to provide a grid for power distribution;
- (e) at present irrigation schemes benefit, less than 2000 ha. are treated as minor. Since most of the schemes in North Eastern Region are small in nature, they usually fall in categories of minor schemes. They do not, therefore, qualify for technical assistance of Central Water Commission, though technically they are equally challenging and costly. The North Eastern States, therefore, get deprived of the latest technological assistance from Central Water Commission. It is, therefore, recommended that for the NE Region such minor schemes may also be eligible for technical assistance of Central Water Commission or alternatively NEC which should be suitably equipped for this purpose.
- (f) a special unit for coordination and monitoring of irrigation projects needs to be created at the regional level and it may be attached to NEC Secretariat. This unit could also keep liaison with Central organisations and national institutions for arranging training, seminars, workshops, etc. to train the personnel in investigation, planning, design, construction and management of irrigation schemes;

- (g) to ensure speedy utilisation of created irrigation potential as well as better water management, command area development programme should be expected to the command areas as group of minor irrigation schemes, in addition to larger and medium projects already constructed (like Loktak projects in Manipur, Mahanadi barrage project in Tripura and Dhansiri project in Assam).
- (h) assessment and development of ground water resources in the river valleys and foot hills should be given priority because the benefits from such schemes can be realised without time lag.

D. HORTICULTURE :

18. The North Eastern Region with unique diversity of agroclimatic conditions, altitudinal variations and well distributed rainfall grows a variety of fruits and vegetables. According to a study conducted by the National Productivity Council, about 71 thousand hectares are under cultivation of fruits with an annual production of 6.34 tonnes. The annual average production of a few important horticultural produce of the region is indicated in the table below : -

Table - 5

Produce	Average annual production (in tonnes)	Percentage of Marketable surplus
Pineapple	8256	90%
Orange	164953	90.8
Ginger	32429	95
Potato	358.4	n.a.

Source :- Study of Marketing of Horticultural Products in NE Region, National Productivity Council.

19. According to a survey conducted by CFTRI in 1977-78 the North Eastern Region produces 4.12 lakh tonnes of vegetables and 9,000 tonnes of chillies. The productivity

rate of most of the horticultural produce has been rather low. The average yield of pineapple per hectare is only about 8 tonnes which is mainly due to the prevailing primitive planting system. In case of citrus, there has been rapid decline in productivity, particularly in parts of Meghalaya, Assam and Tripura. According to an ICAR study the reason for such decline are general neglect, undesirable inter-cropping, improper spacing and infection. In the case of potato also, although the yield rate has increased substantially during the five year period from 1973-78, it has been still far below the all India level. As against the all-India average yield of 12812 Kg per hectare, the average yield rate in the North Eastern Region is only about 5900 Kg.

20. The NPC survey report identifies few basic problems in regard to development of horticulture in the region. These include (i) absence of marketing network and marketing intelligence, (ii) absence of sales promotion activity, (iii) absence of sufficient domestic market and (iv) inadequate storage facilities. Although the upper ridges of the hill areas of this region provide scope for cultivation of a number of cash crops and nut fruits, very little has so far been done for promotion of these crops.

21. Processing of horticultural produce is one of the effective measures for growth of horticulture. This is more true in relation to the North Eastern Region. However, the present status of the Fruit Processing units in the region - there are about 30 such units - is not encouraging. The capacity utilisation in respect of almost all the units is very low, management and quality control arrangement weak and marketing facilities inadequate. Naturally these units have not been able to make much impact on the development of horticulture.

#### E. ANIMAL HUSBANDRY :

22. Commenting on the potential for development of animal husbandry in the NE Region, the National Commission of Agriculture observed :

" In view of the traditional dependence of rural tribal population on livestock for their well-being, large consumption potential, absence of any sentiments regarding slaughter that help in culling and elimination of below standard stock, readiness to adopt improved methods, resources available by way of feeds, fodder and grasses, the region has immense potentialities for rapid development in livestock production."

23. In terms of number, the livestock population of the region is indeed large and accounts for animal husbandry occupying an important place in the economy of this region. As against the all-India average of 29 cattle per 100 people the region is having 36 cattle for 100 people. The average number of pigs per hundred people in the region is 53 as against the all-India average of 1. Even in Assam and Tripura, where the number is relatively less, it is nearly double per hundred people is 24 whereas in Arunachal Pradesh it is 195 birds, followed by Mizoram with 272 birds and Nagaland with 119 birds, Assam, Meghalaya, Manipur and Tripura with 58, 89, 211 and 35 respectively. Thus, in numerical strength, the livestock population average is much higher than the all-India average.

24. The picture in regard to production is not, however, quite satisfactory. With 80.65 lakh heads of Cattle and Buffalo the production of milk (in 1976-77) in the region was only about 5.39 lakh tonnes. Similarly, production of eggs in the same period was 382.30 million although the total number of poultry birds and ducks was as high as 165.18 lakh. The problem is one of management. In the absence of scientific and modern system of rearing the productivity rate has not registered any significant increase although the potential exists.

25. Health care of the livestock population has improved only marginally over the last two Plan periods. But the coverage is still below the required level. For such a large livestock population the existing medical cover facilities in the region, particularly in the context of widely dispersed population and difficult terrain with underdeveloped communi-

ation, is not adequate. An idea of the institutional facilities which exist on the ground can be had from the following table :

Table - 6

State/UT	No. of vet. Hospitals/ Dispensaries Mobile Dispensaries.	No. of Vet. Aid Centres.
Assam	293	314
Manipur	83	NA
Meghalaya	51	70
Nagaland	70	45
Tripura	33	302
Arunachal Pradesh	69	26
<u>Mizoram</u>	18	

Source :- State Governments and Union Territories

26. Because of favourable agro-climatic conditions, this region has plenty of natural forage consisting of perennial and annual plants, trees, bush and grass. Although ICAR has identified a number of local perennial and annual grasses which regenerate even after frequent fire and grazing not much work in the field has been done to propagate these fodder crops. Besides, there is vast potentiality of agricultural by-products in the region which has not been fully tapped. Paddy straw contains 39% digestible nutrient and the estimated production of paddy straw in the region is 6383 thousand tonnes. The harvesting pattern, does not leave scope to fully utilise this.

#### F. FISHERY :

27. Fish is an important protein supplement in the average diet of the people in Assam, Manipur and Tripura and it is popular also among the people in hill areas. There is vast water area available for Fish culture as will be seen in the table below :

Table - 7

State/UT	Total cultivable water area available for fish farming.	Beel and ponds	( Hectares ) Area suitable for camp site fish farming.
Arunachal Pradesh	7100	2500	800
Assam	1,65000	1,42000	8,500
Manipur	19868	16500	1,170
Meghalaya	3475	213	567
Mizoram	400	NA	400
Nagaland	3500	NA	280
Tripura	9274	500	4,474
<b>Total</b>	<b>208617</b>	<b>161713</b>	<b>16,191</b>

Source :- Basic Statistics of NE Region, 1982.

The climatic conditions are also suitable for large scale pisciculture.

28. However, there are a number of constraints in regard to fishery development. The variable climate and altitude within the same State necessitates adoption of different technologies for different areas. Secondly, the socio-economic condition of the people makes it difficult for introduction of modern technology and practice of commercial fish farming. Due to high rainfall and annual occurrence of flood comprehensive water area in the plains suitable for pisciculture is left un-utilised. Scientific methods of fish farming has developed only on a very limited scale. No comprehensive programme for utilisation of substantially large water area for development of fish has been taken up in the state sector mainly due to paucity of fund. Finally, the Fisheries Department in the constituent units are in a badly neglected state and are weak in terms of number of staff as well as expertise.

29. It is, therefore, but natural that pisciculture in the region has been lagging behind. For instance, in Assam with a total river length of about 4500 Kms and 1.42 lakh of water area provided by beels and ponds, the average annual

fish production is only 42,000 tonnes. As against this, the state's requirement is estimated at more than 80,000 tonnes per year. Similarly, in Manipur out of a total of 16500 ha ~~of~~ of beel and lake water area, only 3700 ha have been put under fish culture. The State's annual fish production is estimated at 4000 tonnes as against the annual requirement of about 10,000 tonnes.

#### G. MARKETING AND STORAGE :

30. Agricultural Marketing has not really developed and the required base and infrastructural facilities for organised marketing and storage have not developed. In the remote hilly areas agricultural marketing is still in a rudimentary stage. There are only 183 assembling markets and 5 principal markets in the centre region. While in Assam, there is a market for every 9,000 ha. area; in other units, it is available for an area ranging between 35,000 to 50,000 ha. Except Assam, the other State/UT Govt. have not so far availed of the assistance under the Central Scheme for development of selected regulated markets in backward areas. Financial assistance under the scheme for development of rural, primary and secondary markets also have not flown into this region on any appreciable scale. Road linkages between the villages and the primary markets are hopelessly poor, as a result of which between 48 to 70% of the total arrivals in primary markets are carried on head by the producers. Storage facilities in the rural areas and in the primary markets are either totally absent or are extremely inadequate. The region has only 7 cold storages with a total capacity of 6453 tonnes. Till 1979, about 450 rural godowns were constructed in the cooperative sector. The storage capacity built up by FCI (3.25 lakh tonnes) is not enough even to meet the Corporation's requirement. In the absence of a adequate and proper storage facilities, the post-harvest loss of foodgrains has been considerable—the percentage of loss of foodgrains in the region is reported to be higher than the estimated national average of 6.58%. In regard to marketing of fruits, the spoilage on transportation, which varies between 35 to 51%, has been a big constraint. Although CIFTRI has, after undertaking necessary trials, suggested appropriate methods of transportation to reduce the spoilage percentage, these have not been tried on wide scale.

STRATEGY FOR SEVENTH PLAN

31. A basic fact that has to be noted initially is that in spite of the region being predominantly rural and agricultural, with an economy which is almost totally agrarian, it has been a deficit zone both in regard to food crops as well as most other agricultural products. The mere fact that for a population of 255 lakhs of whom nearly 77.28% directly or indirectly depend on agriculture, as much as 10 lakh tonnes (this is the figure for 1983-84) of food grains have to be brought in from outside annually speaks of the grossly anomalous situation that obtains in the field of agriculture in this region. It also underscores the imperative need to develop agriculture with the primary object of making the region generally self-sufficient. This would have the national exchequer a staggering sum-taking the average cost transportation and subsidy on foodgrains supplied through the PDS roughly Rs. 500.00 per tonne, it makes a total of Rs. 50 crores per year. In such a situation and keeping in view resource endowments substantially high investment in the sector will be justified in the Seventh Plan.

32. Secondly, the region's anticipated requirement of foodgrains by the end of 1990 will be of the order of 62.67 lakh tonnes. This figure has been worked out on the basis of estimated population of 36.40 million by the terminal year of the Seventh Plan. Any strategy for development of agriculture in the region during the Seventh Plan will, therefore, have to take care of this important fact.

33. Broadly the following area-specific models and strategies of development in the agriculture and allied sector may be considered : (i) In areas with sparse population but having plentiful forest and water resources programmes for horticulture development and other less labour intensive schemes may be taken up. This is also

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\*60% are cultivators; 9.2% are agricultural labourers;  
8% depend on occupations connected with agriculture.



applicable in relation to the areas beyond an altitude of 4000 ft above MSL in Arunachal Pradesh, Nagaland and Mizoram. (ii) In areas having irrigation facilities and adequate labour, intensive food production schemes have to be evolved. This model will suit the conditions in Assam, parts of Manipur and Tripura, the foothills belt of Arunachal Pradesh, Nagaland and Meghalaya. (iii) In labour scarce area with plenty of pasture land, animal husbandry schemes will be ideal. This will also apply to areas in Arunachal Pradesh, Nagaland and Mizoram. It is essential that factor endowments are woven into a pattern of complementarity of economies, rather than every part of the region competing with the other in development in all sectors.

34. The following strategy for development of agriculture in the region during the Seventh Five Year Plan is suggested.

(i) The main thrust should be on increasing the level of production and the rate of productivity. Experiments conducted by ICAR have established that with the application of right input package and technology the yield rate of paddy in Assam can be raised from 17% to 48% and that in Nagaland from 16% ~~and~~ to 35%. It has also been established that the potential yield of paddy in Assam can be raised to 47 qtls per ha. in Arunachal Pradesh 40 qtls per hectare and in Meghalaya 34 qtls per hectare. Even if it is difficult to attain the level, a 50% rise over the present levels of productivity in the region should be aimed at so that by the terminal year of the Seventh Plan, the level of foodgrains production goes up by additional 20 lakh tonnes. In that case the region can hope to be self-sufficient. The problem of raising the production level as well as the productivity rate is multifaceted and would, therefore, call for multi-pronged measures. Some of these measures can be introduction of location specific technology, adequate package of input mix. improvement of the cropping pattern,

effective extension services, availability of credit etc. The average size of holding being small, would not permit mechanised cultivation. Ten different types of agricultural tools and implements, suitable for this region as identified by the ICAR Research Complex will help improve the standard of cultivation. Community farming may be promoted on a wider scale. The cropping pattern in Assam, Manipur and Tripura for paddy cultivation can be substantially improved. Given necessary irrigation facilities, three crops of rice viz. Aha, Sali and Boro can be raised. With the introduction of short duration HYV with photosensitivity, raising of three crops of paddy should be a practical proposition.

- (ii) Technological innovation to tackle the peculiar problem of providing irrigation in the very small holdings will have to be attempted and a distribution system at the farm level has to be designed. Perhaps, in such a situation under ground or buried pipe distribution system which can be appended to surface water conveyance system or by creating a pump operative head may be feasible. However, utility of the system may be examined on the basis of economic feasibility.
- (iii) A separate organisation for development of irrigation in each unit where such facilities do not exist be set up and exist organisations may be strengthened. Further, as most of the irrigation schemes are minor in the region but equally challenging and costly the criterion of provisions technological assistance from CWC may be relaxed for NE Region.
- (iv) Production and supply of certified seeds should get equal priority so that this input becomes easily available to the farmers in time. Arrangement should be made for providing seeds

suitable for different crops as recommended by ICAR and the Directorate of Research AAJ. A Regional Seed Certification Agency with the assistance of National Seeds Corporation should be created. Foundation Seed Production Farms and the State Seed Multiplication Farms have to be further developed and their management made more efficient.

- (v) Settlement of tribal families still practicing jhum cultivation should be a very high priority programme in North East not only for improving their quality of life but also for checking the degradation and soil loss due to narrowing jhum cycle. The problem was gone in detail by the Task Force set up by Govt of India in the Ministry of Agriculture and it has recommended in its report (1983) that a Central Sector scheme with an outlay of Rs.75 crores should be taken up to meet this challenge. What will be the share of NE out of this programme has not been mentioned but the report state that 4.3 lakh families are practicing jhum cultivation in North East. The Group recommends that major portion of the outlay on the scheme should be made available to States/UTs in NE as the problem is most severe in North East. NEC has proposed a programme for the 7th Plan which aims at rehabilitating additional 12,600 families under 21 additional Watershed Management schemes to be taken up under the 7th Plan the target being 600 families per project. Assuming the cost to be Rs.20,000 per family, the programme would involve an estimated investment of Rs.25.20 Crores. Working Group recommends that similar programmes may be taken up at larger scale in State/UT plan. Organisational arrangements will have to be

evolved to co-ordinate multi-disciplinary activities and to provide a single point planning and monitoring system.

- (vi) In view of the imperative need to ensure management of land for maximum output, more so in the north eastern region where population pressure on land has been increasing fast, it is suggested that a Regional Land Use/Land Cover Map should be prepared. Land-sat data for this purpose should be collected through remote sensing method. Final map should be prepared by integrating the geological, geomorphological and land use data already collected by different agencies on the basis of ground surveys. A regional centre of NRSA should be set up in the region during the 7th Plan.
- (vii) The rate of consumption of fertiliser is to be stepped up considerably. According to available statistics the average consumption of fertiliser per unit of gross cropped area in case of five States/UTs of the region is only 5.52 kg/ha as against the all India average of 25 kg/ha. By the end of the Seventh Plan the rate of fertiliser use in the region will have to be stepped up to atleast 15 kg/ha. A programme for integrated nutrient supply by complimentary use of mineral nitrogenous fertiliser along with bio-fertiliser should also be undertaken. The Regional Centre for Production of Bio-fertiliser at AAU, Jorhat should be adequately strengthened to meet the need of the entire region.
- (viii) There is a shortage of weather data relating to soil temperature, wind velocity, sun-shine hours and length of day etc which are important parameters for fuller utilisation of the agro-climatic conditions of the region. Review of the existing facilities with reference to the locations is required. As suggested by NCA, one agrimat black for soil temperature measurement should

be set up. Quality control arrangements are likely to become available in Tripura for serving Tripura and Mizoram. Assam has got its own programme to meet its requirements. The existing arrangements in other units should be reviewed and a total plan for the region taken up early. Also a Regional Centre for plant protection and quarantine for keeping the NE free of pests, diseases and weed which may also be introduced alongwith seeds/plants/grains may be established.

- (ix) To provide protection to the marginal and other land, a programme for treatment of such land with better grass land technology and management should be introduced. Similarly the land-to-lab programme to demonstrate the high potential of new varieties of crops should be implemented with co-ordination between the ICAR and the extension officials. Proper links at the Block, District and State levels should be established.
  
- (x) To back up the new agricultural development programmes proposed in the Seventh Plan adequate arrangements for education and training of the required manpower in relation to these programmes should be made. A properly developed system for collection and compilation of agriculture statistics for each State/UI of the region must be developed.

#### HORTICULTURE:

- (i) As there is vast scope for bringing a large area under horticulture in NE. This can be done by bringing hill slopes and marginal areas not fit for cultivation under horticulture. As per Task Force report, area under jhuming in NE is around 4.7 lakh ha. Even if only 2% of this area is to be brought under fruit crops every year, an area of 9400 ha will have to be brought under horticulture every year and 7th Plan target could be set at

47000 ha. In a model suggested by ICAR for hilly areas, one third of the slope in the middle portion of the hill are expected to be put under fruit trees. A suitable back-up programme to ensure that the efforts of the Jhumias in this new field of raising fruit crops succeed. Greater emphasis should be laid on cultivation of high value, non-perishable crops like cashewnut, coconut, black pepper, cardamom etc.

- (ii) The expansion of area under horticulture will require larger production of planting material. The total requirement of planting material for the additional area would have to be carefully assessed by states/UTs after taking into consideration the present availability from State as well regional nurseries.
- (iii) Besides exotic Fruits, a large number of indigenous fruits of the region also need attention. A Research Centre on Indigenous Fruits may be set up by ICAR.
- (iv) Promotion of marketing of horticultural produces, both in fresh and processed forms, should receive priority. NERAMAC should expand its commercial activities not only to cover more areas but more commodities. A network of Growers Co-operatives in the producing area should be set-up in which NERAMAC should provide managerial and technical assistance. The existing processing units in the region should be strengthened to enable them to raise the production capacity by at least 40% during the 7th Plan period. To solve the problem of marketing of the processed products, NERAMAC should enter into a buy-back arrangement with these units. The recommendations of the Committee constituted by NEC to look into the problems of the fruit processing units of the region should be implemented. Greater stress may be laid on

production of concentrates from grange pineapple produced in the region. In this context, the two fruit juice concentrate plants - one in Tripura and the other in Manipur - recommended by the consultancy Cell of the Ministry of Food and Civil Supplies should be set up in the public sector during the 7th Plan period. CFTRI has suggested 19 viable fruit and vegetable processing units for NE Region which may be considered for installation. The estimated expenditure at 1977-78 price level is about Rs.2 crores.

- (v) The yield rate of selected horticultural crops has to be increased. In case of pineapple whose present yield is only about 8 tonnes per ha as against 30/40 tonnes in other part of the country, the yield will have to be raised by about 6 times. Trials conducted by ICAR have established that it can be raised upto 70 tonnes per ha by adopting high density plant population and other improved package of practices. The main emphasis, should be to increase the productivity of this crop through extension support for transfer of technology available to the growers along with necessary institutional credit support.
- (vi) The declining productivity of citrus fruits has to be tackled by adopting corrective measures to improve the productivity on the lines recommended by the ICAR programmes for rejuvenation of declining citrus orchards in the problem areas of the constituent units, should be taken up both by the State departments as well as by NEC.
- (vii) Cultivation of high value non-perishable horticultural crops like cashewnut, coconut, black pepper, cardamon etc should be taken up in a big scale in suitable areas of the region. Fullest advantage of the development programmes taken up by the Coconut Development Board, the Cardamon Board and

of the subsidy available under the Central Sector scheme for cashewnut development should be taken by the region which would provide a substantial income to them. The commodity Boards should set up Regional offices in the region and adequate extension support and arrangement for institutional credit wherever required should be made by the State Governments.

- (viii) In the case of potato the yield rate has to be increased by two times from the present rate of 5900 kgs ha, as the all India rate is 12812 kgs ha. This will necessitate larger production of F-I and F-II foundation seed. The level of production of F-I and F-II seeds should be raised to at least 4000 tonnes per annum which is the estimated requirement by 1990. This should be attempted by expanding the existing foundation seed farm and setting up of new ones. The favourable climatic conditions prevailing in the medium and high hills of the region should be exploited by the National Seed Corporation for production of various seeds for the national market.
- (ix) The constituent states/UTs should assign priorities for horticultural development programmes in the 7th Plan and strengthen the horticultural extension organisation adequately for effective implementation of the programme.

#### ANIMAL HUSBANDRY:

- (i) Area specific programme for development of Animal Husbandry may be taken up - in the higher region of Arunachal Pradesh with development of transport animal of local breeds like Yak, Pony etc and in other lower reaches of the region cattle for extensive milk and milk products as well as meat production have to be attempted. A big integrated animal husbandry products complex for production of milk products and processed meat should



considered in the lower belt of Kameng District of Arunachal Pradesh with market linkages in the valley area of Assam which can meet about 25% of the region's total need of these products.

- (ii) The yield rate in respect of milk, meat and egg has to be increased substantially. This will call for more scientific management of cattle and farm and improvement in the system of feeding. There should be greater concentration on mixed forages rather than feed concentrates. Enterprises for feed production utilising locally available and cultivable crops. In the feeding of domestic animals a programme for production of grasses in flush season and leaves in lean months supplemented by area and brewery wastes. The results of the extensive trials and special studies made by ICAR on local foliages and on growing fodder legumes on the vertical face of ter races should be introduced in the field on larger scale.
- (iii) For piggery development, the three-tier system of pig production evolved by ICAR should be extensively adopted in the hill areas. The system consists of (a) maintenance of coloured exotic and local swine germplasm in locations where pure line breeding is practiced, (b) cross-breeding between exotic and local greeds at the farm level and (c) fattening of cross bred piglets in small numbers by small farmers for sale.
- (iv) Health care of livestock should be given special stress. According to an ICAR study, 63.35 percent of the disease that afflict the livestock population are specific diseases like bacterial, viral, parasitic, FMD etc., 28.94% are non-specific diseases and 7.0% are surgical conditions. As a short term measure are Animal Health Centres with a senior scientist and supporting technical staff should be set up in each of the constituent units either under ICAR's research programme of Central

sector programme during the 7th Plan for detailed research on livestock health. The number of veterinary Hospitals/Dispensaries/Aid Centres in the region should be doubled over the existing number during the Seventh Plan. The target should be to have one veterinary aid Centre for every 5000 livestock population in the plains and for every 3500 livestock in the remote hill areas.

- (v) Improvement of the breed of cattle in the region needs urgent consideration in view of the gradual decline of draught animal and deterioration of the stock. A long term approach is essential for Animal Breeding programme. A few multi-disciplinary projects have to be taken up covering the different species of farm animals. Each of these projects should be broadly patterned after the All-India Co-ordinated Research Projects of ICAR with strong practical orientation to local conditions in terms of housing, feeding etc.
- (vi) On going programmes aiming at upgrading of animal breeds call for consolidation for producing improved breeds of cattle including Mithun, Pigs, Goats, Poultry, Ducks and Fish etc.
- (vii) For better animal nutrition feed concentrated mixing plants are suggested.
- (viii) Establishment of one modern large size meat processing plant in the region is also suggested.

FISHERIES:

- (i) Development of Fisheries in the water areas now under cover of perennial weeds.
- (ii) Development of fisheries in Water resources of LUNGA areas of Tripura and similar areas spread between hillocks.
- (iii) Development of reservoir Fishery.

- (iv) Expansion of fish seed production programme :
  - (a) Bundh breeding for fish seed production;
  - (b) Air breeding fish seed production;
  - (c) Production of local better varieties fish seed in the Region.
  
- (v) Development of integrated fish farming project:
  - (a) Poultry/Duck-cum-fish;
  - (b) Pig-cum-Fish;
  
- (vi) In the simultaneous method of paddy and fish culture the yield of fish ranged from 200 to 300 Kg per ha in four months period. The growth of fish in the same field did not affect the yield of rice adversely. The same results can be expected from foot-hills of upto 5,000 ft. above sea level in all the hill States of the region. A cost benefit analysis indicated that the income from fish equalled that from paddy. A supporting operation research project on this culture at regional level should be undertaken.
  
- (vii) Survey of the fish fauna of the NEH Region with special reference to their economic importance may be undertaken. The available species of fish in this region should be catalogued their economic assessment made and potentiality identified. Meanwhile the 13 important locally available fish species identified by ICAR should be propagated widely.

AGRICULTURE MARKETING AND STORAGE:

The Approach Paper to the Seventh Plan has laid considerable emphasis on post harvest assistance for small farmers and farmers in difficult areas like the NE Region. It has been suggested that the entire range of agriculture and related fields, warehousing and storage, marketing and credit should be given priority in the 7th Plan both for sustaining a better distribution system and for meeting the input needs of the farmers. Following specific courses of action are suggested for the 7th Plan in this sector:

- (i) In view of non-availability of reliable data required for planning for development of marketing infrastructure, suitable mechanism be created for collection and compilation of such data. Similarly, a regular system of surveys/studies for documentation of adequate information about prices, arrivals, disposal etc of different agricultural commodities needed for formulation of marketing policy and programme on an objective basis should be created both at the regional as well as state level.
- (ii) Agricultural marketing including market regulation and development should receive greater attention of the State Governments. The need for market surveys, market research and intelligence and market extension would call for setting up of cell/department. The Directorate of Marketing & Inspection, Ministry of Agriculture may consider opening of a regional training Centre for the North East.
- (iii) Fullest assistance under the Central Scheme for Development of Selected Regulated Markets should be taken by the States/UTs of the region. Similarly, for development of infrastructural facilities in the rural primary markets maximum advantage of the Central scheme for Development of Rural Primary/Wholesale Markets under which grant upto Rs.1.5 lakhs for rural wholesale market are given, should be availed of.
- (iv) In the remote hilly areas permanent sheds and storage facilities at road-side selling points would besides solving the immediate problem of the growers and buyers, lead to growth of bigger market centres in course of time. A comprehensive plan to build regulated markets with all facilities (sheds, storage, water supply etc) at each of the 269 block HQs and atleast one developed primary market within each Gram Panchayat and Village Council area should be formulated and implemented in phases over the next 15 years. However, to begin with storage facilities

recommended by the Working Group on Supply, services and works in the NE Region may be created (Annexure-I) on priority basis for meeting the requirement of supply of essential commodities in the region.

- (v) Expansion of storage facilities in the rural areas should receive priority attention. The Central Ware Housing Corporation has to play a bigger role in this regard. The States should take up construction of rural godowns with assistance under the Central scheme. However, in relation to the NE Region the pattern of subsidy should be modified to provide for 75% subsidy from the Centre the balance 25% to be arranged by the State Govt and the concerned local bodies. This is essential as a promotional measure for a region which has been backward and lacking the minimum infrastructure.
- (vi) There are more than 18000 Rural Retail Outlets in the region. As suggested by the Govil Committee these Retail Outlets should be enabled to procure and market the local farm produce directly from the producers. Likewise, the 4000 and odd Agri Co-operative Credit Societies can be strengthened to play the role of procurement agency for agricultural produce at the village level. This would call for adequate financial and manpower support to these Societies. The Marketing Co-operative structure as a whole has to be substantially strengthened in the region.
- (vii) In regard to marketing of fruits the spoilage on transportation poses a big problem. The rate of spoilage varies between 35 to 51%. Suitable containers using local raw material can substantially reduce the spoilage rate. Trials done by CFTRI in this regard has established that spoilage can be reduced to 10%. The methods suggested by CFTRI should be tried on larger scale. Subsidised in transport of selected fruits, mushrooms etc can also be considered.
- (viii) Closely related to agricultural marketing is the problem of drying of crops, particularly paddy. For proper storage, transportation and marketing the moisture content in the fresh crops need to be reduced to the desired degree. A new method of crop drying and preservation is irradiation with ionizing radiation. Careful and continuing efforts by food scientists and technologists can bring this benefit of science to the farmers. Besides, Solar Driers for drying of crops can be introduced on a larger scale.

STATEMENT (A) : STORAGE CAPACITY FOR FOODGRAINS

State/UT	Existing storage facilities.	Additional capacity to be constructed by FCI and CWC.	Total planned capacity	Storage capacity required for foodgrains in 1984-85*	Addl. capacity suggested by Working Group (shown in Statement (B))
-1-	-2-	-3-	-4-	-5-	-6-
Arunachal Pradesh.	-	25,000	25,000	14,000	29,000
Assam	259803	20,000	279,803	186,000	9,000
Manipur	7850	15,000	22,850	20,000	24,000
Meghalaya	10,000	17,500	27,500	32,000	24,000
Mizoram	21,480	26,200	47,680	30,000	19,000
Nagaland	9680	30,000	39,680	22,000	19,000
Tripura	15,920	20,000	35,920	50,000	32,000

\* Taking 4 months requirements for each unit excepting Tripura Mizoram for which requirement is taken for 5 months and for Assam 3 months.

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STATEMENT (B)

Place	Capacity (MTs)	Place	Capacity (MTs)
<u>I. Arunachal Pradesh</u>		<u>IV. Nagaland</u>	
Itanagar	10,000	Kohima	5,000
Bomdila	2,000	Mokokchung	5,000
Zero	2,000	Dimapur	5,000
Tezu	2,000	Mon	2,000
Bhalukpong	5,000	Phek	2,000
Pasighat	5,000	<u>V. Mizoram</u>	
Along	2,000	Aizawl	5,000
Tawang	1,000	Lunglei	5,000
<u>II. Manipur</u>		Saitre	2,000
Imphal	10,000	Champha-i	2,000
Ukhrul	2,000	Bhairabi/Kolasib	5,000
Chura Chandrapur	5,000	<u>VI. Tripura</u>	
Jiribam	5,000	Kumarghat	10,000
Tamenglong	2,000	Dharamnagar	10,000
<u>III. Meghalaya</u>		Udaipur	5,000
Shillong	10,000	Ambasa	5,000
Jowai	5,000	Khowai	2,000
Tura	5,000	<u>VII. Assam</u>	
Nongstoin	2,000	Hamran	2,000
Williamnagar	2,000	Murkong Jellek	2,000
		Dhemaji	5,000

CHAPTER IV, 2

ENVIRONMENT PROTECTION AND ECO-DEVELOPMENT

Man's concern with environment is fundamental to his survival. He is not merely a passive component of the ecosystem, but he has the unique distinction of being an active agent in shaping the ecological niche that suits his habitat and socio-economic condition. With the growth of population and progress of human society there has been a consequential over-exploitation of the environment and the carrying capacity of the ecosystem is being strained too much particularly in those regions like the North Eastern India where forests play the crucial role of a major life support system. Over-exploitation of forests, land, water as well as various living components of biosphere and failure to tackle the problems of pollution and environmental degradation are exposing the humanity to the threat of a global environmental crisis. Late Shrimati Indira Gandhi, in her address to the U. N. Conference on the Human Environment held in Stockholm in 1972, strongly advocated the theme of environmental conservation and eco-development. Our Sixth Five Year Plan included 'inter alia' the objective of "bringing about harmony between the short and long-term goals of development by promoting the protection and improvement of ecological and environmental assets".

2. In the approach document for the Seventh Five Year Plan, the Planning Commission stresses that conservation issues have to be incorporated into the Plans for each development activity. The Commission highlights the strategy in the following observation, "During the Seventh Plan, a National Conservation Strategy will be formulated to ensure that the goals of sustainable development are met

in the future. Strengthening of research, monitoring and enforcement facilities, establishment of biosphere reserves, intensification of ecodevelopment programmes, launching of large scale projects for environmental improvement and restoration of ecosystems and establishment of a network of Environmental Information System (ENVIS) form the important elements of the suggested strategy under the Seventh Plan."

3. In the above mentioned context it needs to be recognised that environmental degradation in India is basically a national problem and the factual accounts of huge top-soil erosion, doubling of the flood-prone area during the last 10 years and rapid depletion of forest resources clearly indicate the growing intensity of the problem. In the North Eastern Region which is faced with a large scale ecological degradation, massive drive needs to be taken up for environmental conservation and ecodevelopment within the broad framework of National Conservation Strategy and the strategy envisaged by the Planning Commission under the Seventh Five Year Plan. Having regard to the peculiar local conditions, abundance and diversity of natural resources and existence of a fragile ecology in the North East, there is enough justification for special attention and efforts to be directed towards environmental management for the conservation, restoration and development of the deteriorating ecosystem of the region. Unlike rapid growth of giant cities and large industrial concentrations with enormous congestion, pollution and health hazards creating environmental problems in many other parts of India the ecological disruption in the North East is caused mainly by depletion of forests, large scale soil erosion and siltation which have dangerous consequences in the form of natural calamities like floods and landslides.

4. After making colossal investment on essential infrastructural development such as power project and railway projects, it becomes almost obligatory to incur substantial expenditure on afforestation and soil conservation just to save these projects from the devastating effects of soil erosion and heavy siltation. Besides, the destruction of ecological



niche (which, among the tribes of N.E. Region, is rooted in tradition) by large development projects involving exploitation of untapped natural resources is another serious malady that calls for careful examination and remedial action. The traditional practice of jhum cultivation over extensive areas and increasing commercial exploitation of forests are leading the N.E. Region to the verge of complete denudation and extinction of its unique flora and fauna. This wanton destruction of forests, either for meeting the input requirements of large wood-based industries or for meeting the fuel and fodder requirements of a mounting population, cannot be allowed to continue unabated and restrictive measures need to be taken to avert major environmental crisis. This might require specific measures like elimination of contractor system for forest fallings.

5. With a view to ensuring proper environmental protection in the North East it is necessary to take four positive steps viz. (a) introduction and enactment of legislative measures for specific purposes like establishment of biosphere reserves and prevention and control of pollution; (b) arrangements for suitable administrative and institutional support should be made to implement all programmes of environmental conservation and eco-development in a big way; (c) people's participation should be enlisted through adequate publicity and demonstration; and (d) There is need for continuous monitoring of resource status and resources of threat to environment from discharges of industrial and other wastes. With the help of remote sensing such a continuous monitoring is now possible. This technique should be systematically adopted as input for prompt decision making for remedial measures. Apart from deforestation and degradation drying up of water resources, blocking of water channels growth of parasites like water hyacinth, pollution from discharges also need careful watch. The Committee For Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection (1980) recommended for each State an administrative structure (with State Cabinet Committee on Environment at the top) for co-ordinating the functions related to environment protection at the State level. The Committee recognised the difficulty in constitut-

ing separate Departments of Environment in all States immediately and as such suggested that at the initial stage and appropriate Administrative Department could be designated to look after the planning and co-ordinating function in regard to environmental protection. In the North Eastern Region, the implementation of this recommendation deserves urgent and serious attention of all the constituent States/UTs except Assam which is already having a State Department to look after environmental protection and management. With this kind of an effective operative machinery it would be possible to carry out proper environmental assessment as an integral part of the Planning process identifying all major actions both public and private which would require Government clearance. In fact, environmental management demands that there should be not only a statutory mechanism for independent review of environmental status but also an objective base for making the supporting data available to the decision making process in which involvement of the people and voluntary organisations would gradually pave the way for elimination of vested interests.

6. In the N.E. Region environmental management needs to accord priority treatment to soil conservation, preservation of forests and living resources and establishment of bio-sphere reserves for critically degraded areas. Among the multiplicity of factors responsible for rapid depletion of forest cover in the North East the two most prominent are: reckless commercial exploitation of forests and extensive jhum cultivation. A rough idea about the extent of damage done to the forest ecosystem can be obtained from the fact that during the period 1972-75 to 1980-82 there has been a loss of 17183 (Sq. Kilometer) area under forest. This consist of a loss of 1502 Sq. Kilometer of closed forest and

an increase of 7578 Sq. Kilometer under open/degraded forest. This has been revealed by a report entitled "Mapping of Forest Cover in India from Satellite Imagery- 1972-75 and 1980-82 Summary Report- North Eastern States/Union Territories" issued by National Remote Sensing Agency Department of space, Government of India Hyderabad (Dec 1983). In view of a lot of environmental degradation brought about by the practice of jhuming it should be the duty of all the constituent units of the region to control its incidence on top priority basis and also educate and motivate the people to co-operate with the agencies implementing jhum control programmes.

7. With a sharp focus on jhum control and control of reckless commercial exploitation of forests the Seventh Plan strategy for environmental improvement and eco-development in the North East should include the following components :-

(i) Development of specific areawise management programme for Jhuming with the ultimate objective of providing an alternative economic avocation to tribals involved in it.

(ii) Development of fire control lines for preventing spread of jhum fire control should be matters of serious concern to all the States/UTs of the region. All fire control lines may be made permanent and then planted with thick-barked species like schima Wallichii, Gnelinia arbures, Alnus resplonsis and Erythma spp. for which seedlings in polythene bags may be obtained from the nurseries under social forestry. The jhumias can be involved in planting such seedlings on payment of wages.

(iii) The unique natural resources of the North East needs to be protected and improved upon. Against 19 National/Wildlife Sanctuaries existing at present, another 14 more should be constituted. Ecological impact of development projects on the habitats of rare species of animals and birds : should also be studied so as to evolve suitable measures for their conservation.

(iv) A conservation-oriented forest policy should be given due emphasis as an essential pre-requisite for the success of programmes for environmental protection and eco-development that might be launched with strong institutional, financial and technical support from the nodal agency at the national level (i.e. the Department of Environment, Govt. of India). The on-going schemes for the preservation of endangered orchids and plants as well as new schemes for establishment of Sub-Tropical Botanical Garden and Plant Resources Centre in the North East need to be implemented to the best advantage of the entire region. The North Eastern Council's assistance and encouragement to these schemes reveal due concern for preservation of valuable natural resources.

(v) It is necessary to survey the sources of pollution and prescribe adequate remedial measures for the major capital towns/urban centres of Imphal, Aizawl, Agartala, Shillong, Kohima, Gauhati, Itanagar, Tinsukia, Duliagaon, Namrup, Sibsagar and Bongaigaon. Assessment of the extent of pollution of water and air on account of industrial growth and harmful waste discharge, should be taken up by competent agency.

(vi) It is necessary to establish a Sub-centre of the Himalayan Institute for Protection and Management of Environment in the North East to provide necessary technical guidance and help evolving a suitable land use pattern.

(vii) Training programmes on environmental management and preservation of wildlife and endangered plant species need to be organised with a view to developing adequate manpower for specific requirements of the programmes for environment protection and eco-development.

(viii) The administrative machinery for implementation of the environmental programmes should be strengthened at the State level. According to the suggestions of the Committee for Recommending Legislative Measures and Administrative Machinery For Ensuring Environmental Protection (1980), in each State/UT an appropriate Administrative Department should be designated to look after the functions regarding planning and co-ordination of environmental protection until it would be possible to constitute separate Departments of Environment in all these units. For providing adequate legislative support to the required environmental management and control necessary arrangements should be made for enactment and modification of laws according to specific needs and condition.

(ix) State Governments should regulate opening and capacity of Sew Mills and if possible nationalize this Industry.

(x) A Hand Book on Environment in N.E. Region is under preparation. The Hand Book would be providing basic data for environmental degradation of water, air and soil resources of the region arising due to industrial and mining projects and other sources. It is suggested that based on this study, codes for environmental protection for this may be prepared by constituent States/UTs.

8. Further, as decided in the first meeting of the Regional Committee on Environment held at Shillong on 21.2.84, the following four expert groups would undertake detailed study of different aspects of the problem of environmental management in the North Eastern Region and would submit their reports for consideration of the Regional Committee :- (a) Study Group on Jhuming; (b) Study Group on Air and Water Pollution; (c) Study Group on Impact of Developmental Activities on Environment; and (d) Study Group on Living Resources. It is expected that the reports of these Study Groups would be very helpful in revealing the magnitude and intensity of environmental problem in this region and their suggestions might be useful in formulating programmes for tackling specific problems which form the subject of enquiry of each of these Study Groups. The same Regional Committee also suggested that the provision of about Rs. 15.00 crores should be made in the Seventh Plan for undertaking research projects and implementing schemes aimed at protection and management of environment in the North East. In line with this suggestion the detailed programmes in this regard would be worked out for implementation during the Seventh Five Year Plan.

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FORESTS

Forests are important natural resources as they influence climate, soil conditions flood and erosion. The forest area in India is about 22.7 percent of total geographical area as against 33 percent of the world average. The national forest policy of India suggested that one third of the total geographical area of the country to be retained under forest cover, about 60 percent in the hills and 20 percent in the plains. According to Summary Report for North Eastern States/Union Territories (December 1983) published by National Remote Sensing Agency on the basis of Mapping of Forest cover in India from Satellite Imagery (1972-75 and 1980-82), the forest cover in the region is about 48.28 percent. This area includes 104449 Sq. Km. of closed forest and 18730 Sq.Km. of open/degraded forest. Even by taking the degraded forest into consideration, only Arunachal Pradesh and Manipur fulfil the norm of the 60 percent forest cover. Percent of forest area to total geographical area for other states varies from 25.21 percent in Assam to 56.76 percent in Mizoram.

2. Timber and fuel wood and bamboo are the important forest products which are required for house construction, railway sleepers, furniture, poles, fuel (domestic and Industrial), paper and pulp etc. Although forest in the NE Region constitute about 14.95 percent of the total forest in the country, it was noted in 1976-77 that 10.69 percent of national requirement is being met from the region. This percentage is observed to be increasing. The study conducted by NRSA shows that during the period of study the areas under closed forest have decreased by 1.44 percent with 67.95 percent increase in area under open/degraded forest. This destruction indicates poaching and organised logging by commercial exploiters. Giving an overview of the problem NRSA mentions that India is loosing its forest resources faster than its growth. The present rate is 0.2799 Sq. Miles (0.44781 Sq.Km) per minutes. According

\* Please see foot note at the bottom of next page.

\* Table 3.9, Chapter-III.

to a study made by National Commission on Agriculture the fuel wood requirement in 1980 will be of the order of 256 million m<sup>3</sup> and 1990 the requirement will be 300 million m<sup>3</sup>. A very small proportion of about 11 per cent of total requirement of fuel wood is estimated (Report of the fuel wood study Committee, Planning Commission, 1982) to be coming from government forest. If another 16 percent of fuel wood is presumed to be coming from trees on private land, a balance of about 63 percent requirement is believed to be not accounted for. Similarly the position of industrial wood is also not very satisfactory. In 1970 the requirement of industrial wood was 12 million m<sup>3</sup>. The projected requirement and production in 1985 is 50 and 32 million m<sup>3</sup> respectively \*. If this trend continues the chances of further expansion of wood based industries in India will become less on one hand and forest degradation would continue on large scale on the other.

Foot note for para 2 of page , sixth line.

\* Extraction of timber and fuel wood has increased by 151.23 per cent during three years from the region as given below:

	Quantities in 000 Cu.M			All India 1976-77
	N.E. Region 1973-74	1976-77	% increase	
Timber	685	801	16.93	8500
Fuel wood	236	1440	510.17	12456
Total	892	2241	151.23	20956

Source for Col. (2) Development of Forest & Forest Based industry by LC Jain, for Col. (3) & (5) Directorate of Economics and Statistics, Ministry of Agriculture.

This sharp increase in extraction of fuel wood in this short duration gives an rough picture of tendency for increasing exploitation of timber from the region.

\* Source : Forestry in India, A critical Study G.S. Padhi, page 69, International Book Distributors, Dehradun.

E- Kindly also refer to paras 16-18 Chapter III.



3. Modern concept of forestry views it as a multi-purpose socio-economic activity which needs continuous planning and management for a sustained yield. It is no longer an exercise in the volume of timber, raising of plantation of a few commercial species and regulation of exploitation of timber other minor forest products.

Forestry management is essentially based on an application of business methods and principles of technical forestry for achieving the objective of developing and utilising an expanding stock of forest resources ensuring maximum net benefit to the society. In the peculiar physiographical and socio-economic condition of the North Eastern Region, where the tribal communities have to rely heavily on traditional practices of forest exploitation, the right approach to forestry should be to plan for forest development in such a manner that there would be net addition to a perpetuating stock even after meeting the essential food, fodder, fuel and timber requirements of the people as well as the growing requirements of commercial exploitation. This necessarily calls for bringing to sharp focus another important aspect, viz. conservation of forest resources and control of harmful exploitation. In concrete terms, a conservation-oriented forest policy in this region should aim at preservation of useful plant and animal species with extinction. Extensive shifting cultivation and increasing commercial exploitation have already caused large scale denudation and environmental degradation increasing the threats of devastating natural hazards like floods and landslides. Control of jhuming and restriction of commercial exploitation of forests to the minimum necessary level should, therefore, constitute the two important elements of a strategy for forest development which should also ensure both qualitative and quantitative improvement of forest resources during the Seventh Plan.

4. In the background of emerging socio-economic pressures, it is worthwhile to introduce the basic elements of community forest management strategy with the community as the unit of management. This will help forestry to play a significant

role in rural development through an adjustment of land capacity, people's aspirations and project requirements. For the success of such an integrated and participative forestry, it is essential to ensure greater co-ordination between the Government machinery, people and the voluntary organisations in regard to enhancement of the productivity of forests and forest lands under protective care and supervision. In fact, under the 20-point programme forest development is expected to receive considerable impetus particularly in respect of social forestry. Afforestation of identified areas (such as catchment areas of hydro-electric projects and watershed management projects) and regeneration of forests in abandoned jhum land will help improving the environment substantially.

5. In order that forestry might cater to a wider spectrum of utilisation besides meeting the tribal community's food -fodder-fuel employment needs, its productivity should be increased substantially. Forest management should provide for the maintenance and improvement of both the productive and protective capacity of the forests and give due importance to their contribution towards protection of other natural resources as well as environment. The National Commission on Agriculture has therefore, suggested that with a view to maintaining and improving the protection and production capacity of forests it is necessary to categorise functionally all forest lands into three broad types viz. (i) Protection forests; (ii) Production forests and (iii) Social forests.

#### Protection Forests:

6. The fragile forests which are prone to undesirable consequences at the slight disturbance due to reasons of geology, nature of soil or slope of ground should be classified as Protection Forests. Such forests occupy watershed of rivers and other localities vulnerable to erosion and degradation. Such area should be taken out entirely from the orbit of production forests and maintained only for protection of the eco-system and environmental stability in

the region. This forest can offer scope of promotion into nature/biosphere reserves and also for education or research purposes subsequently.

#### Production Forests:

7. Production forests are essential for the development of regional and national economy even though they are basically meant for commercial exploitation. The diverse requirements of national economy can be met only by stimulating development of production forests. What is needed at present is to quickly grow the more valuable and useful trees in place of natural and less valuable growing stocks. Many western countries have obtained a wood production of 3 to 4m<sup>3</sup> per hectare per year on the gross forest areas, without any adverse impact on environment. In India, however, the total wood production at present is hardly 0-0m<sup>3</sup> per hectare per year on the gross forest areas. Therefore, the paucity of forest resources is not so much in the extent of forests but in the quality of the forest stock and low incremental rates of such stock resulting in poor growth and availability. Investment in forestry has been generally inadequate resulting in low production and slow regeneration while revenue consideration has led to considerable destruction of forests. Forest in the North East should, therefore, no longer be looked upon as a mere source of revenue without realisation of the need for investment to replace, replenish and increase the growing stocks of the forests. Future production forestry should be backed by adequate policies for licensing, royalty payment and regeneration costs so that industries based on forest resources may be compelled to bear some compensation or reparation charges required for recouping the loss of forests and damage done to eco-system.

#### Social Forests:

8. The objectives of the social forests will be to meet the needs of the community and embrace activities relating to farm forestry, extension forestry, afforestation of degraded forests and recreation forestry. The main

functions involved are :- fuel wood supply, small timber supply, fodder supply, protection of agricultural fields against wind and meeting recreational need. Social forests would cover wasteland, panchayat land, common village land and land on the sides of roads, canals, railway lines etc. which may be brought under forest plantations, shelter belts and mixed forestry comprising raising of grass and leaf fodder, fruit trees and fuel wood trees.

The species to be planted include mainly sericulture and fodder species as well as suitable species for making agricultural implements. The strategy of development plan of the forests in the North East should therefore take ecological, economic and social aspects into account if the management is to result in sustainable development.

9. The strategy for forest development in the North Eastern Region during the seventh Plan needs to be basically conservation-oriented and oriented to the needs of the tribal communities while the needs of commercial exploitation should be restricted to the minimum necessary level. Viewed in this perspective, the following elements of the strategy need careful consideration:-

- (i) It will be necessary to go in for a total and comprehensive survey of the biological resources of the forest areas in association with the Zoological and Botanical Surveys of India Universities and expert bodies like Bombay National History Society etc.
- (ii) As explained earlier, it is vital that a big afforestation programme is mounted in the North East, particularly with a view to stabilize its fragile eco system and prevent loss of valuable soil. If the ideal of having 60% of land under forest cover in hills is taken into consideration, an area of 153022 Sq.km. should be under forest cover. This could be the outermost and most ambitious frame and would involve restoration of 18730 Sq.k. of open/degraded forests and

bringing an additional 29843 Sq.Km. under forest cover. Even though 60% forest cover may not be required in Assam Valley, even then such a massive programme, however, will not only require astronomical sums but would be beyond the present or immediately developable capacity of States/UTs in the region. A less ambitious but still quite massive, planning frame could be to replenish the present depleted forest areas. It has been observed from NRSA data that over a period of about 8 years from 1972-75 to 1980-82, the total depletion in forest area of NE has been of the order of 17183 Sq.Km. i.e., 2148 Sq.Km. per year. Considering that replenishment of at least already lost area should attract the top most priority, a goal of afforestation of 10740 Sq.Km. could be set for Seventh Plan. An attempt was made to assess the investment required for such an afforestation programme but it was felt that this would require detailed surveys as the cost would differ with extent of degradation and other local factors. However taking average per 1000 ha. cost of afforestation to be Rs.55.35 lakhs on the basis of Sixth Plan documents of five States/UTs in the region, this programme would require an investment of approximately Rs.590 crores in Seventh Plan. Such a huge investment would still be too ambitious and the problem can be tackled only by adopting new and cheap technology of afforestation and drawing upon community participation in a big way. An expert group should be set up by Ministry of Agriculture; Deptt. of Environment and Forest to examine the problem in detail and suggest a practical and workable programme.

- (iii) In order to ensure success in the social forestry programmes. Species selected for planting should possess the following characteristics.
- (a) Ability to survive and grow healthy under difficult soil and edaphic conditions.

- (b) It should be fast growing and capable of yielding useful produce comparatively in shorter duration.
  - (c) Resistance to local hazards including pests, diseases, fire grazing and browsing.
  - (d) Ease of seed procurement, handling, storage etc. easy techniques of nursery and regeneration.
  - (e) Species should not have an adverse effect such as, shade or competition on other crops with which these are grown.
  - (f) Species should not produce side effects such as harbouring agricultural pests and diseases.
  - (g) Species selected for soil and water conservation should have proper root system, similarly trees for shelter belt should have good crown. Trees must be beautiful which are selected for bioaesthetic plantation.
- (iv) The strategy for forest development should embrace all the three categories of forests viz. protection forests, production forests and social forests. While protection forestry aiming at protection of eco-system and environmental stability of the region will encourage activities like promotion of nature/biosphere reserves, production forestry will aim at meeting the diverse requirements of regional and national economy by bringing about quantitative and qualitative improvement of stock. Social forestry should aim at meeting community's needs of fuel wood, fodder, small timber and protection of agricultural fields against wind and provide recreational facilities. List of species which may be raised and planted in the NL Region are given in Annexure-1.

- (v) With the increasing loss of forest cover due primarily to rapid commercial exploitation and extensive jhum cultivation, it is essential that large scale programmes of afforestation and regeneration of natural forests are implemented with people's participation all over the region. The Forest Departments of concerned States/UTs should also try to involve local organisations like the Territorial Army, N.E.C. etc. in the execution of such afforestation programmes. In the ecologically fragile areas grazing of animals should be restricted, fire control should be done in a systematic manner and degraded forests may be offered to large industrial concerns on longterm lease.
- (vi) The basic elements of community forest management strategy with the community as the unit of management should be introduced so that forestry might play a significant role in rural development through an adjustment of land capacity, people's aspirations and project requirements. Such an integrated and participative forestry will ensure more effective implementation of social and agro-forestry programmes, afforestation programmes for catchment areas of large hydro-electric projects and watershed management projects and programmes of forest regeneration in abandoned jhum land.
- (vii) While calculating the cost of major and medium projects the likely damages to forests and environment as well as their replenishment cost should also be taken into account. With adequate policies for licensing, royalty payment and regeneration costs it might be possible to compensate the damages likely to be done to forests and eco-system.

- (viii) In all areas likely to be submerged due to high dams or big hydel projects, counterpart survey of the important plant species should be made and measures for preservation/protection of the same initiated.
- (ix) The Forest Department personnel should get adequate training not only in forest technology and management but also in basic principles of environmental protection and eco-development. There should be a change of attitude of these personnel from the traditional trade-oriented forestry to conservation-oriented forestry.
- (x) A <sup>regional</sup> centre of Forest Research Institute/ <sup>land college</sup> may be started in this region for development of technologies suitable for conservation of natural resources, *and for training of forest staff*
- (xi) For meeting the extensive requirements of rapid multiplication of selected species under the massive afforestation programmes on social and agro forestry, tree improvement, afforestation of catchment areas etc. it is necessary to supplement substantially the conventional techniques of multiplication by the non-conventional techniques like tissue-culture, clonal propagation etc. which require involvement of competent technical and extension agencies for evolving suitable methods and applying them to the field conditions. NEC's assistance to this innovative venture will help initiating an appropriate scheme with the aforesaid objective under the Seventh Plan.
- (xii) For conservation of flora and fauna, it is necessary to maintain, at least in some suitable locations, the total assemblage of plants and animals in a balanced and viable biological community. Such "gene banks" in hands off areas are necessary to conserve, for present and future use,



the rich heritage of biotic communities of plants and animals within their natural ecosystem and safeguard the genetic diversity of species on which their continuing evolution depends. Some of such suggested biosphere reserves are Mana and Gorepani area in Assam; Rongrenggiri, Chimebongshi, Bagmara in Meghalaya; Siro% Hill Ukhrul, Morah, Tipaimukh in Manipur; Ozulokha, Panna, Seramathi in Nagaland; Nemdapha in Arunachal; Blue mountain, Tawi, Thoreng, Zobank in Mizoram and Jagenath, Charilem, Baramore and Serambulai in Tripura.

LIST OF SPECIES TO BE RAISED AND PLANTED  
IN NE REGION

- a) Tree species having property of fixing nitrogen for planting abandoned jhum lands are - *Parkia Roxburghii*, *Albizia procera*, *Alnus Nepalensis*, *Casuarina* Spp., *Acacia* Spp., *Leucaena Leucaphala* (Kubabul) and etc.
- b) Fuel Species - *Eucalyptus camaldulensis*, *Eucalyptus citriodora*, *Eucalyptus teriticornis*, *Quercus*, *Incania* and other *quercus* species, *Castanopsis* spp., *Casuarina Equisetifolia*, *Cacia Aurialiformis*, *Acacia Catechu*, *Alnus Nepalensis*, *Schima Wallichii*, *Bridalis Retusa* and other.
- c) Other Versatile and useful species      *Leucaena*, *Leucaphales* (Kubabul), *Artocarpus* spp., *Morus Alba*, *Azadirachta Indica*, *Moringa Oleifera* (Drum stick), *Ailanthus Excelsa*, *Tamarindus Indica*, *Zizyphus Mauritiana*, *Eucalyptus* spp., *Mangifera Indica*, *Buckardia* spp., *Pinus Kaseya* in Meghalaya and other hill areas, *Gmelina Arborea* and etc.
- d) Ornamental Tree Species      *Poinciana Regia* (Golmuhor), *Jagaranda minosifolia*, *Gravellia Robusta* (Silver Oak), *Leg erstroemia Floreginea*, *Alstonia Scholaria*, *Butea Frondosa*, *Callistemon viminalis*, *Salix Babylonica*, *Cassia Fistula*, *Cassia Siamea*, *Erythrina Versigata*, *Glinisida Sapium*, *Thuza Orientalis*, *Cupressus Torulosa*, *Cryptomeria Japnica* and etc.
- e) Fast Growing Species      *Eucalyptus Camaldulensis*, *Eucalyptus citriodora*, *Populus deltoides*, *Populus laevigata*, *Acacia Tortellis*, *Albizia molucana*, *Kydea calycina* and etc.
- f) Sericulture Species      *Ailanthus glanoulasa*, *Morus Alba*, *Litsea* spp., *Quercus* spp., *Machilus* spp.
- g) Fodder Species      *Leucaena Leucaphala* (Kubabul), *Artocarpus* spp., *Bauhinia* spp., *Morus Alba*, *Litsea* spp. *Ficus Bungalensis*, *Ficus cunea* and etc.
- i) Species for afforestation      *Alnus*, *Nepalensis*, *Albizia Procera*, *Quercus dialata*, *Schima wallichii*, *Gmelina Arborea*, *Castanopsis* spp., *Ficus* spp., *Pinus Kaseya*, *Eucalyptus*, *Casuarina Equisetifolia* (in Manipur) and etc.

BUILDING TIMBER SPECIES :

- |                              |                              |
|------------------------------|------------------------------|
| 1. Albizia Odoratissima      | 31. Azadirachta indica       |
| 2. Terminalis bellirica      | 32. Manihot polyandra        |
| 3. Lagerstroemia laeolata    | 33. Aphanamixia              |
| 4. Phoebe spp.               | 34. Stereospermum Boreonatum |
| 5. Bischofia javanica        | 35. Lagerstroemia hypoleuca  |
| 6. Michelia spp              | 36. Shorea robusta           |
| 7. Schima Wallichii.         | 37. Dalbargia sissoo         |
| 8. Cinnamomum spp.           | 38. Toona oiliata            |
| 9. Artocarpus chaplasha      | 39. Dysoxylum malabaricum    |
| 10. Chukrassia Valutina      | 40. Albrizia procera         |
| 11. Dillinia spp.            | 41. Juglans regia.           |
| 12. Dipterocarpus spp.       |                              |
| 13. Gamelina arborea         |                              |
| 14. Allanthus integrifolia   |                              |
| 15. Terminalia myriocarpa    |                              |
| 16. Adina cordifolia         |                              |
| 17. Dipterocarpanacr ocarpus |                              |
| 18. Hopea glabra             |                              |
| 19. Terminalia Chesula       |                              |
| 20. Syzygium spp.            |                              |
| 21. Altingia excelea         |                              |
| 22. Gasteranopsis hystris    |                              |
| 23. Mesua floribunda         |                              |
| 24. Anthocephalus chinensis  |                              |
| 25. Careya arborea.          |                              |
| 26. Mesua ferra.             |                              |
| 27. Carallia brachiata       |                              |
| 28. Mangifera Indica         |                              |
| 29. Shorea assamica          |                              |
| 30. Machilus macarantha.     |                              |

CHAPTER - IV,4

## POWER AND RENEWABLE RESOURCES OF ENERGY

It hardly needs any emphasis that Power is one of the most important and critical input for development of people and an area. It could be put to two different-types of uses - use of power for welfare activities for the people and use of power for productive purposes. In the former category would come such uses as for hospitals, schools, rural electrification etc. In the latter category power would be used for major and medium industries, small and cottage industries, irrigation, transport & communications and construction sectors. Thus power consumption provides a measure for socio-economic as well industrial development in a region/state. While the power consumption for welfare measure has to be planned and provided as a deliberate government policy, the commercial consumption would depend on a number of factors like the cheap availability of power, climate for industries including availability of raw materials, transport and communication system etc. It is recommended that specific policy measures should be taken by State Government-s to provide for the total requirement of power for welfare needs by making use of a mix of conventional and non-conventional energy sources. Productive use of the power would be both within the region and also outside the region. Any regional surplus of power could be exported outside the region at competitive rates.

2. North Eastern Region has been endowed with variety of power resources- Hydel, Thermal in the form of coal and gas, geo-thermal and wind power. It is known that many cubic ft. of gas is being flared daily and the gas resources for the region have been estimated at 23 million cubic mts. Potential coal reserve for the region is estimated at 928 million tonnes. In regard to hydel power generation, projects with a generating capacity of approximately 50,000 MW have been identified and investigations of these projects have either been initiated or about to be initiated by various agencies.

Therefore, unlike other areas, the choice of projects is not limited by availability of only one type of resources and it can be possible to decide on a proper mix of power generation based on hydro, gas and coal sources. The obvious priority will go to hydro sources as these are renewable and running and maintenance cost of such projects is very low. There could be better value added use of natural gas as production of fertilizers etc. but till that time gas can be used for such purposes and especially when the gas is being flared, its use for power generation should also attract very high priority. Utilization of coal for power generation in such a scenario would get very low priority and only such coal based generation projects should be taken which function more or less like captive generation plants of some other industrial use like cement factory. The actual choice in project will, of course, depend also on such factors as terrain, seismicity of the area, submergence and rehabilitation problems and cost effectiveness of the project.

3. In such a frame work the picture of power consumption that one gets in the NE Region is not quite happy. The per capita electricity consumption varied between 9 KWH in Arunachal Pradesh and 36 KWH in Assam during 1978-79 as against the all-India average of 131 KWH. The situation is the result of a vicious cycle - there being little efforts to generate more power by tapping the enormous potential because the consumption level was low due to absence of power intensive industrial units and on the other hand, no large industries have come up on the plea that adequate power was not available.

4. In the matter of rural electrification also, the North Eastern Region presents a very dismal picture. The following table will show the village electrified as in March, 1984 in the various States and UTs in region :-

TABLE - 1

State/UT	Total number of village	Village electrified as on 31.3.84	Percentage of village electrification as on 31.3.84
Assam	21,995	9555	43.44
Manipur	1,949	532	27.30
Meghalaya	4,585	1138	24.82
Nagaland	960	500	60.42
Tripura	4,727	1540(Sep.'83)	32.50(Sep'83)
Arunachal Pradesh	2,973	697	23.44
Mizoram	229	68 (Sep.'83)	29.60(Sep.'83)
All India	576,126	346000	60%

Source : Rural Electrification Corporation (Gauhati Office).

5.- It may be seen from the above Table that whereas the All-India achievement in rural electrification has been 60% as on 31-3-1984, in some of the North-Eastern Region the percentage of rural electrification has not been even upto 25%.

6. Supply of Power in NE Region : The situation in regard to power generation has of late improved. The total installed capacity in the region now is of the order of 627.00 MW. This does not include power generated from diesel sets and micro-hydel projects. Following are the power stations which have already been commissioned in the North Eastern Region.

TABLE - 2

Name of the Project	Installed capacity
<u>Meghalaya :</u>	
Uniam Stage -I.H.P.P.	36.00 MW
Uniam Stage -II H.P.P.	18.00 MW
Kyrdomkulai H.P.P.	60.00 MW
Umtru H.P.P.	11.20 MW
Garo Hills Thermal Project	5.00 MW
Sub-total	130.20 MW

Tripura

Gumti H.F.P. - 15.00 MW

Assam

Namrup Thermal Station - 111.50 MW

Chandrapur Thermal Station - 30.00 MW

Bongaigaon Thermal Station - 120.00 MW

Lakwa Gas Turbine Station - 45.00 MW

Mobile Gas Turbine Sets. - 21.00 MW

Sub-total - 327.50 MW

Regional Scheme (NEEPCO)

Kopili H.F. Project (Khandong-P.H.) - 50.00 MW

Manipur (Central) Sector)

Lektek H.F.P. - 105.00 MW

Others (Micro Hydel & Diesel) 76.00 MW

TOTAL 703.70 MW

( Say, 704 MW)

7. Besides the projects already commissioned, following projects are either awaiting issue of formal approval (e.g. Doyang) or in various stages of execution :-

TABLE - 3

Name of Projects	Installed Capacity	Year of Commission
1	2	3
<u>Assam</u>		
<u>1984-85</u>		
1. Bongaigaon Thermal P.S.(T)	2X 60 MW -	Unit III Unit IV 85-86
2. Namrup Waste Heat(T)	1 X 22 MW-	1984-85
3. Lakwa Gas Turbine(T)	1 X 15 MW	Unit I 85-86
4. Borgehri Thermal Station (T)	2 X 30 MW	Unit I 85-86 Unit II-beyond 1989-90
5. Chandrapur Ext.(T)	1 X 30 MW	1987-88
6. Lower Barapani (H)	2 X 50 MW	Unit I 86-87 Unit II 87-88
7. Lakwa Waste Heat(T)	1 X 22 MW	88-89
8. Lakwa Phase-VI(T)	4 X 15 MW	1st & 2nd set 1987-88 3rd & 4th -1988-89
9. Dhansiri (H)	15 X 1.33M W	5 sets in 1988-89 & 10 sets in 1989-90

Manipur

1. Nangchug Wang (H)	3 x 0.5	1985-86
2. Golonel Micro (H)	2 x 0.2	1986-87
3. Khoga Micro (H)	1.5	1987-88
4. Boeing hydel (H)	2 x 0.5	1986-87
5. Thoubal (H)	3 x 2.5	1987-88

Meghalaya

1. Umiam-Umtra-IV	2 x 30	1986-89
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Tripura

1. Marani micro (H)	1 MW	1986-87
2. Baramura Falls (T)	2 x 5 M W	1985-86

Nagaland

1. Dhiphu (H)	1 MW	1985-86
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Arunachal Pradesh

1. Tago (H)	3 x 1.5	1st set 1987-88 2nd and 3rd set 1988-89
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Central Sector

1. Doyang (H)	3 x 35 MW	1989-90
2. Kopili (H)	2 x 50 "	1985-86
3. Garo Hills (T)	2 x 30 "	beyond 1989-90

Total

During 84-85 = 82.0 MW

During 7th Plan = 630.0 MW

Beyond 7th Plan = 90.00 MW

Grand Total = 802.00 MW

8. The investigations of following 26 identified hydel projects with a generating capacity of approximately 30,000 MW have either been initiated or about to be initiated by various agencies. In fact, reports on some of the projects like Ranganadi Stage I (405 MW), Kameng (600 MW), Tipaimukh (1500 MW), Subansiri (4800 MW), Dihang (20000-MW), Dhansiri (29 MW) and Thoubal (7.5 MW) have already been prepared. The name of the projects and their expected generation are indicated below :-



TABLE - 4

Sl. No.	Project	Expected generation
1.	Ranganadi (Arunachal Pradesh)	505 MW
2.	Darong (Arunachal Pradesh)	1000 MW
3.	Dikrong (Arunachal Pradesh)	100 MW
4.	Papun (Arunachal Pradesh)	80 MW
5.	Tuivai (Mizoram)	200 MW
6.	Dholeswari (Mizoram)	160 MW
7.	Kameng (Arunachal Pradesh)	600 MW
8.	Tipaimukh (Trijunction of Assam, Manipur and Mizoram)	1500 MW
9.	Loktak Downstream (Manipur)	150 MW
10.	Tuivai (Manipur)	60 MW
11.	Lower Barak (Manipur)	90 MW
12.	Irang (Manipur)	100 MW
13.	Thoubal (Manipur)	7.5 MW
14.	Subansiri (Arunachal Pradesh)	4800 MW
15.	Dihang (Arunachal Pradesh)	20000 MW
16.	Lokha (Meghalaya)	100 MW
17.	Umling (Meghalaya)	150 MW
18.	Upper Barapani (Assam)	60 MW
19.	Middle Barapani (Assam)	60 MW
20.	Lower Kopili (Assam)	100 MW
21.	Amting (Assam)	33 MW
22.	Kopili Stage -II (Assam)	185 MW
23.	Dhansiri (Assam)	20 MW
24.	Kynshi (Meghalaya)	600 MW
25.	Khawai (Tripura)	10 MW
26.	Serlui-B & Tuivai (Mizoram)	60 MW
Total :		30730.5 MW
or say		30000 MW

9. Besides the above projects-on which investigation works have already-been-initiated, the following investigations also have been identified by various agencies for being taken up :-

TABLE - 5

Sl. No.	Project and State	Expected Generation
1.	Upper Subansiri (Arunachal Pradesh)	500 MW
2.	Rikor (Arunachal Pradesh)	2700 MW
3.	Entali (Arunachal Pradesh)	3500 MW
4.	Idiopo (Arunachal Pradesh)	1150 MW
5.	Kolodyhe (Mizoram)	400 MW
6.	Dibong (Arunachal Pradesh)	3000 MW
7.	Lohit (Arunachal Pradesh)	4500 MW
8.	Naya Dihing (Arunachal Pradesh)	350 MW
9.	Kameng (With storage reservoir) (A.P.)	2000 MW
10.	Pakke (Arunachal Pradesh)	90 MW
11.	Manu & Deo (Tripura)	20 MW
12.	Meklang (Manipur)	75 MW
13.	Sanalok (Manipur)	90 MW
14.	Papum Puna (Arunachal Pradesh)	100 MW
	TOTAL:	18475 MW
	Say	18500 MW

Strategy for Seventh Plan:

10. The strategy for development of power projects in the North East involves some important problems. As indicated, the region has been endowed with a variety of power resources but has the limited consumption of power. The Region at present has an installed generating capacity of 704 MW which is expected to reach 786 MW by the end of Sixth Five Year Plan. Generating capacity of another 630 MW is expected to be added from the Projects under execution or or awaiting sanction during the 7th Plan period. Thus the anticipated supply and demand position in the region is as follows :-

TABLE -6

	<u>1984-85</u>	<u>1989-90</u>
<b>I. <u>SUPPLY OF POWER</u></b>		
<b>A. <u>Existing Generating Capacity.</u></b>		
1. <u>Meghalaya</u>		
1.1 Hydro	- 125.20 MW	
1.2 Thermal	- 5.20 MW	
2. <u>Assam</u>		
2.1 Thermal (coal)	- 120.00 MW	
2.2 Thermal (gas)	- 177.50 MW	
2.3 Thermal (Oil)	- 30.00 MW	
3. <u>Tripura</u>		
3.1 Hydel	- 15.00 MW	
4. <u>Regional/Central Sector.</u>		
4.1 Hydro	- 100.00 MW	
4.1.1 NHPC (Loktak)	- 100.00 MW	
4.1.2 NEEPCO (Kopili)	- 50.00 MW	
5. <u>Others</u>		
5.1 Diesel	- 63.00 MW	
5.2 Microhydel	- 13.00 MW	
TOTAL :	704.00 MW	
<b>B. <u>Additional Generation Capacity likely to be added.</u></b>		
1. <u>Assam</u>		
1.1. Thermal (coal)	- 60.00 MW	
1.2. Thermal (Gas)	- 22.00 MW	
	82.00 MW	
<b>C. <u>Generation likely to be added during 7th Plan period.</u></b>		
1. <u>Assam</u>		
1.1. Thermal	-	299.00 MW
1.2. Hydel	-	119.95 MW
2. <u>Meghalaya</u>		
2.1 Hydel	-	60.00 MW
3. <u>Manipur</u>		
3.1 Hydel	-	11.90 MW

		<u>1984-85</u>	<u>1989-90</u>
4. <u>Tripura</u>			
4.1 Hydel	-		1.00 MW
4.2 Thermal	-		10.00 MW
5. <u>Nagaland</u>			
5.1 Hydel	-		1.00 MW
6. <u>Arunachal Pradesh.</u>			
6.1 Hydel	-		4.50 MW
7. <u>Regional/Central</u>			
7.1 Hydel	-		205.00 MW
	Total :		<u>630.00 MW</u>

Anticipated Total Generation - 786.00 MW 1416.00 MW  
 Anticipated Peaking Capacity - 515.00 MW 980.00 MW  
 (After allowing for scheduled maintenance, auxiliary consumption etc.)

II. DEMAND OF POWER (MW)

<u>State/UT</u>	<u>1983-84</u>	<u>1984-85</u>	<u>1989-90</u>
Assam	237.00		450.00
Manipur	13.20		55.70
Meghalaya	22.90		52.90
Nagaland	14.00		27.90
Tripura	18.40		50.10
Arunachal Pradesh	7.10		16.20
Mizoram	6.00		20.90
TOTAL :	318.60	377.00	674.00 MW
Surplus (+)/Deficit (-)		138 MW(+)	306 MW (+)

In the above statement demand of power and likely availability of power as has been estimated by the Directorate of Power System Planning II, Central Electricity Authority in the paper 'Prospective Generation and Transmission Master Plan of NE Region - 1985 - 1995' has been adopted.

This power demand has been estimated assuming the 7 per cent per annum compound growth in the industrial sector. This master plan shows a surplus to the tune of 300 MW towards the end of the Seventh Plan i.e. the year 1989-90. It may however be difficult to accept this conclusion, because :

- i) This assessment includes commissioning of projects like Borjoi in Assam, Dayang in Nagaland, and some other projects which has been cleared by Central Electricity Authority. The actual availability of power at the end of the Seventh Plan will depend on timely commissioning of the projects as targetted. Considering the time frame and status of execution possibility of some of the projects being spilled over to 8th Plan can not be ruled out.
- ii) At the present stage of development most of the power consumption arises only from areas like Assam. The conclusion that the potential of power consumption will remain limited or will not increase rapidly may however is an open question. The region is only at the threshold of development and its natural resources are just beginning to be exploited. Power consumption from industries, processing of agricultural forest & horticulture produce and from rapidly developing urban centres could make for a much greater consumption than hitherto experienced. The need for lifting water for irrigation and for drinking water supply could itself generate a very considerable demand.

11. In fact, the emerging picture regarding surplus or deficit of power in the region is very misleading, The whole concept of a regional surplus or deficit of power begs the question of a regional transmission and distribution system which at present is non-existent. In the circumstances,

surplus of power from one area cannot be evacuated to areas which are deficit in power. Establishment of transmission and distribution network is very difficult and costly in the view of the terrain and the climate and it is not clear whether geography, climate and economics would work out towards the feasibility of an integrated regional grid connecting all areas. For quite some time power generation might need to be considered along with power transmission schemes to progress towards a system of various smaller grids eventually connecting with one another into a regional grid. In this context, therefore, merely because arithmetically the total availability of power might be shown to exceed the total demand for power, it would be wrong to conclude that generation of power should be ruled out for some time in the North-East. The assessment made by the Central Electricity Authority is an indication of the fact that a high priority may need to be attached to the development of a transmission and distribution network. The strategy should aim at development of power resources initially for supply at most economic rates to areas to be immediately served by them but eventually to flow from one State to another as a common pool of resource to be shared by all, barring such remote and inaccessible locations which it is not feasible to be brought on the grid as laying transmission lines to connect them would clearly prove uneconomic. In such cases, development of power resources for strictly local or limited consumption through exploitation of micro power, wind resources or an integrated rural energy system utilising bio-gas, wind energy, solar power or micro power should be taken up in such areas.

12. For development of power, exercise of planning has to be done well in advance because of the fact that it takes a few years to conduct investigation works to determine the feasibility of a project and taken another 6 to 7 years to construct a major hydel project and 4 to 5 years for a thermal project. Planning is required to be done long in view the fact that development of power is a continuous process. It is, therefore, necessary to deter-

mine the expected requirement of power for a period of 10 to 15 year and initiate investigation of hydel and thermal projects with a view to keeping the documentations ready well in advance for taking up projects in hand as and when necessary so that at no stage generation capacity lags behind requirement of power. This gives also some flexibility in the choice of generating schemes. Because the gestation period involved in bringing power generation schemes to fruition is generally longer than the plan period itself without planned advance action there remains practically no option but to confine the power programme almost exclusively to the on-going schemes which could be physically commissioned during the plan period itself. It may, therefore, be seen that the pattern of power programme is mainly dependent on the effective action taken in advance in years prior to plan formulation.

13. The following broad considerations are, therefore, relevant to planning for power development in the region :

- (i) In the context of rising expectations, urgent need to provide relief to these sparse tribal populations from labourious tasks involving great drudgery and for providing an answer to the power problem in terms of "here and now", large schemes cannot be offered as a solution. Immediate solutions for the power problems of North-East need to be devised. Theoretically a large number of alternative energy systems are available but these systems are location specific and in order to devise the adaptation and application of their technologies to local situations, very careful location based surveys are necessary. A strong organisation for the North-East for undertaking such surveys and for deciding the selection of appropriate technologies is urgently needed.
- (ii) The conventional energy systems should be planned to cater to the requirements of

relatively highly populated regions, viz. Assam, Tripura (Plains portion) parts of Meghalaya, Manipur (plain portion). In this area corresponding to generation, transmission systems for consumption in the area would be viable. This is to be an integrated exercise in planning for power generation and transmission.

- (iii) The mountaneous terrain in the hilly areas of North East with a large number of rivulets and streams lends itself ideally suited to taking up a large number of micro/mini hydro projects. This would be especially so as we enter more and more interior areas. Although the cost of generation from Micro/Mini hydel projects will be more than bigger hydel projects, their advantage will lie in cutting out of heavy transmission cost and in reaching electricity to the large number of interior tribal villages which due to problems and costs of transmission lines are not likely to see the electricity for a long time to come if, we only depend on conventional big hydel projects. There is also scope for R&D work in relation to economising the cost of generation in mini/micro hydel projects and organisations like BHEL, IITs, etc. should be encouraged to undertake research in the field. It is also necessary that each state/UTs identified the organization which will undertake preparation and implementation of these projects. Suitable management structure is also required to be developed so that after execution these projects are managed satisfactorily. This is an important priority area for North East as great untapped potential exists.



Even at the national level the potential of small hydro stations (mini, micro and small upto 5 MW) has remained largely untapped and Advisory Board on Energy has observed that as against an estimated potential of 5000 MW aggregate installed capacity of small hydro projects is today around only 160 MW.

- (iv) Though there are substantial coal reserves in the North Eastern Region, tapping of coal for power generation calls for a low priority and this fossil fuel could be preserved to be utilised at a future date in view of abundance of other resources for power generation namely, hydro potential and availability of natural gas in the region. However, coal based thermal station like Garo Hills may be considered which are tied up with other projects.
- (v) At present a sizeable quantity of gas is already flared in Assam and it is understood from ONGC authorities that Assam itself has a gas reserve of 64.09 billion Cu.M. which is capable of generating about 1500 MW power for 15 years at 100 percent load factor. Similarly, in all explorations being done in the North East, indications are that huge quantity of gas would be available from Nagaland, Tripura and Arunachal Pradesh. In Tripura, at present 0.1 million cu. meter of gas per day has been assessed to be available from Baramura Gas fields, and it seems that this quantity is already tied up with the gas turbine station coming up in Tripura. Explorations are already on the other gas horizons in Tripura and at Rokhia a very high potential of gas availability of the order of 1 million cu. meter of <sup>gas</sup> per day is expected. It may be

possible to plan a 100 MW station from Rokhia Gas field immediately.

- (vi) Decision regarding final choice of the projects to be taken up in the Seventh Plan which are likely to yield benefit in the 8th Plan has to be done considering the availability of resources, need and quantum of transference of power and comparative economics of the projects, having also regard to comparative backwardness of some constituent units of the NE Region for locating power stations there for removing regional imbalance.
- (vii) The economic feasibility of large hydel projects and its corresponding match with thermal projects for balancing it, would need to be studied alongwith the technical feasibility of impounding large quantities of water within the limitations of rock and soil characteristics of the region. In other words, vulnerability to earthquake and nature of soil and rock may impose very great limitations upon taking up of hydel projects. The history of Loktak project may hold out lessons for future projects. There is need for continuous study of the interaction of reservoirs with the behaviour of soil and rock formation. The dis-similarities within the region being what they are, no single location would suffice for such a study for application to other regions and the programme for the study of the characteristics of the behaviour of rock or soil structures should be both comprehensive and continuous.
- (viii) It is true that having regard to the seismic risks in the region, an appropriate earthquake factor is taken into consideration while designing the foundations of important civil constru-

ction works but this is done largely from the point of view of civil engineering problems. The desirability of locating projects like dams or reservoirs and defining their safe limits from the point of view of seismic threat to the region is not done systematically from the seismological side. A number of field observation centres have been located by NEC with the assistance NGRI, Hyderabad. It is desirable that clearance from the seismologists of the designs of the specified category of work should be obtained and this should be made a pre-condition for sanction of schemes in this regard.

- (ix) The anticipated demand for power in this region by 1990-91 as assessed by the Central Electricity Authority may not, except for export, to other regional systems justify taking up of all the hydel and thermal generation projects enumerated above. As investigations taken up of way reveal potential of a large number of projects, it may be worth consideration whether to start with projects with less than 1000 MW capacity should be taken up for implementation during the Seventh Plan. The bigger projects will need study from multi-disciplinary teams as a number of loose ends have to be tied up firmly and aspects of inundation, uprooting of families, seismic repercussions and maintenance of environmental balance have to be taken care of much more precisely. Thus projects like Damwe HEP (1000 MW), Tipaimukh project (1500 MW), Subansiri HEP (4800 MW) and Dihang HEP (20000 MW) can be kept aside for detailed study, Leaving these aside from the list in para B, the generation that could be expected from the rest, may be of the order of 3430 MW which would be able to meet regional demand. The exact generation

available will be fully known after the investigation of all the projects are completed. However, assuming that 3000 MW will be available from these projects, the investment that will be necessary to take up these projects will be of the order of Rs. 3600 crores. This assessment has been made assuming that 1.2 crores average investment norm derived from Doyang Hydel project (105 MW), estimated cost of Rs. 128.61 crores and Kopili Hydel Project (150 MW) with revised estimated cost of around Rs. 186.00 crores will be necessary for per MW of installation.

- (x) Even assuming that there would be surplus power, the power generation potential of the region could be viewed from an industrial angle. In the context of this region, power should be treated as an industry, and bulk transmission of the same outside the region can become a substantial source of revenue for some of the States/UTs of the region, who would otherwise have no income generation for sustaining growth. While planning for regional power generation and transmission attention should be paid to the possibility of large scale export of power. As of date the inter-regional transmission linkage between Assam and West Bengal is not even adequate for minor power transmission. Therefore, the power plan for the region for the Seventh Plan should provide for integrated inter-regional transmission system. This would involve not only more serious planning of the regional grid with suitable augmentation by way of laying high voltage transmission lines, but inter-grid power transmission line as well. It is relevant to note in this connection that the West Bengal Planning Board has reportedly indicated the view to have a dialogue on bulk supply of power from

the North Eastern Region. Further planning for the Power Sector will have to keep this possibility in view. Even so, it is worthwhile to tap as much as possible to hydal resources and create surplus condition within the permissible resources. This will enable availability of cheap power which may motivate power consumption and bring in its wake, new ventures to be set up in the region. It has been the experience that if surplus power is made available within reasonable rate load tends to increase automatically and requirement of load tends to increase and catch up generation capacity in not so long a time. It is quite possible that with cheap power availability the economy of the region may have sudden boost up which once again will invite more generation capacity to be established and process would continue. Gap of per capita consumption with reference to all-India consumption will narrow down.

- (xi) There has been a rising trend in the capital cost of power plants, partly, due to inflation in economy and partly due to the increase in efforts have, therefore, to be made to contain these rising prices to the extend possible. Future planning for power should be based upon optimal mix of various sources of generation viz. hydro, thermal (gas) and micro which will ensure optimal development of these resources and minimise the total overall cost. The choice of the various sources of electricity should be based on detailed studies covering various possible patterns of development on the basis of systems approach.
- (xii) Transmission and distribution losses has been continuously rising. In India, the percentage of loss rose from 14.3% in 1965-66 to more than 19% in 1976-77. The T&D loss in the North Eastern Region is much higher according to one

estimate, it is as high as 33%. Some of the reasons for this high percentage of T&D losses are, low density, inefficient distribution system, low power factor, difficult terrain etc. Effective steps have to be taken to improve the power system. With the steeply increasing cost of power generation, it may possibly be more remunerative to invest more for transmission and distribution that might reduce T&D losses than investment in additional capacity generation.

- (xiii) A bigger programme of power generation would automatically call for greater improvement of technological capabilities and R&D support on a big scale. The R&D projects to be taken up in the Seventh Plan may relate to development of new design for equipment. For solving various operational and maintenance problems, power system planning including identification of location, construction and project management, software development, integrated operation of power system etc, training of power engineers as also other technicians is very important. The need for training of power engineers & technicians has also been recognized by the Advisory Board on Power and it has suggested that State Govts. should make arrangements for certification of operating and maintenance staff but a uniform syllabus and criteria for certification need to be set up by the Govt. of India. Power Engineers Training Society of India should establish a Regional Training Institute in the region.
- (xiv) Greater emphasis should be laid in the Seventh Plan on Rural Electrification. The task of rural electrification in the NE Region is relatively difficult because of its topography having a wide valley divided by mighty Brahma-

putra across the whole of the Region with low density of population and with hill ranges all round where population were still sparsely located. Thorough improvised and improved technology, smaller but local sources of power should be tapped for providing electricity to the villages. The Seventh Plan target should be to raise the percentage of villages electrified in the region to atleast 40%. In the Seventh Plan, the programme of Rural Electrification should primarily address itself to the task of lift-irrigation as enough ground-water resources are available in the valley for rising of multiple crops besides setting of Small Industries with locally available raw-materials. This will be definitely give a big boost to the agricultural production in the North Eastern Region. If sufficient industrial and agricultural loads could be connected, the rural electrification schemes could be more viable for implementation. In order to make the programme more acceptable amongst people, the Advisory Board on Energy has suggested that thorough planning should be done in making power supply timely and stable and has also observed that rural consumer will have a better deal in many places if their power supply is entrusted to cooperatives ( or other Associations of consumers and not retained with SEBs.

- (xv) Electification of household has practically made no progress in this region. This has important implication on oil consumption in the household sector. Advisory Board on Energy has also stressed this fact and observed that at present as much as 80% of the energy consumed in household sector in the rural areas is from non-commercial sources and in the long run it is to be replaced with electricity. Special programmes may, therefore, be taken up in the

Seventh Plan to expedite the pace of household electrification. If required, lower rates may initially be charged for household connections, especially in the areas around existing/ongoing power projects and such rates could gradually be increased bringing them on par with the normal rates.

#### RENEWABLE RESOURCES OF ENERGY

14. The NE Region has abundant hydro power, forest and bio-mass resources. In some ridges and slopes of hills swift winds blow, where wind energy can be profitably harnessed. Intensity of sun in many areas are quite high and there are definite scope of making good use of solar energy in these areas. But the region as a whole is characterised by heavy rainfall and cloudy sky for considerable period of the year, which makes total dependence on solar energy for use other than irrigation (where energy is required to operate pump during dry days which almost invariably are sunny) impracticable. However solar Energy can be very profitably utilised to supplement other forms of energy specially for tube-like heating water or drying processes, in rural, urban as well as industrial sectors.

15. There is, however, lack of data in respect of different renewable sources of energy without which systematic planning becomes difficult. The NEETCO was engaged by the NEC for conducting a pre-investment survey for bio-gas development. The report recommended a large number of viable locations for setting up bio-gas plants in the constituent units. Some efforts have been made for installation of bio-gas plants and solar and wind energy devices on pilot basis under a scheme sponsored by NEC. Besides, a few data collection centres are also being set up.

#### Strategy for Seventh Plan:

1. It has to be emphasised that for proper planning and timely implementation, follow up and monitoring are essential for success of RPE programme and it is possible



to achieve such results only if State Governments create effective organisational setup for this purpose.

17. For the success of RRF programme, extensive data collection and documentation works ( in respect of energy availability, energy requirement and feed back received from the operation NRSE Plants and devices), technical research and development (to develop plants and devices most suitable for the N.E. Region), economic researches (to study economics of non-conventional energy vis-a-vis conventional energy and prepare projection of such costs to 1990, 1995 and 2000 AD) and socio-economic researches (to evaluate total impact of use of NRSE on social life of the different section of the population) may be undertaken. It will be also necessary to train manpower for implementation, operation and maintenance of NRSE schemes. North Eastern Council may bear the above research, development data collection and training costs.

18. Bio-gas has tremendous potential in the NE Regions and there has already an awareness among the people about this renewable energy source. A viable unit for an average family will be of 4 cu.m. capacity. Cost will be about Re.15,000.00. Heads of cattle/animal required to feed the plant will be 5 to 6. Taking the per capita fuel wood as 0.6 tonnes, each bio-gas unit will save about 0.30 tonnes (30 quintals) of wood per year which would be otherwise obtained by felling trees. The region's livestock population is estimated at 1.5 million (according to 1979 figures) Even if 30% of the wastes of this livestock population could be utilised, more than 260 million cub. ft. of gas would be available to provide cooking fuel to the housewives, street lights and domestic light. Besides the livestock waste, the region abounds in agro-waste, forest-waste and plants like water hyacinth which provide raw material for bio-gas production. The technologies which are available from the School of Applied Research, Sangli and other institutions and is hand-operated could provide an answer to many remote areas in the North-East. The IIT developed technology could also be tried.

19. The average wind energy density (with average velocity of 3 to 8 KMPH) in many remote areas of the region makes windmills feasible for irrigation as also for various domestic and community use. Data on wind velocity is not available for the entire region. At Pasighat and Tuting in Arunachal Pradesh, the average wind speed recorded is 9.5 KMPH. In many areas of Nagaland, Mizoram, Meghalaya and Manipur, the average wind speed varies from 3 to 6 KMPH where low speed wind mill can operate.
20. All these alternative energy systems, however, suffer from two difficulties - capital cost has to be found for which there is no local scope and hardly much information. The second is that the high-risk factor involved in unknown technology makes it necessary to have some effort by the State to undertake pilot projects in considerable number. The present parameters of assistance for institutional funding either from REC or the Deptt. of Non-conventional Energy may have to be reviewed and other mechanism, for undertaking pilot projects may have to be evolved.
21. Adequate and innovative funding devices for undertaking a specific alternative energy systems based approach is required. Considerable support from State exchequer is certainly a must. Institutional funding cannot be related to a specific village in the circumstances of the terrain, geography, and other problems of the North-East. But it may be possible to have an arrangement of institutional funding and State exchequer support to be centralised either at the regional level through the NEC or at the State level. In other words, if financing institutions are set up for developing renewable resources of energy the undertaking of investigation, installation, commissioning and maintenance of such projects can be done systematically. Care has to be taken that such projects have low capital intensity, simplicity of technology, training input for local manpower development and adequate community attention and support are built into the very system of taking up projects in the North-East.

22. Villages for electrifications through RRE should be identified. At least 200 villages may be electrified on a pilot basis during the Seventh Plan through new and renewable resources of energy.

23. The programme in RRE sector shall now emerge out of demonstration phase and should be taken up on a much larger and commercial scale. In order to launch really big programme, States/UTs would have to set up specific agencies/corporations so that a large number of projects could be undertaken with the help of institutional finance. It may also be considered whether instead of giving subsidy to individual or groups of beneficiaries, such an agency/corporation produces energy from various sources and sells the energy to the beneficiaries.

CHAPTER IV.5

FLOOD CONTROL

There are two principal river systems in the North-Eastern Region, the Brahmaputra and the Barak. The alluvial plains of the Brahmaputra and the Barak Valley are drained by the mighty Brahmaputra and Barak and are prone to floods by these rivers and their tributaries.

Brahmaputra River System

2. The Brahmaputra which is a major international waterway of the east has its source in a glacier mass in the Northern most chain of Himalayas in the Southwest of Tibet about 80° east, called Kulinganga. Several tributaries join the infant river from the pass of Manassarovar lake area in which two other great rivers, the Indus and the Sutlej, have their sources also. The Tsangpo (sacred river to the Tibetans) as the river is known in Tibet, flows through Tibet (China) for about 1,000 miles eastward during which it receives many tributaries. It touches the biggest trade centres in the Tibetan plateau viz; Shigatse, Chusul Dzong and Tsela Dzong. From near 83° east, the Tsangpo has a wide navigable channel, it is perhaps the most remarkable high altitude inland waterway in the world, boats plying to and fro for 400 miles at the incredible height of 12000 ft. above sea level. At Tsela Dzong, the Tsangpo is joined by the Gyamda and it is two miles wide at the confluence. Further east of Po (9680 ft.) the river is broader still, and then turning abruptly to north and northeast it makes its way through a succession of stupendous gorges between the high mountain masses of Gyala Peri (23740 ft.) and Namchebarwa (25445 ft.). Through these deep narrow gorges, it rushes down in a series of cascades and rapids turning round the range in a hair-pin bend where it takes in, from north, the Po Tsang Po. Then turning to the south and south west it emerges from the foothills under the names Siang and then Dihang until near Sadiya it meets Dibang and Lohit, whereafter it is known as the Brahmaputra. According to the statistics furnished by the Brahmaputra Board, the catchment area of river Brahmaputra is 5,73,500 sq.km. and it is 2880 km. long, of which 1625 Km. lie in Tibet, 918 Km. in India and 337 Km. in Bangladesh. Its annual flow is nearly 61.65 m.ham. (500 maf.)

and the silt charge is 3700 Hect.meter (3 lakh acre feet.).

3. The Brahmaputra flows in gently in the westerly direction through the Assam Valley. The Brahmaputra is a braided river all along its length in Assam and Bangladesh. The river bed and banks are built of fine alluvial soil. From Kobo to Dhubri its bed slope varies from 1 in 3700 to 1 in 10,000. The average flood lift at Dibrugarh is 4 meters, at Tezpur 4.5 meters, at Pandu 9 meters and at Dhubri 6 meters. The maximum observed discharge of the Brahmaputra at Pandu in 1962 was 62,000 cumecs and the minimum discharge is of the order of 4300 cumecs. It is further joined by 42 tributaries in Assam, 27 on the North Bank and 15 on the South Bank. The characteristics of the North bank tributaries and the south bank tributaries vary widely. Generally, the north bank tributaries are much bigger in size and they have steep slopes and shallow braided channels. They generally have flash floods and carry high silt charge and quite often change course. The south bank tributaries have comparatively flat grades, deep meandering channels, and carry comparatively low silt charge. They are stable in nature. The rainfall in the basin in India is very high. It varies from 174 cm in the western part (Kamrup district) to 640 cm in the north-eastern part (Arunachal Pradesh). Bulk of the rainfall (85%) takes place during the months of May to September. The south-west monsoon is responsible for bulk of the rainfall in the Brahmaputra Valley. Before the monsoon, some rainfall takes place in the months of April and May due to thunderstorm activities.

4. The Brahmaputra valley is about 880 Km long in Indian territory, out of which 120 Km is in Arunachal Pradesh and 720 Km is in Assam. It is 80-90 Km wide, out of which the river itself occupies 6 to 10 Km. At places, it is 15 Km wide. The valley is surrounded by hills on three sides. This narrow valley surrounded by hills with heavy rainfall concentrated during 4/5 months is the main cause of frequent floods. Unlike other parts of the country, the first flood visits the valley in June and once the Brahmaputra is bankful, it continues to remain so till the middle of September and a few days heavy rainfall in the catchment causes a flood in the Brahmaputra.

This explains the visit of 3-4 waves of flood in a season. Before one wave of flood fully subsides, it is visited by another. In consequence, a vast area of the valley remains submerged by the flood water for almost three months in a year. The problem has become more complicated after the earthquake of 1950 when there was considerable bed rise in the Brahmaputra in the Upper Assam region resulting in upsetting of the drainage system there.

5. The Brahmaputra basin is highly seismic. It experienced several major earthquakes in recent times. The earthquake of 1897 and 1950 in this region are rated amongst the severest earthquakes that have occurred in the world. In the 1950 earthquake, the drainage system of the Upper Assam region was greatly affected. Due to occurrence of high landslides in the hills, silt charge in the river increased to such an extent that the river bed at Dibrugarh registered a rise of 3 meters in one season.

6. Another major problem of the valley is bank erosion. Large areas are eroded away every year by the river. The chief cause of erosion is instability of the river which is due to high silt charge much beyond the carrying capacity of the river. Another important factor is its age old tendency to shift south-ward due to bringing in of high silt charge by the north bank tributaries to their confluence with the main river. There are few places such as Guni, Howlight, Moriahola, etc. where due to repeated attack by the river the embankment had to be retired as many as 9-10 times. Seriousness of the problem can be gauged by the fact that during 1923 to 1954, between Kobo to Dhubri, the south bank had undergone erosion over a length of 355 km and the north bank 230 kms. Bank erosion on the tributaries is no less serious a problem. Like Brahmaputra, the main cause of bank erosion of a northern tributary is instability of the river channel due to excessive silt load carried by the river. The problem is less in case of southern tributaries which are meandering in nature and stable. The outer curves of the meanders are subjected to erosion but rate of erosion is very slow.

7. To tackle the flood problem of the valley, construction of flood embankments on the Brahmaputra and its tributaries has been the main method employed so far. Some works of improvement of drainage, river training and town protection works have also been undertaken. Construction of embankments on the Brahmaputra and its tributaries was started as short term protection measures with the idea that these would be fitted into the long term plans to be taken up subsequently as permanent measures in the valley. So far approximately 900 Kms of embankments have been constructed on the main river and 3270 kms on the tributaries. Protection works have been taken up in 6 major towns, 29 minor towns and 90 villages. 54 Nos. major sluices and 217 Nos. minor sluices have been constructed. Area so far protected from flood is 12.81 lakh hectares. The embankments constructed have served useful purpose in protecting areas inundated by floods but all the same they have been found to be inadequate in many respects such as, inadequate section, uncompleted section, weak foundation, inadequate/irregular spacing etc.. This has resulted in large number of breaches occurring every year, specially during high flood years. In addition to above, the Brahmaputra Flood Control Commission did some dredging work in the Brahmaputra purely on experimental basis to test the efficacy of such-a measure for arresting bank erosion in the Brahmaputra. The performance of the dredgers however was not considered satisfactory.

#### BARAK RIVER SYSTEM

8. An entirely independent sub-basin of the main valley of river Brahmaputra lies in the southern region and is known as the Barak. The Barak valley lies between Khasi and Jaintia Hills on the north, Manipur on the east and Mizoram on the south and joins the main Brahmaputra in Bangladesh. The Barak has a catchment area of 25,000 sq. km and rainfall is about 300 cm. The valley lies mostly in Cachar district of the State of Assam. The width of the valley between the foothills is of the order of 40 to 50 km only.

9. Barak is fed by tributaries both from the north and the south. There are seven northern and six southern tributaries. The river Barak bifurcates at Bhangra, down stream of Badarpur into river Surma and river Kushiya. These rivers flow from the international border with Bangladesh. The bed level of Barak at places is below the mean sea level and the gradients of river Barak and Kushiya are very flat. The flood level at Silchar, 600 km away from the sea, is only 20 M(R.L.). Due to such adverse topography, flood spills cannot find continuous drainage along the valley and remain confined within the tributary basins till the Barak level falls sufficiently to receive back the spill. Thus Barak floods back up the tributaries at their outfall and makes them spill their banks in turn and almost the entire valley upto the foothills is submerged. This results in large scale inundation, and water logging. To provide relief 665 Km of embankment, 236 Km of drainage channel have been constructed upto 1981-82. The approach to the solution of its problem will also be on the lines of the main Brahmaputra Valley.

10. The west flowing rivers of Tripura come under Brahmaputra Basin in Indian Territory. The important west flowing rivers are the Hoara, Buriganga and Gumti which join the Meghna on the left bank in Bangladesh. Two other rivers, namely, the Muhuri and the Fenny flowing westwardly enter Bangladesh and ultimately outfall into the Bay of Bengal. These rivers spill their banks in certain reaches during the monsoon season. The Government of Tripura has so far constructed 90 Km of embankments for protecting lands from flooding. They propose to construct another 20 Km and also strengthen the existing ones.

#### THE PROBLEMS

11. The problems due to the floods are of three types  
1) Periodical submersion of agricultural land as well as homesteads. 2) Flash floods in the upper reaches of rivers due to sudden increase of water discharge in narrow and shallow streams. 3) Bank erosion, meandering of river channels and consequent change in the river courses. Since the floods occur during the main agricultural season, the loss caused due to the submersion of the standing crops is quite considerable in the Assam Valley as well as Cachar Valley. In addition, the loss of cattle, property and human life is also considerable.



The erosion problem is more prominent in the Northern tributaries as well as some reaches of the main Brahmaputra near Dibrugarh, Jorhat and Palashbari in Assam. Various methods for avoiding the flooding have been attempted. One common method adopted is the construction of flood embankments to prevent the river water entering into the fields. this is continous and short term measure only.

12. An idea of flood damage in the State of Assam can be had from the following statistical data which is based on the average for the period 1953 to 1970 :-

1.	Area affected $\frac{m. ha}{m. ac}$	$\frac{0.90}{2.02}$
2.	Population affected (in lakhs)	12.74
3.	Damages to crop	
	i) Area $\frac{m. ha}{m. ac}$	$\frac{0.15}{0.37}$
	ii) Value (in lakhs)	585
4.	Damage to houses	
	i) Number	19,431
	ii) Value (Rs. in lakhs)	25
5.	Head of Cattle lost	5444
6.	Human lives lost	22
7.	Damages to public utilities (Rs. in lakhs )	103
8.	Total damage to crops, houses & public utilities (Rs. in lakhs)	713

13. The periodicity of the flood and their flood crest can be considerably controlled by constructing storage reservoirs in the upper reaches of the tributaries of the Brahmaputra. These reservoirs can, apart from flood control, give the benifits of hydel power, irrigation, inland water transport and fisheries also. Hence, the long term measure for reducing the damages due to the flooding has to be in the form of storage reservoirs. Already project reports for a few such projects have been prepared by the Central Water Commission and Brahmaputra Board. These are Tipaimukh Project on the river Barak and Subansiri and Dihang projects on the Subansiri and Dihang rivers which join river Brahmaputra in Assam. Of course these projects will have to be examined from various angles including ecological considerations, seismicity of the area and management systems required for

implementing and maintaining these big projects. In the meantime, the investigations for other reservoir projects should be a continuing process and new innovation such as having a series of smaller reservoirs instead of a big one will also have to be tried. The problem of bank erosion has also to be tackled on the basis of a master plan rather than construct protection works on adhoc basis.

14. For a mighty and problem river like Brahmaputra, any talk of controlling floods fully is not a practicable proposition. The long term flood protection measure as discussed above will take a long time to mature due to the inherent problems both logistically and financially. However, providing immediate relief in case of flood havoc is an urgent necessity. One of the ways of providing this relief is to have a system of flood warning net work, such - that the local authorities get sufficient time to evaluate the flood prone areas in some important localities. The Central Water Commission through its flood forecasting Circle at Gauhati has established a wireless net work system covering the entire North-Eastern region to issue flood forecasts for the strategical areas of Dibrugarh, Jorhat, Tezpur, Gauhati and Dhubri in Assam apart from many other stations. The North Bengal river system is also covered by a similar net work system. During the flood season these wireless stations work round the clock and hourly river water levels are communicated. 12 hourly forecast indicating the anticipated flood levels are intimated to the local authorities in the townships as mentioned above. The Calcutta A.I.R. is also furnished the data for issuing through their bulletins. This system has been operating for the last one decade and has been proved to be very useful for the protection of the areas. It is estimated that a loss to the extent of about Rs.100 crores has been prevented by timely steps taken by the local authorities to shift people etc. It is, therefore, necessary that these aspects are also considered as part of the long term strategy for development of the North Eastern Region, since the indirect benefits are of considerable magnitude.

STRATEGY FOR FLOOD CONTROL

1. Government of India have established the Brahmaputra Board in December, 1981 so that an integrated and coordinated approach could be adopted in harnessing the potential and in tackling the problems posed by Brahmaputra and its tributaries. The Board is still in its infancy but it will have to be ensured that it develops working arrangements with a host of agencies, including governments of the State/UTs in the region, which are directly or indirectly connected with either causes which lead to floods such as deforestation, jhuming etc. or work in connection with flood control measures. The Board will also have to develop close links with NFC which is the forum where Governors, Lt-Governors and the Chief Ministers of the seven constituent States/UTs in this region can play a positive role in bringing about a well coordinated plan of action for tackling the challenging task of moderating and controlling the floods in Brahmaputra and Barak basin.

2. A master plan will have to be prepared after studying the problem both in respect of short term and long term measures which are required to be taken to protect the basins from the menace of flooding and bank erosion. It will have to be multi-disciplinary and may have to be implemented by more than one agency.

3. Storage reservoirs appear to be a must for the flood control. The ones investigated over Dihang, Subansiri and Barak will, if decided to be taken up, will surely help in moderating floods as a major portion of the discharge of the river will be taken care by these reservoirs. It should, however, be carefully considered by concerned experts whether a series of storage reservoirs on all major tributaries of Brahmaputra can be built primarily for flood moderation, their use for electric generation of irrigation being an accompanying benefit.

The question of storage in large reservoirs and corresponding requirement of tunneling in some cases raises also the need of a detailed and careful study of the behaviour of soils and the soil structure of many hills is of clay and shale and of soft rock. The consequences of seepage could well go beyond the estimates which form the basis of selection of design. Similarly, the implications of such storage on the proneness to earth quake and the standards and even the concept of safety which underlie the design need a fresh review in such areas.

4. It will be necessary to improve the existing embankment system along with construction of storage reservoirs. Arrangements will also have to be made for maintenance of these embankments and of eliciting peoples participation in maintaining and guarding these.

5. Control of contributing and aggravating factors like rapid deforestation and jhuming are as much necessary as evolving a master plan for flood control. State governments should take immediate measure for replenishing the forest area already lost during last decade or so and ensure that exploitation of forests in future is regulated in such a manner that total-forest cover available is not reduced. Simultaneously, efforts will have to be intensified for providing a viable and acceptable alternative to jhumias.

6. New technologies will have to be evolved for taking up large scale afforestation programmes in very rugged terrain and in situation where labour is scarce. Prospects of aerial seeding need to be fully explored.

7. Flood warning system will have to be further streamlined both for Brahmaputra and Barak basins. This should also involve quick analysis of data and information received from various sources from satellites to interior warning stations and development of a communication system which would be able to disseminate warning quickly.

Developing mechanism for pragmatic and positive cooperation between India, China and Bangladesh will also have to be thought of both in the field of flood forecasting and flood protection.

8. - The task of flood preparedness and providing immediate relief also needs urgent attention on a continuing basis. This is essentially for Govt. of Assam and to some extent Govt. of Tripura. The contingency plans must be regularly reviewed and updated. The organisation responsible for this in the State Government should be well equipped and there is no reason why such organisations should not have Baily Bridge spans, boats, motor launches etc. to deal with floods instead of looking for such equipment at the last moment from various sources including Defence forces. The contingency plan should also identify the strategic points, both in flood chronic areas as well as marginal areas, from where the flood fighting and relief measures would be launched and such points should be well stocked with equipments whose operational efficiency should be maintained at all times.

CHAPTER IV.6  
MINERALS AND MINING

The geological resources of the North-Eastern region cover a large variety of minerals, of which the most important are petroleum, limestone and coal which can be the base for the establishment of big industries, for which very large investments and high-level technology are required. In this field only the government organisations and public undertakings can provide the necessary finances and expertise. In addition to these minerals, there are reports of small occurrences of ceramic material, clay, glass-sands, abrasive material, fertiliser rocks and refractory minerals which require limited capital and the adoption of long-used technology. This can easily be taken up by the local residents to meet the needs of the increasing demands of pottery, glass, abrasive papers and other material required for day to day purpose. The finances required for taking up such industry are not very large and with a little encouragement, both financial and technical, small scale entrepreneurs can easily establish the industries. In addition, there are industries which require a higher attention than the common ones mentioned above as in the manufacture of industrial abrasives and polished tools. The government undertakings can easily take up work in this field. The industry relating to metalliferous deposits such as chromite, magnetite, clay and other base-metal minerals required positive identification and establishment of reserves and would also come under large scale capital intensive industry. More aggressive and positive approach by undertakings like CGI will be required to make optimum use of these resources.

2. The contribution of petroleum of the North Eastern Region, to the economy and industrial development of the country, hardly needs mention. However, as regards the North-east region itself, apart from the limited advancement which the petroleum industry has created by providing employment opportunities to technicians, skilled and un-skilled workers, its contribution to industries based on the petroleum derived products has been very little. The multipurpose use of natural gas and of oil refinery effluence has practically been

nil and most of these highly useful by-products have been allowed to escape into the air. It is necessary that these valuable products are also made use of, in the production of petroleum by-products and to some extent in the production of power. Tripura State has proposed an Urea Plant based on the natural gas, making use of only part of it and it should be examined if there is scope for many more. There is immediate need for the establishment of several industries based on the petroleum derived by-products and while the NEC can only play limited role, it would be worthwhile for the Petroleum Ministry to take it up.

3. The abundance of resources of limestone specially in Meghalaya, Assam and to a lesser extent in Nagaland and Arunachal Pradesh, can support large scale cement and lime manufacture and chemical grade lime product industry. However, while thinking of exploitation of these munificent natural resources, it is very necessary to identify clearly the other inputs namely coal and the technology that will be used for the manufacture of cement or lime. The quality of most of the limestone is such that it can directly be used in the manufacture of cement provided the long-followed technology of rotary kiln is used. A change in the technology to a VSK type obviously brings about rigidity in the raw-material quality and only part of the huge resources of limestone would become suitable. While deciding on the appropriate technology for cement or lime manufacture based either on the economic operation or efficiency of operation, it would clearly be necessary to select the fuel raw material required for the purpose namely coke or coal.

3. The vast resources of coal in the North-eastern region have been described and accepted as belonging to a particular type based on physical and chemical characters. The coal is generally described as highly friable, powdery, lignite-bituminous with low ash content, high volatile and sulphur contents and with a very high calorific value. While these descriptions are appropriate, by and large, they only apply as an average to the North-eastern coal, but the variations of characters in the coal would make the acceptance

of the general characters as local characters unreliable. It is, therefore, essential to make an inventory of the coal occurrences starting from one end to the other in Meghalaya, Assam, Nagaland and Arunachal Pradesh giving all the characteristics, physical and chemical, wherever these coal occurrences are explored. An inventory of the secular characteristics will directly help in finding out whether the coal at a coalfield can be used for a particular industry.

4. The determination of the characters of geological material such as coal, clay, abrasives, glass-sands, sillimanite, kyanite and bauxite etc. is equally necessary so that their suitability for use in an industry can be judged directly. It is also equally necessary to arrange for beneficiation/conversion tests for their use in a particular industry. An inventory of this type will also be helpful.

5. The usefulness of preparing inventory on this line is demonstrated by the need which has risen as regards the ~~an~~ supply of coke breeze for the cement and lime plants. In the feasibility reports prepared for these plants it was expected that coke breeze would be brought from Bengal-Bihar or UP or lump coal from the North Eastern Coalfield would be available. The difficulties which are now being anticipated and expected are in the transport of coal or coke breeze, the inability of the North Eastern Coalfield to supply lump coal and unsuitability of some of the North-Eastern region coal for conversion. As a result, it has become necessary to arrange for R&D projects for the conversion of some of the North-eastern region coal. The possibility of conversion has been established on a laboratory test-scale and it is expected that the operation scale can be increased. In this context, it becomes necessary to assess the total requirements of coke breeze for the identified mini-cement and lime plants and contemplated ones. The plant for conversion of coal to coke breeze could be set up in one of the coalfields in NE Region and arrange for a large scale conversion plant at one of the coalfields.

6. One of the essential functions for the assessment of geological natural resource both as regards its quality and reserves is a continuous process of exploration which would



include geological mapping, core drilling and exploratory mining. The programme of such exploration specially for limestone and coal in the North-eastern region is being carried out by the GSI and the concerned State departments of Geology or Mineral Resources. In continuation of the preliminary exploration by these organisations, it becomes necessary to carry out detailed exploration on similar lines to establish the quality and reserves for opening of mines or for identifying the material for a particular industry and NEC is arranging and sponsoring such detailed work.

7. As a sequence to the identification of geological raw material which would sustain an industry, it would become necessary to arrange for feasibility studies for the establishment of the mineral-based industry. In this connection, the availability of large reserves of limestone, of mineable coal near vicinity, and of electric power close by at Siju in Garo Hills, Meghalaya makes it possible to think in terms of a very large cement plant, which could even be of the capacity of one million tonne per year. Ministry of Industries should get this scope examined and if the proposal is found feasible include it as a Central Project to be taken up by the CCI. This will also meet the deficit of coal in NE, the inwards movement of which strains the limited railway system to a very great extent. In addition, similar raw material conveniences and infrastructure present near Umrangshu in N.E. Hills, Assam also leads to the conclusion that feasibility studies for the setting up of a million tonne cement plant there could also be taken up.

#### Strategies for Development

8. Thus in the domain of minerals, which in the north eastern perspective would continue to be one of the most important raw materials, the following strategy initiatives are suggested in view of the existing situation and the regional characteristics :-

1. Limestone, coal and ceramic raw materials constitute the main mineral resources, and perspective planning as well as medium-term planning of development is necessary.

2. Base-metal and refractories come next in order of importance; detailed exploration and proving operations should be intensified.
3. A regional institutional framework should be developed to ensure detailed exploration and proving of reserves of promising mineral deposits.
4. Carbo-chemical potentials of northeastern coal should be properly exploited.
5. R & D studies on industrial utilisation of specific mineral raw materials need intensification.
6. State and Central agencies engaged in mineral prospecting must be strengthened and expanded to ensure early completion of mineral prospecting in the region. States/UTs without their own Directorates may be assisted to develop such Directorates so that regulations regarding minor minerals could be framed and enforced.
7. Coal mining in some of the States needs to be regularised according to the provisions of the Coal Mines Nationalisation (Amendment) Act.
8. Mining of North-eastern coal needs special attention; projects for thin seam mining are necessary.
9. The potentials of refractory and ceramic industries need to be utilised fully.

Suggestion regarding sectoral programme :

9. In conformity with the objective and strategy outlined above, the main components of the Seventh Plan sectoral programme for Minerals should be the following :-

1. Continuation of detailed exploration and proving operations in promising mineral deposits.
2. Experimental/pilot mining projects.
3. Development of appropriate regional and State/UT - level institutional infrastructure for mineral exploration and development through restructuring and/ or new organisations.

10. For the above plan more specific details are suggested below. These are intended to constitute the total regional plan including Central, NEC and State Plans.

(1) Detailed Mineral Exploration & Proving

Coal

- (a) Extension areas of Makum Coalfield, Assam-Arunachal
  - (i) East of Tipong Nala and further east
  - (ii) Jairampur sector
  - (iii) Western extension of Namchik Coalfield
  - (iv) Boragolai underground sector.
- (b) Langrin Coalfield, Meghalaya (continuing investigation)
- (c) Dilli-Joyपुर Coalfield, Assam (continuing investigation)
- (d) Balphakram-Pendengru Coalfield, Meghalaya
- (e) Nazira Coalfield extension areas, Nagaland.

Limestone

- (a) New Umrangshu Extension Block, Assam (continuing investigation)
- (b) Nimmi Limestone Deposit, Nagaland.

Basemetal Ores

- (a) East Nagaland - Manipur belt (continuing investigation)
- (b) Ranga Valley, Arunachal.

Fertilisers

- (a) Sung Valley Apatite deposits, Meghalaya

Ceramics and Refractories

- (a) Clay and Glass and deposits of Meghalaya, Tripura and Assam.
- (b) Sillimanite deposits of Karbi Anglong District, Assam.
- (c) Kyanite deposits of Garo Hills, Meghalaya.

Coal Mining

- (a) Thin coal seam mining project, Bapung, Meghalaya
- (b) Synthesis Gas (Bapung/Simsang, Meghalaya or Namchik, Arunachal).

(2) Experimental/Pilot Mining Projects:

- (a) Thin Coal Seam mining project, Bapung, Meghalaya.
- (b) Synthesis Gas (Bapung/Simsang, Meghalaya or Namchik, Arunachal Pradesh).

(3) Development of appropriate Regional and State/UT-level Institutional Infrastructure for Mineral Exploration and Development and Other Industries

- (a) Creation of a regional organisation for detailed mineral exploration, proving, exploratory mining and mine planning (excepting for coal).

- (b) Strengthening of the regional organisations for industrial surveys, project implementation and project consultancy.
- (c) Strengthening of the regional organisations for improving industrial productivity.
- (d) Formation of a consortium of term-lending institutions for financing an integrated industrial development plan for the region..
- (e) Formulation and integration of a programme for progressive professionalisation of the management of the industrial undertakings in the State/UT sector.
- (f) Development of a professional organisation or similar services under an existing regional body for advising the State/UTs in regard to formulation of area development plans with intergrate sectoral programmes for agriculture, industries and services.

CHAPTER IV. 7I N D U S T R I E S

Location and growth of industries are largely the result of a long process of historical evolution, of market forces and deliberate public policies. These factors coupled with the lack of investment climate, absence of alert entrepreneurs and strong pressure group to lobby for various forms of Govt. intervention have left the resource rich NE Region industrially backward.

1. The policy initiatives for the Sixth Plan reckoned that regional imbalances in industrial development had not received the required attention. The Sixth Plan, therefore, aimed at improving the situation. However, this objective in the context of the NE Region does not seem to have been realised. Industries tended to gravitate towards existing centres without reaching this backward region. The following table about industrial units set up in selected backward areas in various fixed capital investment ranges gives an idea in this regard :

	( 1980 )			
	Up to Rs. 10 lakhs	Rs. 10-50 lakhs	Rs. 50 lakhs to 1 crore	More than one Crore
Assam	236	11	4	4
Manipur	5	-	-	-
Meghalaya	69	2	2	-
Nagaland	73	2	-	1
Tripura	88	-	-	1
Arunachal Pradesh	-	-	-	1
Mizoram	-	-	-	-
Total NER.	1121	15	6	-
Total India	10064	463	148	143
Source				

2. The incentive schemes for the backward areas have not been effective enough to reverse these trends. The region could hardly avail of the schemes for giving capital subsidies

to the backward districts. The following details of disbursement of concessional finance in backward areas will project the actual picture obtaining in this region.

( 1979)

	<u>Sanctioned</u>	<u>Disbursed</u>
Assam	3487.39	3234.79
Manipur	74.05	14.42
Meghalaya	536.63	509.48
Nagaland	152.89	126.50
Tripura	256.77	167.09
Arunachal Pradesh	5.73	-
Mizoram	3.46	-
NE	4516.92	4052.28
All India	133194.62	77840.10

3. There are very few large and medium industries. Apart from the traditional tea industry the petrochemical complexes, the refineries, two jute mills, five sugar and khandsari mills two cement plants, two existing and two upcoming paper plants, two complexes of oil fields, one fertilizer plant and one coalfield constitute the entire gamut of northeastern industrial scenario; The 35 plywood factories constitute another distinct element of the region's industry.

4. Other indices of industrial development in the region are still more discouraging. During the decades of '60 and '70 the rate of growth of employment in the factories in Assam was only 6 percent against the all India figure of 73 percent. The growth rate in other constituent units is even less. The total value of products added by manufacturing activities in the region during 1977-78 varied between Rs.204 crores (Assam) and Rs. 6 crores (Meghalaya & Tripura) as against the all India total of Rs. 11823 crores. In 1979 out of a total of 305 Industrial Licences and 550 letters of intent issued the North Eastern Region's share was only 2 and 1 respectively.

5. A review of the proposed and contemplated industries in the North-eastern region for the coming five years reveals that excepting oil, coal and industries downstream of BIFL including spinning mills, there is not much of forward thinking. Of course under NEC Plan, four minicement plants, two lime plants and several other small units will be added by the middle of the Seventh Plan period.

6. The north eastern region is known to be resource rich, and can provide raw materials for a wide range of industries, Exploitation of the resources would indeed be the only means of regional development. Planning for such exploitation and development perse, however, calls for several pre-requisites, namely precise assessment of the quality and quantity of exploitable resources, infrastructural development, good transportation network, intra and extra regional market, manpower and some positive influence of external economics. Due to a variety of reasons these pre-requisites or conditions are yet to develop and the resource reserves are still mostly inferred rather than proved. Development of industries in the region would, therefore, need in the first instance massive efforts on raw material investigations and lumpy investments in infrastructure including manpower. This is, however, widely recognised and efforts are under way to prepare better data base and develop infrastructure.

7. It has to be realised that the currently obtaining situation is not at all conducive for attracting private investment. Moreover, in a generally underdeveloped region, the public sector has to take the initiative for the first generation industries, as the social objectives of such development cannot be expected to be achieved by the private sector. This unfortunately is not the case. The functioning of the State Industries Development Corporations leaves much room for improvement.

8. Lack of entrepreneurship is a general malaise of the region. This is true of every field of activity. This emanates from the prevailing conditions of a self-reliant and self-contained society. Such conditions in a predominantly agrarian culture, aided by a bountiful nature, do not promote the kind of motivations and fiercely States/regions. Economic pressure and the spiral of rising expectations, create such attitude. It cannot be said that such a state-of-affairs is wholly desirable, but as long as development is measured in terms of specific material indices, aggressive entrepreneurship will be the only means of success.

Approach and Strategy :

9. In the light of the above, industrialisation of the North Eastern Region is to be planned in a different manner after taking into consideration the local conditions and characteristics. Since labour and trained manpower constitute an important input, the demographic profile is also important. One of the principal objectives of industrialisation is to absorb the surplus labour. This problem is not very acute in the region excepting in the plains of Assam, Imphal valley of Manipur and Tripura. Elsewhere the tribal society, albeit backward in several areas, survives in a contented manner with their agrarian and traditional industrial (household sector) practices. It is also necessary to point out that with the introduction of better seed-fertiliser-water technology in agriculture, the dominantly agriculture will be replaced by multiple cropping and settled cultivation. This is likely to reduce the problems of surplus labour considerably. Thus manpower for industry will be a major area of concern which has to be reckoned for perspective planning.

10. The strategy emphasised in the Approach Paper on Seventh Plan will be relevant to any programme for development of industries in the NE region. "Industrial development strategy has to be based on adequate infrastructural development,



incorporating the growth centre concept and nucleus plant approach together with initiatives for increased ancillarisation. The policy framework must also disperse industry away from urban concentrations. In the North Eastern Region, particularly, industrial growth will have to be promoted keeping in view the totality of facilities and incentives and infrastructure that is made available and not merely in terms of financial concessions like investment and transport subsidies. However, the ecological and environmental aspects will equally have to be kept in mind so that industries set up both there and in other ecologically and environmentally sensitive areas which are in need of protection and reservation, do not damage".

11. The Industrial Development Programme in the North Eastern Region will have to be formalised keeping in view the following objectives :-

(i) In an industrially under-developed region, growth of industries will be primarily governed by the availability of certain facilities like location of markets, geographical spread of entrepreneurship, infrastructure and support facilities like access to transport net work, raw material etc. The first step towards promotion of industries in the NE Region should therefore, be to create these facilities through co-ordinated efforts at the regional level. A central body like the NEC can undertake this task of identifying the areas, resource potential and effect co-ordination among the various state and central bodies concerned with the problem of industrial development of the region.

ii) The focus of industrial development should be on upgradation of technology, better utilisation of assets, promotion of efficiency and removal of the infrastructural constraints affecting the growth of industry.

- (iii) Development of industries appropriate for regional raw material potentials should be planned and dependence on extra regional raw material should be avoided as best as can be.
- (iv) Development of both labour and capital intensive industries should be planned according to location and raw material characteristics.
- (v) More emphasis may be laid on high value added products e.g. petrochemicals, coal-chemicals.
- (vi) Very large industries where economies of scale are important may receive lesser attention.
- (vii) Development of market linkages and improvement in external economies should receive priority attention.
- (viii) Absence of a chain of factories and diversified market would call for comprehensive planning for industries, inclusive of intermediates and down stream units.
- (ix) Engineering industry should be encouraged vigorously to develop the minimum infrastructure for other industries.
- (x) In the north eastern perspective mineral and forest would continue to be the most important raw materials. Therefore, industrial surveys and techno-economic feasibility studies for cement, electronics, paper, cement substitutes, semi-mechanised brick, etc., and study on special industrial costs in respect of these prospective industries should be undertaken.
- (xi) In the context of availability of lime-stone, action to implement in phases the ten-year perspective plan for cement to raise the installed capacity to 7.2 million tonnes by 1990 should be taken.

(xii) The industrial development programme in the Seventh Plan should also provide for raw material investigations for specific industrial projects, R&D projects for industrial utilisation of regional raw materials, experimental/pilot industrial and mining projects, integrated development of agroforest and mineral based industries, and development of industrial manpower through in-service/in-plant training.

(xiii) Some of the forest based industries which should be considered during the Seventh Plan are waste processing plants for extracting turpentine, resin and hydrolysis products, in Meghalaya, Assam and Nagaland, mini paper plants ( 50 TPD) with recovery and captive generation in Tripura, Mizoram, Manipur, Meghalaya and Arunachal Pradesh and Newsprint plant in Arunachal Pradesh/

(xiv) Single window servicing of entrepreneurs is vital to growth of industries in an area like North East where entrepreneurs have to face special difficulties and handicaps. At the same time, a number of organization and agencies have to be necessarily involved in training of entrepreneurs, conceptualization of projects, preparation of detailed project reports, obtaining of licences/clearances, drawal of margin money and bank loans and so on. It is, therefore, suggested that a consortium of all concerned organizations/agencies may be formed in each State/UT so that all the problems of entrepreneurs could be tackled at one forum.

(xv) It is suggested that a Regional Industries Corporation may be considered to take up such industries where raw materials are found in one State/UT but the use of the end product is essentially in another State/UT or in the entire region or even outside the region.

To illustrate, a State having both limestone and coal may still not be in a position to set up a cement or lime industry because its own demand does not justify one and it may not have financial resources to go in for such an industries. At the same time, it may not be interested to look for institutional finance. In certain other cases, even with the availability of raw materials, a small State/UT may not be having the technical and managerial capacity to implement and manage a comparatively large and complex industry. A Regional Industries Corporation can step into such areas and besides tackling the problems of management, marketing and finance, also enter into collaboration with Central Govt. Corporations in the concerned fields.

12. The foregoing enumeration is an attempt to provide an idea of the potentials of industrial development. The magnitude of such a development plan is large and would have to be accommodated in various Central and State Plans. NEC's role in such endeavours would be of necessity, remain restricted to sponsorship of raw material investigation, techno-economic feasibility study, preparation of project report, selective infrastructural components and manpower development.

SMALL SCALE INDUSTRIES

In spite of considerable growth potential and existence of various promotional agencies, the development of small scale industries in the North East still remains at a very nascent stage. The progress in this field has so far been both tardy and lopsided. The region's industrial backwardness is reflected by the fact that with less than 2 percent of our country's medium and large industries and 1.9 percent of existing small scale industries this region's share in value added by manufacture is barely 2 percent. The two States of Assam and Manipur have the largest concentration (i.e. about 70 percent) of all the registered small scale units in this region. Besides, very high incidence of sickness among the existing small scale units reveals inherent weakness of their current status. The tiny sector industries are struggling hard for their survival against competition from the cheaper substitutes and products turned out by mass production. Lack of infra-structural facilities, entrepreneurial motivation and ability and technical know-how as well as absence of adequate tie-up of bank finance has created such a baffling situation that development of small scale industries has become a stupendous task in the North Eastern Region.

2. Statistics of registered SSI units in the region, of course, indicate a rising trend in the number of registered units in this sector over the years although the rate of increase, in the context of the national growth, is appreciably low. In absolute terms the numbers of registered small scale units show very low figures as is found in case of Arunachal Pradesh, Meghalaya, Mizoram and Nagaland. The annual growth in these cases is therefore just nominal. The following table will give an idea of growth in the number of such units over the three years from 1979 to 1981.

Table - 1

State/UTs.	X Number of registered SSI Units		
	X 1979	X 1980	X 1981
Assam.	3461	3677	4152
Manipur.	1687	3073	3422
Meghalaya.	304	327	393
Nagaland.	203	283	366
Tripura.	996	1126	1188
Arunachal Pradesh.	145	168	189
Mizoram.	289	471	599
Total - NE Region.	7035	9125	10309
Total - India (000)	392	454	523

Source: Report of the Small Industry Extension Training Institute, Hyderabad (1984).

About 41% of the total SSI units in the region are located in one State - Assam. Dispersal in the other States/UTs is, therefore, quite limited. Of the total number of industrial units in the small and cottage sector about 50% are local resource based units and diversification is very rare. For instance, while in the rest of the country Electronic Industries have grown rapidly, they are conspicuous by their absence in this region.

3. The following table giving the occupational distribution of the region's population shows the low percentage of the local population engaged in household and manufacturing industries, which may be regarded as an index of backwardness in the industrial field.

Table-2

(1981)

Category	Arunachal Pradesh	Manipur	Meghalaya	Mizoram	Nagaland	Tripura
Total Population.	628,050	1411,375	1328,343	478,774	779,381	2047,351
Total Workers.	308,946	588,231	587,158	200,988	354,102	606,153
Cultivators	223,329	348,363	373,180	144,941	249,614	264,099
Agricultural labourers.	7,575	46,334	58,236	5,136	6,611	144,910
Household Industry, Manufacturing, processing, Servicing & Repairs.	1,267	64,071	6,403	2,580	5,079	9,836

Source: Directorates of Census Operations.

4. The available statistics of total value of product by manufacturing activities in the region as in 1977-78 is given in Table-3. Per capita value of product also indicate the extent of industrial backwardness as compared to the position at the all India level.

Table-3

(1977-78)

State	Total value of products	
	Rs. in crores	Per capita Rs.
Assam	204	118
Manipur	12	104
Meghalaya	6	58
Nagaland	-	-
Tripura	6	33
All India -	11823	194

Source - Commerce Vol.142 No.3643, Bombay.

5. The slow rate of registration of SSI Units in the region, coupled with the relatively high incidence of sickness among the existing units has acted as serious impediment to the progress in this sector. As in December, 1979 the position in regard to sick SSI units in this region stood as below:-

Table-4

State/UT	No. of sick units	Total No. of regd. small units.
Assam	1045	3461
Manipur	186	1687
Nagaland	3	203
Meghalaya	25	304
Tripura	70	996

Source: Report of the Small Industry Extension Training Institute, Hyderabad (1984).

6. From the figures given in the above table, it appears that the high incidence of sickness among the small scale units particularly in the States of Assam, Manipur, and Tripura which have the bulk of these industries (about 85 percent) poses a serious problem for the entire region. The magnitude of the problem of sickness in the small scale sector is evident from the fact that more than 30 percent of the total registered units in Assam were either sick or closed during 1971-75. In order that the little progress achieved in the field of small scale industries in this region may not be wiped out on account of increasing incidence of sickness, it is necessary to diagnose this malady properly so that timely remedial action could be taken to save most of them from eventual extinction. Rehabilitation of sick units is vital for putting to productive use the investment already made in them and from the economic point of view this will result in higher national product.

7. There may be a number of internal or external causes of sickness of an industrial unit. A study conducted by the SIS1, Gauhati has shown the following as the main causes of sickness of small scale industries: (i) shortage of working capital and term loan, high cost of raw materials, marketing difficulties, difficulties in getting Government orders, lack of entrepreneurial capability and inability to face competition from outside,



After identifying the causes of sickness of particular types of small scale industries and carrying out feasibility studies it would be possible to categorise them into viable and non-viable units so that specific remedial action can be taken for the revival of viable units while non-viable units may be advised to close down. One important implication of sickness is that sizeable amount of institutional finance has been locked up in sick units. It is therefore, advisable for the financial institutions to undertake indepth study in this field involving also the Govt agencies like SISI, DIC etc. so that suitable plan for nursing the viable units might be drawn. Such a plan should take explicit account of the units' strength and weakness as well as likely impact on environment. The action on the revival or rehabilitation of sick industries will cover several aspects such as plant and equipments, location, logistics, transport and communication, finance and marketing. The willingness, capacity and professional competence of the entrepreneurs will play a very significant role in the rehabilitation of sick units.

8. There are 19 industrial estates in the entire North Eastern Region - 9 in Assam, 5 in Tripura, 2 in Meghalaya and 1 each in Manipur, Nagaland and Arunachal Pradesh. These estates provide 358 sheds. According to the Vepa Committee report, utilisation of sheds in these industrial estates has been far from satisfactory. The following figures taken from the Vepa Committee Report will project the actual picture :-

Table - 5 (Year - 1980)

Name of the State/UT.	(Total No. of sheds)	(Sheds vacant)	(Sheds occupied but not commissioned for production)
Arunachal Pradesh.	10	Nil	4
Assam	230	17	49
Nagaland	22	Nil	3
Meghalaya	8	Nil	Nil
Manipur	28	Nil	14
Tripura	60	1	5
<b>Total:</b>	<b>358</b>	<b>18</b>	<b>75</b>

Source: Vepa Committee Report.

9. Industrial backwardness of this region is due to a number of reasons - historical, geographical, technological and financial. A climate conducive to industrial growth does not really exist. Local entrepreneurs have been shy and they lack in motivation. Therefore, the State Governments have to play a leading role in the matter of promotion of industries. In actual practice however, the State Governments/UT Administrations do not appear to have taken initiative and drive to the desired extent. The meagre outlays provided in the State/UT Plans for the SSI sector is one indication of this fact. The total outlay under the Sixth Five Year Plan for all the seven constituent units in this region for SSI is only Rs.66.75 crores, which represents only about 2.41% of the total Sixth Five Year Plan outlay of all these units. The total Sixth Plan outlay in the State Sector for this region stands at Rs.2764.16 crores. Secondly, except Assam, the other constituent units have not so far formulated an industrial policy as such. Thirdly, there is only 1 State Financial Corporation in Assam, extending its services to Tripura, Mizoram, Meghalaya and Manipur. Only 4 constituent units have Small Industries Development Corporations - Assam, Manipur, Tripura and Mizoram. The operations of the Corporations are also not upto the mark,

10. The position in regard to availability of institutional finance for SSI units in the North Eastern Region has not been satisfactory. It is partly due to the limited way in which the financial institutions have come out to help the SSI units with credit facilities and partly due to the absence of intermediary financing institutions and also the lack of enthusiasm among the entrepreneurs. Between 1970-1982, the rate of increase in credit facilities to SSI sector in this region has been between 8.5% to 12.3%. The following figures of advance by public sector banks to SSI Units in this region from 1979 to 1981 will be relevant.

Table-6

Name of STATE/UTs	(Rs. in lakhs)		
	X December '79	X December '80	X December '81.
Assam	1516.00	1876.12	2411.96
Meghalaya	34.08	64.22	70.47
Manipur	27.14	50.06	33.74
Nagaland	59.17	109.85	160.22
Tripura	91.81	100.02	162.12
Arunachal Pradesh	2.02	5.00	15.70
Mizoram	1.13	3.29	7.61
NE Region.	1731.35	2208.56	2861.82
All India	233449.50	297495.57	376332.08

Source: Regional Consultative Committee for Nationalised Bank - North Eastern Region.

11. There have been complaints about low allocation and shortfall in actual supply of the scarce raw-material both canalised and non-canalised for the SSI units in this region. In fact, it has been one of the main hurdles standing in the way of industrial growth in this region. As regards canalised items i.e. iron and steel and metals, the projected demand in 1980-1981 was of the order of 90,000 MT. However, the allocation and actual supply fell far short of this demand. The level of procurement and distribution of these raw materials have never gone beyond 25% of the total demand. As regards, the non-canalised items like Paraffin Wax, Chemicals, Cement, Yarn etc. the procurement and distribution are grossly inadequate to meet the requirements. During 1980-81, as against a total demand of 79923 tonnes of iron and steel material for the entire region, the Steel Authorities of India Ltd. supplied only 47081 tonnes. The supply in case of Mizoram was as low as 682 tonnes as against the UT's demand of more than 3000 tonnes. The following table gives the details :-

Table-7

State	X Demand	X Supplied by SAIL
Assam	47,696	34,421
Arunachal Pradesh	3,254	1,421
Meghalaya	4,756	3,588
Manipur	3,556	1,967
Mizoram	3,055	682
Nagaland	3,954	1,759
Tripura	4,652	3,243

Source: <sup>Total</sup> Steel Authority of India Ltd. <sup>70,913</sup> <sup>47,081</sup>

It may be mentioned that the total demand is inclusive of requirement for various State Government projects like house building, irrigation, power projects etc. The actual share that the Industries sector gets out of the total supply is calculated at about 7%.

12. The Government of India has declared the entire North Eastern Region as 'A' category backward area for the purpose of giving central investment subsidy at the rate of 25% of the total capital investment, subject to a maximum of Rs.25 lakhs. Besides, 31 district - 10 in Assam, 6 in Manipur, 3 each in Meghalaya, Nagaland and Tripura, 4 in Arunachal Pradesh and 2 in Mizoram are categorised as 'No Industry' districts, where 14 districts/areas have been identified for establishment of nucleus plants which are expected to ensure a widely spread pattern of investment and employment in the ISI sector. The Statewise distribution of 45 District Industries Centres set up in the region is as follows : Assam - 10, Manipur - 8, Meghalaya - 3, Nagaland - 3, Tripura - 3, Arunachal Pradesh - 11, Mizoram - 3.

13. It is widely recognised that the DICs and State Directorates of Industries should play a crucial role in promoting small scale industries in the NE Region. The DIC concept is founded on the idea of providing single-window service to the entrepreneur who may not have to face the difficulties of dealing with a multiplicity of

organisations for specific items of assistance and guidance. The National Committee on Development of Backward Areas (1981) has suggested that while the State Directorate of Industries may prepare the package programme for development of particular industry, the DIC may implement the programme and oversee and facilitate the activities to be undertaken by other agencies. Of course, the SISIs should continue to prepare a package for the industries to which they are expected to provide assistance. The committee has emphasised the concept of guided entrepreneurship for backward areas in which the DICs should provide more comprehensive and thorough guidance. In the NE Region the most baffling problem is to find out adequate personnel to man the technical and managerial posts of the DICs. The dearth of suitable local candidates have left the DICs in a void which is mainly responsible for their tardy progress. The minimum complement of staff necessary for the operation of DIC programme is not in position in many of the DICs. Some of the sanctioned DICs in Arunachal Pradesh and Meghalaya are yet to be opened. A number of posts of General Managers and Functional Managers are still lying vacant. In the DICs as will be seen from the data presented in the table below :-

Table-8

Name of the State/UT	General Managers		Functional Managers	
	Sanctioned	In position	Sanctioned	In position
Assam	10	5	70	26
Manipur	6	6	42	41
Meghalaya	5	1	33	4
Nagaland	7	6	27	24
Tripura	3	-	15	-
Mizoram	2	1	10	5
Arunachal Pradesh	5	-	15	-
<b>Total:</b>	<b>38</b>	<b>19</b>	<b>212</b>	<b>100</b>

14. The immediate means of tackling the problem of filling important vacant posts in the DICs is to attract suitable

candidates on deputation from outside the region by offering special incentives and facilities. The development of local talents will definitely involve time lag but this also needs to be accelerated by arranging suitable facilities for training. Besides, the DICs being too ill-equipped to prepare Action Plans, this task has been entrusted to competent consultancy organisations; but delay and non-preparation of Action Plans has acted as a serious impediment to the progress of DIC activities in this region. As against 38 DICs only 28 Action Plans could be prepared till the end of 1982.

15. At present the existing industrial structure of this region consists of about 50 large industrial units and roughly 10,500 small scale units. Among the small scale industries scattered unevenly over the entire region agro and wood based industries are most common. Among the predominant types of existing industries mention may be made of food processing (rice mill, oil mill etc.), fruit processing, saw milling and wood products making, steel furniture making, utensils making, hosiery and garments manufacturing, leather goods (shoes mostly) making, textile dyeing and printing, printing press, rubber and plastic goods making, machinery & paints making, electrical apparatus making, manufacture of transport equipments & parts, tyre retreading, candle making, chemical products making, fountain pen ink making, repairing and servicing etc.

16. There are about thirty fruit processing units in the region of which 10 are in the small scale category. Statewise distribution and pattern of ownership are as follows:

State/UT	Table-9			Total
	Public	Private	Co-Operative	
Assam	2	10	1	13
Arunachal Pradesh	1	--	--	1
Manipur	1	--	1	2
Meghalaya	2	3	--	5
Mizoram	2	1	--	3
Nagaland	1	2	--	3
Tripura	1	2	--	3
Total:	10	18	2	30

Source: Study on Marketing of Horticultural Products in NE Region, National Productivity Council, Gauhati.

The estimated annual capacity of these units is about 3600 tonnes per annum. As against this the actual production during 1980 was just over 600 tonnes - the average capacity utilisation being only 17%.

17. Handloom weaving is a cultural heritage of the people of NE Region. According to a rough estimate there are about 1.3 million handlooms and around 1.5 million weavers in the region. This approximately works out to 33 percent of the total looms and 13 percent of the weavers in the country. The total production of handlooms in the North Eastern Region which is about Rs.1057 million is 9.6 percent of the national output. This gives a fair idea of the importance of handloom weaving in the life of the people of North Eastern Region. However, only about 11% of the total number of looms are used for commercial production and such production in the entire region (excluding Mizoram) is estimated only at about 25 percent (i.e.250 million). The following table indicates the statewise distribution of looms and weavers :-.

Table-10

State	Thousand Nos.					
	No. of looms Total	Commer- cial	Percen- tage share	No. of Weavers Total	Weavers Commer- cial	Percen- tage share.
Meghalaya	5.0	2.0	40.0	10.0	2.0	20.0
Arunachal Pradesh.	100.0	0.5	0.5	100.0	0.5	0.5
Nagaland.	100.0	0.5	0.5	100.0	0.5	0.5
Tripura	119.0	9.7	8.2	120.0	13.5	11.3
Manipur	250.0	80.0	36.0	250.0	80.0	36.0
Assam	684.0	46.0	6.7	786.0	60.0	7.6
<b>Total:</b>	<b>1258.0</b>	<b>138.7</b>	<b>11.0</b>	<b>1366.0</b>	<b>156.5</b>	<b>11.5</b>

Source: Khadi and Village Industry Commission.

18. From the Commercial point of view, Assam, Tripura and Manipur appear to have some base in terms of looms and weavers. The other three States are yet to attain noticeable levels in the sphere of commercialisation of looms and weavers. This type of looms in operation in the region result in lesser productivity per loom and consequently to lower

production. Nearly 79% of the existing looms consists of throw shuttle/pit and loin loom the productivity of which is lower than the fly shuttle looms.

The effect of these constraining factors is reflected in the levels of production achieved in various States. The table below indicates the total and commercial production of handlooms fabrics in different States of the region.

Table-11

State	Value Rs. million				
	Total	Commer- cial	Production percentage share	Govt schemes	Percentage share in Commercial production.
Arunachal Pradesh.	2.00	0.70	35	0.45	64
Nagaland	4.00	1.20	30	0.70	58
Meghalaya	10.00	6.00	60	5.00	83
Manipur	360.00	75.00	21	20.00	27
Tripura	61.00	35.00	57	12.00	34
Assam	620.00	125.00	20	50.00	40
<b>Total:</b>	<b>1057.00</b>	<b>242.90</b>	<b>23</b>	<b>88.15</b>	<b>36</b>

19. As the current year is observed as the "Year of Handlooms", the office of the Development Commissioner, Handlooms is taking calculated measures to select at least two common handloom products from each constituent State/UT of the region and arrange the production of these special collections through the co-ordinated activities of Weavers' Service Centres and the concerned State level agencies. The purpose is to sell these collections in the National Handloom Expos or in the State level exhibitions-cum-sales organised by State Governments/Agencies. This endeavour will produce salutary effects in the form of publicity, demonstration and sales promotion as well as provide a chance for studying market reactions which will help gearing future production of handlooms to the actual consumer needs.



The Planning Commission suggests that the handloom sector should be strengthened to play an increasingly important role so as to meet the entire requirement of Janata cloth.

20. The North Eastern Region is rich in a number of handicrafts. The main handicrafts of this region are : Basketware, Cane furniture, Mats, Wood Carvings, Terracotta, Artistic textiles, Bell Metal artware, Dolls and toys, embroidery etc. These crafts are almost entirely oriented to locally available raw materials. While the estimated number of handicraft units in 1981 in India was around 2 lakhs, it was 4479 in the North Eastern Region. The region, thus accounted for 2.2 percent of the total number of handicraft units in the country. Around 40,000 craftsmen are engaged in this industry accounting for 1.7% of the estimated number of craftsmen in the country. The estimated production value of handicrafts in the region, was around Rs.11.4 crores i.e. about 1.7 percent of the estimated production value of handicrafts in the whole country.

21. The SSI sector in the North Eastern Region suffers from a number of inherent handicaps, locational, infrastructural, financial and entrepreneurial. Geographical location and inadequate transportation system have resulted in crippling disincentives of excessive transportation cost, in-ordinate delay in movement of materials and problems of marketing. Capital inflow and formation are at a low level, credit facilities are limited and entrepreneurial talents are lacking. Inadequacy of consulting services and training facilities has been another handicap particularly in regard to project counselling, DPR preparation and getting the plant into production etc. Productivity is relatively low and appropriate technologies have not developed.

22. Manufacturing cost in almost all units in the region is high. An industrial unit has to incur extra cost ranging from 10-20% as compared to similar unit elsewhere in the country. The Central Sales tax and transportation cost account for 10-15% of the cost of equipment and machinery in this region as against 3.5% for other advanced States.

Consequently, project cost for individual project goes up by 20-25%. Critical inputs, which come mostly from outside, are not available in adequate quantity and in time.

23. The development of power generation capacity of the region is, of course, a good augury for future industrial progress; but at present the small units are required to pay for a minimum fixed tariff of 20 H.P. irrespective of the quantum of power consumed. Thus the entrepreneur has to pay for the minimum quantity of power even though he does not or cannot consume it totally. The present Sales Tax structure of the States in the region with high rates of taxes also effects industrial growth adversely. These taxes make the products of the local units costlier and less competitive compared to products coming from outside the region. The situation in the North East calls for special probing into the tax problems faced by small and tiny industries so that some feasible scheme of tax concessions may be made to operate.

24. The industrial development programme suffers from non-availability of trained and experienced personnel and there is no proper institutional set up for development of technical and managerial talents. The manpower development programme under the Seventh Plan is expected to take care of skill formation aspect of small industries development in this region in a phased manner. As a result of lack of adequate personnel, supervision has been weak and worker's efficiency below the expected level leading to higher operational cost. As there is no sound base of mechanical engineering industry within the region, the SSI units have, of necessity, to procure even small spares and accessories from outside which adds to manufacturing cost. The SIDO can accelerate establishment of common facilities centres for the benefit of such small units at least in the Industrial Estates and Growth Centres.

25. In regard to the agro-horticultural processing units, the general constraints are the lack of working capital, scarcity of packing material, low capacity

utilisation, lack of quality control, absence of process know how, inefficient management and limited market facilities. The Handicraft Units suffer from high prices and inadequate availability of cane and bamboo, lack of central control and coordination in the matter of design and training, problem of packaging etc. The major inhibiting factor in the Handloom sector has been the poor organisational structure. Besides, lack of commercial exploitation and hesitation of the average weavers to take new methods and to adopt diversification and lack of skilled personnel in technical and managerial cadres are other constraints.

26. As against the numerous handicaps and constraints, the NE Region has also certain positive points which need to be considered in formulating future plan strategy. Firstly, the region has a good natural climate. Secondly, the average wage rates offered to and accepted by the workers is quite reasonable and by nature they do not migrate frequently from one industry to another. Thirdly, the region is endowed with plenty of natural resources, both overground and underground including tremendous power potential which is being harnessed gradually. Finally, there is an awakening among the local people in regard to industrial development.

27. The primary objective of any industrial development strategy must be to utilise the local resources optimally so as to maximise benefits to the local people. The Shrivaraman Committee suggested that in the NE Region small scale industries based on locally available natural resources and industries capable of meeting growing local needs might be promoted. The Committee particularly suggested agro-processing, wood-processing and timber processing units. It is time that at present stage of development of entrepreneurship and technical skill in the region, the impact of small industries based on local markets or agro-processing units will be greater. However, on an analysis of the available raw material in the

region as well as the requirement of the local population other industries like electronic, consumer industry (like bicycle, footwear and non-ferrous wares), poultry and cattle feed industry, glass and ceramics, building material and common hardware, electrical hardware and fittings etc. photochemical and fractionalisation of natural oil from locally grown medicinal plants and oil grasses have considerable scope. These will be, by and large, low capital investment and high return units with relatively lesser gestation period.

28. The most important variety of resources based industries which is found suitable for the North Eastern Region is the category of agro-processing industries. Apart from the processing of cereals and oilseeds which need to be augmented, there is considerable possibility for developing small scale units to make best use of horticultural products. The Shivaraman Committee suggests that the District Planning and Implementation Organisation which the Committee had recommended for infrastructure development in the backward areas should be capable of planning for the development of prospective agro-processing units linking them with the supply of raw materials and marketing. Among the other varieties of agro-based industries which might draw upon local resources, mention may be made of the possibility of small units manufacturing agricultural implements, fodder and poultry feeds etc. There is also a considerable potentiality for the growth of wood-based industries, and industries manufacturing leather goods as has already been pointed out. Manufacture of chemicals and dye stuffs based on locally available resources also has good prospect.

29. There is no authentic data base regarding the quality and quantity of various natural resources available in the NE Region which makes formulation of accurate plan for development of industries difficult. However, as has been indicated earlier the region abounds in natural resources which can sustain a variety of small scale industries. As an illustration the annual availability of

forest resources, production and marketable surplus of important horticultural crops and the estimated production of hides and skins in this region are given in Annexure I, II & III. While in regard to forest resources, only about 20% have been exploited locally for manufacturing purposes, not more than 40% of the horticultural crops have been used by the processing industry. In regard to hides and skins utilisation in this region is almost negligible. The region's tradition of Handloom and handicraft is itself a potential resource for development of these industries.

30. For the development and dispersal of village and small industries during the Seventh Plan the Planning Commission recommends that the industrial development strategy should have proper emphasis on infrastructural development and adoption of growth centre concept as well as nucleus plant approach together with initiatives for accelerated ancillary development. In the document - 'Approach To The Seventh Five Year Plan - 1985-90' it is stated that promotion of industries in the NE Region should take into account the totality of facilities, incentives and infrastructure rather than relying too heavily on concessions like investment and transport subsidies. Of course, development of industries in this region should not be allowed to have any serious damaging impact on environmental protection and ecological balance. The strategy for the SSI sector under the Seventh Plan may be indicated as follows :-

- (i) A comprehensive survey of resource potential of the region by adopting modern techniques like landsat imageries and actual field surveys has to be undertaken to prepare a dependable data base which is the first pre-requisite for formulation of any plan for development of SSI in the region. These surveys may be sponsored by the NEC.

- (ii) Attempt should be made for identification of products having market potential - regional, national and inter-national - so that wherever the scale of requirement is large enough, setting up of viable production units can be planned. This exercise may also be financed by the NEC.
- (iii) Level of productivity has to be increased through use of appropriate technology. This will apply more in case of rural and cottage industries. The scheme of introducing appropriate technologies for villages in Gujarat may be a model.
- (iv) R&D efforts should be stepped up and the possibility of commercial production and distribution of improved tools and equipments may be explored.
- (v) Optimum utilisation of the installed capacity of the SSI units needs to be ensured.
- (vi) Effective monitoring of programmes and strengthening of the data base should form integral parts of the programme of developing small scale industries.
- (vii) Adoption of a wider entrepreneurial base and dispersal of small industries need to be given due emphasis.
- (viii) Growth-centre based approach for development of SSI as suggested by the National Committee on Development of Backward Areas should be adopted. Selected growth centres in each constituent unit alongwith industrial estates and with provision for raw material dumps, common service facilities etc have to be developed. For development of infrastructure facilities, a promotional scheme for a selected growth centre in each of the non-industry district may be taken up.

- (ix) For motivation and training of small entrepreneurs, a regional institute more or less on the lines of the National Institute of Entrepreneurship & Small Business Development may be set up in collaboration with the existing organisations and the State Corporations. The scope and content of the training programme as well as the entrepreneurial development schemes should be redesigned to fit into the peculiar needs of the region. The managerial courses, instead of being oriented only towards skill formation, as at present, should be made more relevant to marketing techniques and product and process oriented. The target should be to train up on an average 25 entrepreneurs every year during the entire period of the Seventh Plan. The scheme should be funded jointly by IDBI, nationalised banks, NEITCO and NEC.
- (x) Ancillarisation should be given special emphasis and in this regard the SIDO, Directorates of Industries and the DICs should try to take advantage of Government policies and directives for the promotion of ancillary units in identified fields.
- (xi) A consortium approach for procurement and distribution of critical raw material at the regional level may be considered. The cost of handling of raw material may be treated as promotional cost. The NEC may consider constituting a regional body for this purpose and also sharing a part of the expenditure on the implementation of the scheme. As suggested by the Shivaraman Committee the responsibility for sponsorship for statutorily controlled materials and imported raw materials might rest with the DICs and Directorates of

Industries. The SIDO should continue to be the co-ordinating agency at the central level for ensuring that the requirement of small industries (particularly in backward areas) are fully met.

- (xii) Financial institutions have to play a more positive role in the matter of providing adequate credit facilities for the SSI units. Bank advances to the weaker sections particularly artisans and village and cottage industrial units should be raised upto at least 25% of the total bank credit by the end of the Seventh Plan.
- (xiii) As the tiny sector constitutes nearly 80% of the small scale industrial sector, it is desirable that at least 50% of the industries among the industries reserved for exclusive production in the small sector should be reserved for development of the tiny sector.
- (xiv) Organisation like MEITCO, NPC, SISI and nationalised banks should jointly open Information Centres in each constituent unit and provide specialised services to entrepreneurs at nominal charges.
- (xv) To reduce financial strain on the SSI units, a subsidy to the extent of 25% of the annual wage bill may be provided to the small/units for the first five years.
- (xvi) The State and Central level promotional agencies should formulate concrete programmes for helping the handloom sector of this region to take increasing advantage of commercialisation by adopting their production technique and designs of products to the changing tastes and preferences. The Weavers' Service Centres should be strengthened to play a more effective role in this regard.
- (xvii) As a strategy for development in the Handloom sector, an integrated approach instead of the present package deal approach may be adopted.



For this purpose, a detailed study of the existing production relation, role play d by various agencies etc. may be undertaken under the aegis of NEC.

- xviii) In regard to handicrafts a market oriented approach is suggested. This will include effective distribution, sales promotion, introduction of new design/pattern, colours, shapes etc, adding new product range, development of product range development of product mix etc. Dovetailing of market intelligence with production programming on a continuing basis vital for the growth of handicrafts industry.
- xix) Greater assistance from PADI for setting up Rural Industries Development Centres where besides production of selected cottage industrial goods, training of artisans and marketing can be organised. Similar scheme is being introduced in Bihar.
- xx) A Regional Testing Centre and a product and process development Centre should be set up jointly by DC (SSI) and NEC.

31. While considerable efforts to support the growth of industries, especially in the small scale sector, has been made in the past, one critical area which accounts for inadequate progress is the development of entrepreneurs. The programmes for entrepreneur development in the past have largely concentrated on training, motivation and job orientation. In the North-East with all the difficulties and the challenges of telescoping the strategies of economic development within a campus of short time frame, it has been necessary to consider the entrepreneurship programmes to have a wider range from adequate selection of project, preparation of project report, marketing of products, and even insurance against sickness and volume of enterprise. This comprehensive range of coverage from birth to death has been regarded as a part of the entrepreneurship development programme and it is necessary

to consider evolving the content of the programmes on a new basis for the North-East. In addition to the various programmes taken up by various agencies, it is found that the North Eastern Council has set before itself a programme of development of 1000 entrepreneurs every year in three separate categories of industries, all of them in the small scale sector, but according to the scale of capital investment requiring separate training programmes appropriate to each of them; (1) The first category will cover those entrepreneurs who are likely to set up industries with a capital investment ranging from Rs.5 to 20 lakhs; in the second category will be those who are expected to take up projects involving capital expenditure between Rs.2 and 5 lakhs and in the third category will be entrepreneurs who are likely to take up projects with capital cost of less than Rs.2 lakhs. While the programme for the first category of entrepreneurs will be organised by the North Eastern Industrial and Technical Consultancy Organisation ( a subsidiary of IDBI), the second category of EDPs will be organised by the National Institute of Small Industries Extension Training. Training of entrepreneurs under the third category will be left to Small Industries Services Institute and the concerned State Governments. The EDP for the first two categories of entrepreneurs have been specially designed with suitable course-content in consultation with the Entrepreneurship Development Institute of India, Ahmedabad which has also arranged a special course for training of the trainers for the proposed EDPs; (2) The entrepreneurs who will be trained in the proposed EDPs would require post-training assistance of trained hands at various stages like project formulation, plant installation, management, marketing etc. The requirement of such trained personnel is estimated at 4 per entrepreneurs. Thus, another 20,000 personnel will be required. Training input in financial term, while considerable, is highly cost effective in terms of the development of enterprises and generation of surplus and creation of jobs. The association and participation of the financial institutions right from the beginning of the programmes to the monitoring of its implementation and the tying up finances for the projects appear to be well conceived. It is estimated that the programme with the train-

ing input of Rs.2.5 crores, if successfully implemented will generate about 700 projects each year with capital investment of approximately Rs.28 crores.

32. The above programme is in addition to the TRYSEM scheme which has been in operation under the Rural Development Programme. The TRYSEM scheme primarily aims at improving the skill of rural artisans. However, in the context of the North Eastern Region, it is considered desirable as well as essential to motivate the artisans/craftsman trained under TRYSEM so that the TRYSEM trainees develop both skill as well as they will to improve their trade. Therefore, short entrepreneurial development programme for the TRYSEM trainees should also be considered.

## ANNUAL AVAILABILITY OF FOREST RESOURCES

Forest Product	Unit	Arunachal	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura
		Pradesh	(1976-77)		1974-75	1975-76	1970-71	
-1-	-2-	-3-	-4-	-5-	-6-	-7-	-8-	-9-
Bamboo	Lakh tonnes	2.23	1.35	14.48	-	47.00**	-	5.50
Sawn Timber	CU.MT.	5,215.30	21,205	41,000	66,061 @	650,000	9,000	7,129
Plywood Class Timber	"	5,682.74	30,000	1,10,000	-	-	-	19,001
Hardwood for Industrial Uses.	"	19,4047.12	-	1,17,000	-	-	-	-
Pinewood for Industrial Uses.	"	--	-	9,063	-	-	-	--
Pulpwood.	"	--	91,636*	4,00,000	-	-	-	66,005
Poles.	"	--	8,000	10,000	-	-	-	1,821
Matchwood & Pulpwood.	"	3,411,58	7,497	--	-	-	-	1,560
Pine for Timber use.	"	--	--	23,948	-	-	--	-

Note : \* Related to 1975-76; \*\* In number @ Include Sal, Pine and Round Wood.

Source : Basic Statistics of North Eastern Region, 1980 (NEC).

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ANNEXURE-II

AVERAGE ANNUAL PRODUCTION OF CERTAIN  
SELECTED AGRO-HORTICULTURAL CROPS IN  
NORTH EASTERN REGION

Commodity	(In M.T.)	
	Average Annual Production	Marketable Surplus
Pineapple	1,18,256	1,07,586
Orange	1,64,953	1,49,762
Ginger	32,429	30,807
Potato	3,58,400	N.A.

Source: Study on Marketing of Horticultural Products in NE Region, National Productivity Council.

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ANNEXURE-III

ESTIMATED PRODUCTION OF HIDES AND SKIN, 1976.

State/UT	(No. of Pieces)			
	Cattle	Buffalo	Goat	Sheep
Arunachal Pradesh	22,260	569	91,250	228
Assam	4,56,706	55,990	11,02,742	Negligible
Manipur	24,000	13,000	5,500	2,000
Meghalaya	1,50,000	7,000	24,000	6,000
Mizoram	10,250	650	6,250	Negligible
Nagaland	1,500	200	5,000	Negligible
Tripura	28,470	5,280	1,92,469	Negligible
NE Region	6,89,186	•	14,27,211	8,228
		82,689		

Source : Preliminary Report of Techno Economic Survey on Leather and Leather-based Industries in the North Eastern Region. Central Leather Research Institute, Madras, May, 1977.

CHAPTER-IV.9.SERICULTURE

As an agro-based labour-intensive industry which provides basic raw material for handloom industry which is equally labour intensive, sericulture has great potential for development. Besides, it fits into the traditional economic system and way of life of the people of this region. The NE Region has a rich tradition of handloom as well as sericulture. Sericulture is also an important activity for removing unemployment and under-employment, particularly in the rural areas, and bringing up the economically weaker section of the society above the poverty line.

2. The North Eastern Region produces mainly three varieties of silk i.e. Eri, Muga and Oak Tassar. The Muga culture is found nowhere in the world except in Assam, and on a limited scale, in Meghalaya. The following table shows the Statewise production of raw silk in NE Region :

States	(Production in lakh kg)			
	Mulberry	Tassar	Eri	Muga
Assam	0.07	-	1.10	0.48
Manipur	0.05	0.20	0.09	-
Tripura	Neg.	-	0.01	-
Meghalaya	Neg.	-	-	-
Total for NER.	0.12	0.20	1.20	0.48
Total in India.	45.02	2.65	1.35	0.48

Source : Central Silk Board, Govt. of India.

3. Assam has been the largest producer of Eri and Muga Silk in the country. Mulberry silk culture in the State is also taken up extensively because of its economic importance. The culture of Oak Tassar is lately introduced in the region and its commercial viability is yet to be ascertained.

4. The overall production of raw silk in the North Eastern region is furnished in the table below :-

Statewise & Varietywise Raw Silk Production Target.

Sl. No.	States	(Unit : Lakh/Kg)				
		Mulberry	Tassar	Eri	Muga	Total
1.	Arunachal Pradesh	-	0.01	-	-	0.01
2.	Assam	0.20	0.01	2.00	0.75	2.96
3.	Manipur	0.10	0.25	0.10	-	0.45
4.	Meghalaya	0.01	-	0.20	0.01	0.22
5.	Mizoram	N.a.	-	-	-	-
6.	Tripura	0.05	-	-	-	0.05
Total :		0.36	0.27	2.30	0.76	3.69

5. The importance of sericulture in the economy of the NE Region needs no emphasis. A sizeable population is engaged in rearing, spinning, weaving and processing a variety of silk. In 1977-78 nearly 4 lakh persons were found engaged in silk industry. Sericulture, though widely practised in the region, has not been properly organised. It is taken up as a part time occupation and is practised only in leisure time. A lot has to be done to make the industry economically viable. If organised and developed on proper lines, sericulture may occupy, in the region's economy, a place only next to agriculture.

6. While the silk industry in the country made rapid strides during the last two Plan periods, in the North East, it has been almost stagnant particularly in the non-mulberry sector. In fact, there was marked decline in the production of Muga Silk. The main causes are :

in the production of Muga Silk. The main causes are :

- i) absence of an organised seed areas and lack of supply of quality seeds in time.
- ii) Lack of grainage technique and other modern package of practices in rearing, spinning and reeling, twisting etc.
- iii) Lack of marketing support for seed cocoon, industrial cocoon and the raw silk produced.
- iv) Insufficient research facilities,
- v) lack of trained personnel.

7. In order to provide these critical linkages comprehensive programme establishment of nurseries for Eri & Muga food plants, grainage-cum-training Centres, production of adequate seed cocoon, mulberry nursery-cum-chowki rearing centres, viable silk production unit at the regional level and ensuring of market for the products.

Strategy for Development :

Constraints 8. One of the main reasons for slow growth/stagnation of sericulture in the North Eastern Region is lack of organised seed areas resulting in under production and short supply of quality/hybrid silkworm seed to the rearers. The seed supplied are generally not healthy as it is prepared under un-hygeni-

and unscientific condition which in turn effect yield and quality. Secondly, forward critical linkage facilities in the shape of facilities for reeling with modern reeling machines are missing. Thirdly, production of good quality silk in the NE Region is hampered due to non-existence of modern reeling machine, like multi-end or semi-automatic reeling machines, There is a lot of wastage in terms of waste silk etc., while reeling cocoon in obsolete machines. Fourthly, although production of cocoon is increasing marginally, there is no permanent market mechanism for sell/disposal of the commercial cocoon. In fact the absence of permanent market mechanism for purchase sell of cocoon and the silk yarn is one of the major missing linkages which is hampering the growth of sericulture in the north eastern region. Finally, there is acute shortage of trained technical personnel to oversee the implementation of schemes for development of sericulture. Apart from that the farmers are also not exposed to new technique or package of practices which are practised in the sericulturally advanced States like Karnataka, Andhra Pradesh and West Bengal.

Strategy 9. The Sericulture Development programme in the North Eastern Region for the Seventh Plan should aim at removing the deficiencies noted above. The strategy should be to develop sericulture as an industry, commercially and economically viable. The programme for the Seventh Plan may provide for :-

- i) Substantial expansion of area under nurseries for food plants and increased production of seed cocoons so that the production base is strengthened to sustain a programme of greater dimension;
- ii) Eight Reeling units with a total of nearly 100 Basins should be set up in the region. Two of these units with 20 Basins each may be located in Assam and one each in the other units with 12-15 Basins each;
- iii) Two large size Silk Weaving units each with 30-40 Looms for production of silk material from the yarn produced locally should be set up. The locations may be decided on the basis of local production and other economic considerations;



- iv) An integrated Reeling and Twisting unit with modern reeling facilities capable of producing higher grade of silk with a capacity of using about 35,000 Mgs of raw silk per annum should be set up. This unit will consume the additional cocoons that would be produced by the Reeling units mentioned in Sub-para (ii) above. For better management and co-ordination, the integrated Reeling and Twisting Unit should be linked to the smaller reeling units all over the region. Diversification of products and improvement of the quality and design should receive priority attention.
- v) A regional seed cocoon market complex to cater to the needs of all the constituent units should be set up at a central location. The Complex will supply to the rearers of the region hybrid seed cocoons from L.R. and F.R. The Complex will have adequate cold storage facilities for supply of DFL during the summer months when there is no normal seed cocoon production. This will enable rearers to be engaged in sericulture activities throughout the year. The complex should have a commercial cocoon marketing centre with outlets in other constituent units;
- vi) One or two villages in all the silk producing areas of the region where local rearers should be adopted and all necessary facilities for production of cocoons for seed for commercial use be provided to the selected rearers.
- vii) The trained manpower need for the implementation of the above programme as well as the scheme taken up by the States/UTs for the entire region should be adequately assessed and steps to get the personnel trained taken accordingly.

viii) Local Farmers should to be provided with the much needed exposure to new and improved techniques through audio-visual aids and written material. Thoroughly produced and systematically brought to them.

10. All the above activities cannot be taken up individually by the State/UTs of this region. Either the Central Silk Board should take up the comprehensive programme or the NEC should set up a Regional Corporation to implement the programme. The programme for the 7th Plan, including the State/UT schemes, will require an estimated fund of Rs. 1300 lakhs. It will, however, be necessary to organise and enthuse the people engaged in this field.

CHAPTER IV.  
T R A N S P O R T

The lack of adequate transport infrastructure both within the region and its link with rest of the country has been the main reason for the backwardness and the feeling of isolation of the north eastern region. The natural and traditional means of communication between the region and the main market of Calcutta were suddenly disrupted due to the partition of the country. The limited waterway transport through East Pakistan was also adversely affected in 1965 in the wake of Indo-Pak conflict. The Chinese aggression in 1962 brought into focus the inadequacy of transport network, specially rail communication facilities in the region as a result certain improvements took place mainly on the strategic considerations.

2. The terrain of the region is difficult. In many parts of Arunachal Pradesh, Assam, Tripura, Meghalaya and Mizoram especially, there are deep gorges and steep hills with abundant forests. High velocity wind formations, occasionally of a significant intensity as well as land slides disrupt surface communications. A very vast network of streams, rivulets and tributaries swelling to large volumes of water being carried at very high speed in rainy months, but drying up to sandy beds full of boulders, stones and shingles in winter, characterise many parts of the North-East. Surface communications or transportation systems, therefore, do not become very reliable and also are disproportionately capital intensive in costs. Maintenance of roads becomes forbiddingly costly and adequate labour is always not possible for timely clearance of works. It is not economic to transport bulky goods of low value by roads. The general soil in the hill areas of the region consists of dis-integrated rock which often tend to lead to landslides and soil erosion. The soil has, therefore, to be strengthened by using lime or other stabilising material before laying pavement during road construction. In Tripura and Mizoram, there is acute shortage of good quality stone require for road construction projects.

3. The region is linked with the rest of the country

with a narrow strip of land of about 50 km width through which a railway line links the region with the main land. The main network is provided by the Railways by bringing the broad gauge from Siliguri to Gauhati and joining the rest of the region and also the trunk rail route from Lanka to Silchar/Badarpur which feeds the units of Tripura, Mizoram, Cachar and South Manipur. However, this also frequently get disrupted due to unpredictable behaviour of the rivers of North Bengal, Goalpara and North Kamrup.

4. In spite of the transport bottlenecks, the share of the transport in the total outlay of the north eastern States in the State Plan is inadequate. In the entire region the outlay on transport sector is only 15%. The total outlay in NE region in the State Plan is Rs.36020 lakhs in the Sixth Plan. The North Eastern Council since its inception has given special emphasis on transport and communication by allocating highest share of outlay in total NEC Plan expenditure.

#### STRATEGIES FOR DEVELOPMENT

5. The topography and climatic features of the North-East necessitate the development of a large variety of transportation systems. The operation of road, rail, water transport, ropeways, helicopter and air services should be so planned that the timing of journey at the arrival/departure points are so connected that a network of transportation system is developed in which rain/road transport may provide the main network and complementary facilities are offered by other mode of transportations for the benefit of users.

6. Development of roads has been recognised all over the world as a basic and important infrastructure for the economic development of the country. Roads not only provide important link between the rural and sub-urban areas of the country, but also connect the country with other international centres of trade and commerce. The requirement of the North Eastern Region is still greater as the region has mostly to depend on the roads network for the movement of goods and passengers within the region. While the National Highways serve as the main arteries, they are to be linked up by

various other type of roads. The region has remained industrially backward due to deficiency in the road network.

7. Total length of the road in the NE States/UT's which is likely to be completed by March'86, whether surfaced or unsurfaced has been compiled from Annual Plan for 1984-85 and are placed at Annexure-I. The total roads completed/targeted upto March'85 in the entire NE region have also been compiled and is placed at Annexure-I and II. It can be seen from Annexure-III that the average length of road in km per 100 sq km in the NE region will be 20.86 in March'85. Nagpur Plan (Annexure III) had envisaged the completion of 26 miles of roads (35 Km/100 sq.mile) in the year 1981, which was revised to 52 miles per 100 sq miles by Bombay Plan. Thus it can be seen that the NE region is far behind all India targets.

8. The Interministerial Working Group proposed that a master plan for the whole region may be prepared in the framework of which new schemes could be taken up for consideration and sanction depending on the priority and the resources. This master plan is proposed to comprise of all the required road schemes whether to be taken under Central Plan or State Plan or NEC Plan. A planning group as such has been appointed by the Planning Commission vide their letter No. T&C/3(18)/84 dated 7th July'84 under the Chairmanship of Adviser(Transport), Planning Commission. The finalisation of such master plan will, however, take some more time.

9. The State PWDs in the north eastern region are suffering from lack of road making equipment. For the successful implementation of the Seventh Plan, it will be necessary to ensure timely supplies of road making machinery to north eastern States. In this region, and against the background of scarcity of labour, even the pre-mix carpetting is being done manually which results in excess and irregular use of bitumen and unsatisfactory surface. This also results in construction of road without quality control.

10. To derive full benefits from the expenditure incurred on road construction, the maintenance of the existing roads should also be done efficiently. It has been seen

that the State Govt. are not maintaining the existing road properly due to various reasons. Maintenance cost of hill roads is also higher than the roads in the plain areas. The north eastern region is also having the high rainfall, hence the the maintenance cost in the north eastern region is higher. The Chief Engineers report on the Road Development Plan 1961-81 (Nagpur Plan) indicated that the rates per mile of surfaced roads vary from Rs.3,500 to 4,000/- for single lane and about 8,000/- for double lane. The minimum requirements of fund for maintenance in this region will be Rs.10,000/- per annum per km for single lane surfaced roads and nearly Rs.12,000/- per annum per km. for single lane of unsurfaced roads. It is also suggested that in this region renewal coat of 7.5 cm. WBM layer must be laid every three years on WBM roads surfaces. Renewal coat of thin bitumenous surfacing also is required once in four years.

11. Due to difficult terrain of the region the construction, the improvements and the maintenance of the roads are quite difficult. The Border Roads Organisation has a very important role in these activities as far as the region is concerned. The roads under Border Roads Organisation are maintained in a better ways largely because of greater mechanisation of operation and stricter adherence to targets. However, considering the present workload vis-a-vis the present setup of the Organisation it has been felt desirable to expand and strengthen the Organisation of the Border Roads in the north eastern region so that they can take up more roads.

12. The National Highways being under the ownership of the Central Government are maintained out of the Central funds through the Ministry of Shipping & Transport, while the remaining roads are maintained out of the State Plan budget. The roads undertaken for improvement out of the Central fund through NEC Plan have to be maintained properly. It is felt necessary to earmarked the specific requirement of funds for the maintenance of these roads. It may be necessary to finance the maintenance of such roads out of the Central fund through Ministry of Shipping & Transport as is being done in the case of the National Highways.

13. It is well recognised that highway construction causes soil erosion, erosion leads to pollution and pollution results in degradation of environment. The highway transport vehicles also create noise and emit poisonous pollutants. With a view to arresting large scale erosion due to unplanned highway construction in hilly areas, the Ministry of Shipping & Transport (Roads Wing) issued guidelines in September, 1974. The Indian Roads Congress has set up Highway Environment and Pollution Committee. The Planning Commission has also set up task forces on eco-development separately for Himalayan Regions including North Eastern Region. However, it is necessary that adequate attention is given and more vigorous steps are taken in selection of a road alignment to avoid unstable and erosion prone areas. Steps should also be taken to improve the air quality due to automobiles and noise abatement. It may also be considered whether it will be worthwhile to earmark separate funds against each road for roadside plantations.

14. The existing railway network within the region is mainly confined to Assam, having 2089 km of metre gauge and 268 km of broad gauge, totalling 2357 km. In addition, Trirura and Nagaland have got a metre gauge track of 12 km and 9 km respectively. The other units of the NE region have no rail lines at all. The total network in the region as such has a length of 2378 km, which works out to 0.95 km per 100 sq km against the all India average of 1.88 km per 100 sq km.

15. The main bottleneck in the railway network in the region is the Luming-Badarnur section popularly known as hill section. This link is a vital link of rail communication to Cachar, Manipur, Mizoram and Tripura serving about 50,000 sq.km of area. However, even after the necessary improvement in the existing rail track, the line capacity cannot be increased beyond to limit. The traffic projections warrant the conversion of this into broad gauge immediately.

16. The Railway Reforms Committee has also set up Working Group for reviewing rail borne traffic potential,

problems of NE Railway. Summary of recommendations of the Group are given in Annexure IV.

17. The inland water transport had been a fairly well developed mode of transport on the Brahmaputra and Barak and in fact, the development of steamer services was well established when the railway services were in their infancy. With the partition of the country and the difficulty of continuing steamer services through the areas, then in Pakistan and now in Bangladesh, the potential of the river services was utilised only to a limited extent and, in fact, the facilities already available at the time of partition, went into disuse. After the protocol on inland water transport was signed with Bangladesh, the steamer services have been revived under the Central Inland Water Transport Corporation (CIWTC) which has already taken steps for renovation of fleet and for building various shore facilities at important river site stations. The plans of the CIWTC involve development of Calcutta-Pandu route and extension of its services from Gauhati to Dibrugarh with development of river site stations at Calcutta, Dhubri, Pandu, Tezpur, Noamati and Dibrugarh and development of Calcutta-Karimganj route. The plans of the CIWTC could be developed to a greater extent if facilities to be created at Pandu dry port are to be fully exploited. Similarly, necessary works for river training, especially in the Koshiara river in Bangladesh are needed for exploiting the potential of Calcutta-Karimganj route. Facilities for hydrographic surveys and river training works should be taken up in several tributary rivers of the Brahmaputra and Barak if other stations in upper reaches of Brahmaputra and its tributaries as well as Barak have to be fully developed and utilised. Very considerable work in this regard remains to be done in the case of a number of river systems. The significant advantage of a waterway compared to other systems is that it is especially suitable for bulky and low value traffic, whereas it may be uneconomic for other systems to transport. Besides unlike other systems with greater use, the maintenance of waterway becomes easier and less costly. At the initial stage, many of the remote and inaccessible



areas are likely to find greater use for waterways because its forest and mineral products before processing are likely to be low value and of large volumes.

18. In the field of Inland Water Transport two major developments need mention here. Division of Transport Research, Ministry of Shipping & Transport has recently completed a study on Traffic Potential and Economic Viability of River Services in the Brahmaputra River (1984). Along with this study, the report of the Working Group set up by the Planning Commission for development of inland water transport during the Seventh Five Year Plan has become available. Summary of recommendations made by the Working Group is given in Annexure-V. The study by Transport Research Division finds justifiable scope for a major thrust on IWT development of the river Brahmaputra and has identified a traffic of 22.64 lakh tonnes which annually could be profitably carried by this mode and have proposed an investment of Rs. 291 crores in improving the IWT infrastructure on the Brahmaputra basin routes. The Working Group while recommending maximum utilisation of this mode of transport immediately, has suggested that a small Expert Committee may be set up to examine the two reports together and frame actual steps for implementation of the programme. Some of the programmes which have been considered essential have been listed in paras 42 to 65 of this chapter.

19. Vayudoot should take up the question of extending its services to a larger number of district and subdivisional and administrative headquarters of such remote and inaccessible areas. The aircraft to be selected may have a lower capacity, but should provide regular services and should enable both the goods and passengers traffic to be catered to. There is considerable scope for picking up horticultural and other perishable crops through a well organised Vayudoot service connecting with regular IAC services or long distance rail road service at important stations or terminus.

The State and UT Governments concerned may, with advantage, consider introduction of helicopter services for

for transportation of government, medical and other personnel and also for passenger service. Even if rates are subsidised, this would considerable help in opening up the areas.

21. It is of utmost importance in some of the inaccessible and remote areas of the North-East like Arunachal Pradesh, Mizoram, Manipur, parts of Nagaland, Tripura and Meghalaya that ropeways for carrying freight and even passengers should be developed. The terminus can be planned so as to connect other means of surface transport like roads, etc. It would be worthwhile for the State and UT Governments and North Eastern Council to invest in detailed techno-economic surveys for this purpose. Besides the economic importance of carrying freight, this means of transportation could be regarded as emergency mechanism for reaching medical and other facilities to inaccessible areas as well as for providing a useful stage in development of infrastructure pending the construction of roads and other means of surface transportation system.

22. There is already considerable competition and avoidable overlapping and duplication in transportation of goods and, even to some extent, passengers between road and rail services. If economic studies in this regard establish a structure of freight showing the extent to which Rail transport is more economic and competitive in certain ways than road transport, it would be desirable if demarcation is made between the goods and passengers to be carried by road transport and rail transport. In a democratic and competitive system as of our country, it is not possible to prohibit the entry of any transport system in any area, but the concept of planning and integration of competing transportation systems involves that the tariff structure and various other regulation operating subsidies and other incentives should be so planned as not to defeat the economic objectives and inherent advantages of the respective transportation system. Above all, the need for utilising scarce mineral and oil resources remains a paramount objective of the planning of transportation systems.

Subject, therefore, to appropriate guide lines being evolved in this regard, it might be advantageous to define and demarcate the sphere to be offered to the respective transportation systems somewhat on the following lines :

(i) Goods and passenger traffic of a short distance nature which could be defined as 300/400 kms should be preferably carried by road.

(ii) High value traffic of commodities especially perishable commodities, the markets of which are situated outside the North-East should be carried by the transport system which offers the greatest speed. Air services should be utilised for this purpose.

(iii) Large volume and high value or medium value traffic within the North-East and from the North-East to the destinations outside should be carried by rail.

(iv) Low value and high volume traffic should be carried by river.

23. At present while to some extent the Railways have formed some committees for discussion with users as well as with the State Governments, there is no coordinated linkage for discussion in the region as a whole among all the transportation services and the State Governments. At this stage, it is neither necessary nor desirable to form a commission with statutory powers of giving directions which are operationally mandatory and binding. The decision making role of the respective transportation services may not be interfered with at all. It is, however, necessary that the representatives of the State Governments, the users, the authorities controlling various transportation services etc., should meet together periodically under the aegis of a regional body to deliberate upon and discuss and make suggestions regarding freight, operations, facilities to be developed effecting greater integration etc., in a systematic manner. In view of the fact that some of the transportation services are run by the State Governments and some by the Central Undertakings the ultimate control of which

remains in offices outside the North-East. It would be useful if the North Eastern Council which is a regional body and which has among its functions those of regional planning, especially in the matter of transport and communications were to organise such periodical meetings under its aegis. The NEC may also set up a cell for adequate follow-up and planning of transport systems as well as in order to identify the areas in which duplication and undue competition are avoided and the services are made very effective for the user as well as for the administration in the North-East. On such a body to be created the representatives of the State Transport Departments, of the Road Corporations, the Railways, the Vayudoot and the I.A.C., CIWTC and the State IWT Department, important representatives of business and commercial interest and user organisations should be represented.

#### SELECTED PROGRAMMES IN IDENTIFIED AREAS

##### RAILWAYS

24. The six new railway lines (Table-I) taken in hand during the Sixth Plan costing around Rs.114 crores are to be completed expeditiously. The overall progress on this is not very satisfactory and the main bottleneck in this is the non-availability of the necessary land.

25. The work on the railway lines, on which the surveys (Table-II) are under process and are expected to be completed in next 2 to 3 years may be taken up immediately after the reports are made available. Reports for the two railways lines i.e., Lekhapani to Kharsang and Lalachhat to Vairengte have already been made available and the cost of the project is expected to be around Rs.24 crores.

Table- I

Sl. No.	Details of Link	Gauge	Length (KM)	Cost (Rs. in lakhs)
1.	Gauhati-Burnihat (Assam/Meghalaya)	BG	28.21	1470.00
2.	Balipara-Bhalukpong (Assam/Arunachal Pradesh)	MG	33.45	997.00
3.	Lalazar/Lalaghat-Bhairabi (Assam/Mizoram)	MG	48.77	2717.00
4.	Anquri-Tuli (Assam/Nagaland)	MG	17.07	583.00
5.	Silchar-Jiribam (Assam/Manipur)	MG	50.36	2668.00
6.	Dharmanagar-Kumarghat (Assam/Tripura)	MG	33.50	2959.00

Table-II

1. MG railway line from Kumarghat to Agartala.
2. MG railway line from Dimapur to Chumukedima.
3. MG railway line from Jiribam to Nekiou.
4. MG railway line from Tipling to Ibanagar.
5. MG railway line from Lekhapani to Kharsang.
6. MG railway line from Murkongselek to Passighat.
7. Conversion of broad gauge from Gauhati to Dibrugarh:-
  - i) Via Nowgong-Jorthat-Sibsagar.
  - ii) Along the existing alignment via Lanka and Dimapur.
8. The broad gauge conversion from Lanka to Silchar.

26. For taking the investment decision on the new railway lines the norms may be relaxed as the conditions in this region are quite different from the rest of the country. The decision has to be taken keeping in view the socio-economic considerations. The present practice of the Railways is to expect a rate of return of at least 6.75 per cent of the capital investment by the eleventh year after opening and a return of 10 per cent on the investment by 30 years after opening without providing for depreciation, the net earnings being determined through "discounted cash flow technique". Judged by such traditional yardsticks, possibly no schemes for railway development in the region would ever

be taken up.

27. The three main projects which are very vital for the region and on which the entire economy and other industries including the supply of foodgrains depend are :- (i) construction of Jogighopa bridge along with the broad gauge line from Pancharatna to Gauhati; (ii) construction of broad gauge from Lanka to Silchar; (iii) the broad gauge line from Gauhati to Dibrugarh. These three projects should be taken up on a war footing and funds (around Rs.900 crores) for these three projects should be released liberally so that the construction programme is not affected due to the want of funds.

28. All the new projects suggested above/being executed will take about 7 to 8 years for construction. In the meantime, it has been suggested by the Railway Reforms Committee to open 20 new places under the out agency system and to charge the consumers the railway telescopic rates instead of the actual cost of the road portion. The extra burden on this account has been estimated to be of the order of Rs.28 crores annually which may be borne by the Central Government.

29. As the time required for constructing a railway line, its investigation, etc. take a very long time, planning on long term basis is required as far as new rail lines are concerned. Keeping this in view it will be worthwhile to include survey on some additional lines/extension to existing lines in Seventh Plan. It is suggested to include survey on :-

- |   |  |
|---|--|
| (1) Bhairabi to Sairang   | (2) Agartala to Belonia in Tripura.    |
| (3) Kharsang to Miao in A.P.                                      | (4) Makru to Imphal in Manipur.        |
| (5) Dhansiri to Karang  | (6) Burnihat to Barapani in Meghalaya. |
| (7) Rupai-Namsai-Wakro  | (8) Naharkatia to Deomali.             |
| (9) Mahur-Tousem in Manipur at an estimated cost of Rs.150 lakhs. |  |

30. The Oil India Ltd., has got a lot of activities near Moran-Tengakhat, Duliajan and Digboi. At present, Moran, Naharkatia are not directly connected by railway line.

Similarly, Naharkatia is connected to Dibrui via Tinsukia, Morah, Tangakhat is not connected by any railway line. They have, therefore, proposed a railway line connecting Moran, Tangakhat, Duliajan and Dibrui. This requires consideration.

#### ROADS

31. As already stated the average length of the roads in each constituent unit of the region is much less than the all India averages. The statistics pertaining to the surfaced road is even more discouraging. The position of the roads by the end of the Sixth Plan will be as per Annexure-I. The details of the National Highways in the region are shown in Annexure-VI and VII.

32. The total length of the National Highways in the region is 4062 km. These have to be brought to the specifications of National Highways by completing the balance work on urgent basis. There should be no compromise in reducing the width and other specifications on financial considerations, specially in important National Highways like NH 40, NH 44, etc. According to the estimates of the Chief Engineer, Ministry of Transport, at Gauhati, the cost of upgrading the National Highways to their specifications was worked out at the time of the start of the Sixth Plan at Rs.254 crores for the old National Highways and Rs.230 crores for the new National Highways declared on 1.9.80. Against this, the expenditure incurred is hardly 10%.

33. In addition to the National Highways already declared, there is a need to declare some more National Highways in the region. The statistics pertaining to the National Highways in each constituent units and comparison of the same with all India averages are given in Annexure-VII. It is proposed to declare some more National Highways out of the list mentioned in Annexure-VIII. "The Road Development plan for India (1981-2001)" has also endorsed this new and have also identified the roads to be released as National Highways in the region. The report has also worked out the lengths of roads to be developed in each State/U.T.

34. In the NEC Plan it is proposed to construct interstate roads to connect district headquarters of the adjoining districts of the neighbouring states in the region and the total length of such roads were roughly worked out to 900 km costing around Rs.135 crores. Similarly, it is proposed to connect subdivisional headquarters of the neighbouring states and the block headquarters of the adjoining blocks of the neighbouring states. The total length for connecting the subdivisional and block headquarters was roughly worked out at 1300 km and 1500km costing around Rs.195 crores and Rs.230 crores respectively.

35. States Plans may consider connecting (a) all district headquarters with their respective state capitals, which are not yet connected like, Anini in Arunachal Pradesh (b) all subdivisional headquarters with their respective district headquarters, (c) all block headquarters with their respective subdivisional headquarters and (d) all villages/ cluster of villages having a population of 1000 and above to be connected by all-weather road. The identification of the roads on the basis of the above modality, however, could not be completed. It must be emphasised that while deciding the alignments, the need for the proposed road to open up potential areas like villages must be kept in mind.

36. As the wayside amenities and facilities like godowns etc., are generally not available in the region it is recommended to make a provision for such facilities on the main roads. The identification of such places, however, need to be finalised.

#### MAJOR BRIDGES

37. Rail-cum-road bridge over Brahmaputra at Bogibil near Dibrugarh. The feasibility report is expected from M/s RITES by June'85. The project may cost around Rs.200 crores and is of vital importance especially for Upper Assam and Eastern Arunachal Pradesh. After the feasibility report it may take 2 to 3 years for investment decision and model studies. The requirement during Seventh Plan on the project may be around Rs.20 crores.



38. Major bridge for river Brahmaputra at Jhanjimukh. 4 sites were suggested by M/s. PITES in the preliminary estimate for construction of bridges over Brahmaputra at Bhomra-guri, Bogibil, Jhanjimukh and Jonai. The construction at Bhomra-guri and survey of Bogibil bridges are being completed. It is proposed to take up the survey and investigation for Jhanjimukh bridge in the Seventh Five Year Plan at an approximate cost of around Rs.100 lakhs. Considering the fact that these major bridges need a long term planning, it is worthwhile to start the investigation work at this stage.

39. Bridge over river Barak at Raniferry/Jatingamukh. There is a persistent demand for a RCC bridge over river Barak at Raniferry/Jatingamukh on the State roads. Though two such bridges already exist within a distance of 10 and 15 Km at Balarpur and Silchar, yet the proposed bridge will cut short the distance for the people going from Meghalaya side to Silchar. The project is likely to cost around Rs.8 crores. The construction of this bridge is recommended to be included in the Central Plan of the Ministry of Shipping & Transport.

40. Bridge over river Dhansiri at Silbori. At present NH 52 crosses the Dhansiri river at Rowta. The proposed bridge to be constructed at downstream of Rowta Silbori will reduce the length of National Highway by 10 kms. The bridge may cost around Rs.3.50 crores. The Ministry of Shipping & Transport has already decided to prepare feasibility report and the investigations to be done by Border Roads.

41. Bridge over river Jia-Bharali at Chowkighat near Tezpur. The present approach from Tezpur to Eastern side i.e. North Lakhimpur etc., is via Balinara. If a bridge is constructed at Chowkighat over river Jia Bharali the approach will be directly to NH 52 via Jima-guri reducing the distance by 27 km. This will not only benefit the people of north bank of Brahmaputra but after the completion of the Bhomra-guri bridge the places on the souther bank will also be benefited. The expected cost will be around Rs.12 crores. After

the construction of such a bridge the National Highway 52 can be realigned to pass through Tezpur.

#### WATERWAYS

42. Inland Water Transport has a paramount importance pertaining to the north eastern region due to its physical and geographical conditions. River Brahmaputra with its tributaries like Disang, Burhi Dihing traverses through the region for about 720 km. In addition, river Barak and its tributaries Dholeswari, Deo, Manu also can be developed for inland water transport. The NE region has 1983 km of navigable waterways being the fourth largest in India after Uttar Pradesh, West Bengal and Andhra Pradesh.

43. Night navigational facilities in the entire Brahmaputra reach at a cost of Rs.40 lakhs may be provided. The improvement in the terminal and infrastructure facilities at Tezpur, Neamatī, Dibrugarh, Dhubri, Karimganj may be effected.

44. The Calcutta-Karimganj route should be extended upto Silchar/Badarpur by making the improvements by dredging etc., and making the route operational throughout the year. The Central Water Commission has completed the investigations for Barak project and the report is under consideration, of the Government of India. After the scheme is completed the navigation in the river will improve considerably. The project may cost around Rs.950 crores and may take 7 years for completion. An immediate investment decision will help the navigation on this route.

45. Mechanical cargo handling facilities at Karimganj, Dibrugarh and other places may be provided.

46. Acquisition of cargo vessels by Inland Water Transport for commercial cargo services on river Brahmaputra at Rs.300.00 lakhs. Capacity of Inland Water Transport is proposed to be increased by another 3600 MT by acquiring 12 Nos push barges, 2 push tugs of 100 HP fitted with kort no

nozzles and flanking radders.

47. Acquisition of ferry vessels by Inland Water Transport at a cost of Rs.250.00 lakhs. Out of this Rs.140.00 lakhs for modernising ferry services; and procuring 2 Nos modern ferry vessels of Roll on Toll type, for the use in Brahmaputra. For the use in Barak and Dholeswardi/Katakhal 11 Nos ferry vessels are required.

48. Procurement of 20 floating jetties at a cost of Rs.200 lakhs for the use in Brahmaputra.

49. In order to remove the difficulties and bottle-necks near Dhubri area, the CIWTC may have a fibre glass survey launch costing Rs.15 lakhs and some survey equipment like Echo-Counter, Sonar position fixing equipment, etc., costing Rs.5 lakhs. It may also be worthwhile to set up a small river hydrographic survey unit costing Rs. 1.00 lakh per annum.

50. After the construction of the proposed dam at Bhairabi, the upstream portion of Dholeswardi and Tut will be navigable. The Mizoram Government has already received a feasibility report which recommends the navigation with Ro-Ro facilities in which case the loaded trucks will be put on the vessels and brought upto Sairang and Tut and then taken off from the vessels to go for the destinations.

51. Ferry crossing at Dholeswardi and Tut bridge sites as the two existing bridges are likely to be submerged after the construction of Bhairabi dam.

52. At present there is only one centrally located floating workshop at Gauhati. It will be necessary to have one more workshop at Dibrugarh and one at Silchar at a cost of Rs.20 lakhs.

53. At Pandu the covered warehousing and back up facilities are to be extended to CIWTC. Similarly, river side POL loading point is also to be established.

54. At Tezpur and Neamati, an open space of 2 acres

with gangway, pontoon facilities for operating cargo carrying flotillas are necessary. As long term requirement, mechanical cargo handling facilities will also have to be created.

55. At Dibrugarh, 2 acres of open land with firm river bank, covered warehouse of about 10,000 MT, loading facilities for POL products are necessary. As long term planning, mechanical cargo handling facilities may be planned.

56. Karimganj and Badarpur have to be provided with concrete jetty heads, one 10 tonne capacity crane for loading/unloading and additional covered storage space.

#### AIRWAYS

57. As already indicated the north eastern region has very poor surface facilities of the transportation. The air transport in this region is, therefore, very essential. The region has at present 10 civil airports, out of which 6 are in Assam, one each in Manipur, Tripura, Meghalaya and Nagaland. Arunachal Pradesh and Mizoram have no air facilities so far. Considering the above, the immediate programme for the Seventh Plan are :-

- i) Night landing facilities at Gauhati airport, so as to reduce the cancellation of flight in case of delay.
- ii) Increase of seats in the quota of Gauhati on IC 489/ IC 490 between Gauhati and Delhi. The flight should touch only Bagdogra between Gauhati and Delhi.
- iii) Running Boeing 737 instead of Fokker Friendship in Flight No.211/212 and Flight No.249/250.
- iv) Construction/improvement of runways at Dimapur, Tezpur, Lilabari to facilitate the landing of Boeing 737.
- v) Construction of new airstrips at Aizawl, Itanagar, Nowgong, Kailashar and Khowai.

- vi) Improvement of passenger facilities, transit lounges, toilet facilities, restaurant facilities, etc., at various airports.
- vii) The original idea of introducing the third airline service was to improve the air communication services in the backward N.E. Region and the Vayudoot service was accordingly expected to connect areas in the North Eastern Region which have not hitherto been connected by air and due to geographical reason are not easily accessible. The Ministry of Tourism and Civil Aviation, took a decision in 1980 on the basis of the report of the National Transport Policy Committee on short haul air services, to introduce feeder air services to as many as 11 locations in the North Eastern Region, viz. Rupsi in Assam, Shillong in Meghalaya, Komalpur and Kailashar in Tripura, Along, Daporijo, Itanagar, Pasighat, Tezu and Ziro in Arunachal Pradesh and Aizawl in Mizoram. (This decision is contained in Home Ministry's letter No.13029/7/79-AP dated 7.10.80). As against this, Vayudoot services have so far been extended only to Shillong, Tezu and Aizawl. (The service to Aizawl has also been suspended).

TOTAL ROADS CONSTRUCTED/TAUGHTED IN NORTH EASTERN  
REGION

Sl. No.	Category	Completed upto 3/80 Km.	1980-81 KM	1981-82 KM	1982-83 KM	1983-84 KM	1984-85 KM	Remarks	
1.	State Highways	Total	3593	3631	3633	3637	3640	3643	
		Surfaced	2909	3058	3103	3132	3180	3266	
		Unsurfaced	594	573	530	505	460	377	
2.	Major District Roads	Total	6950	7066	7108	7137	7195	7221	
		Surfaced	2587	2701	2807	2894	2997	3205	
		Unsurfaced	4363	4365	4307	4243	4198	4016	
3.	Other District Roads	Total	19539	20627	21672	21726	22434	23392	
		Surfaced	3068	3325	3723	3955	4068	4355	
		Unsurfaced	16471	17302	17949	17771	18366	19037	
4.	Village Roads	Total	10661	11431	12209	12815	13427	14889	
		surfaced	1046	1219	1509	1660	1795	1951	
		Unsurfaced	9615	10212	10700	11155	11632	12938	
5.	Total roads	Total	40743	42755	44622	45315	46696	49145	
		Surfaced	9700	10303	11136	11641	12040	12777	
		Unsurfaced	31043	32452	33486	33674	34656	36368	
6.	All India	Total	1604110	Position as on 31.3.1979 - Basic roads statistics					
		Surfaced	623402	of India 1978-79 - Transport Research Division.					
		Unsurfaced	980708						

The length of road completed has been compiled from State Plan documents and is different from Basic Road Statistics published by Ministry of Shipping and Transport presuming that the figures given by States/UTs are correct.

## ANNEXURE II

ANTICIPATED ROAD LENGTH BY MARCH '85

Sl.No.	State/UT	Total length of road in km	Ave. length of roads in Km 100 sq km	Length of surfaced road in km	Ave. length of surfaced road in km per 100 sq km	Percentage of surfaced road length to total road length	Length of surfaced roads per lakh of population in km	Remarks
1.	Arunachal Pradesh	3230	3.86	320	0.07	9.91	45.71	Total length shown includes NH
2.	Assam	26765	34.09	6759	8.60	25.25	30.58	The length of the road in States taken from State Plan 1984-85
3.	Manipur	4130	18.47	2365	10.57	57.26	147.81	
4.	Meghalaya	5869	26.09	2305	10.25	39.27	164.64	
5.	Mizoram	1360	6.45	533	0.25	39.19	133.25	As targeted as on 31st March '85
6.	Nagaland	6260	37.89	1501	9.00	23.96	187.63	
7.	Tripura	5597	53.41	2631	25.10	47.01	114.39	
8.	Total NE Region	53,215	20.66	16414	6.55	30.80		All India as on 31.3.79
9.	All India (position as on 31.3.79)	16,84,110	48.79	623402	18.96	38.86		

The length of road completed has been compiled from State Plan documents and is different from Road Statistics published by Ministry of Shipping & Transport presuming that the figures given by States/UTs are correct.

NAGPUR/BOMBAY ROAD PLAN

The objective of Nagpur Plan were as follows :

(a) In a highly developed agricultural area, no village should be more than 2 miles from "a road" nor more than 5 miles from "mainroad", the average distance from a main road being generally less than 2 miles in most cases.

(b) In a non-agricultural area, no village should be more than 5 miles from "a road" nor more than 20 miles from a "main road", the average distance from a main road being 6 or 7 miles in most cases.

In achieving the above mentioned objectives, the Nagpur Plan adopted the "two Grid & Star" formula for determining the mileages of the main roads, and the other roads respectively. Under this Nagpur Plan the roads were for the first time, classified as National Highways, State Highways, Major District Roads, Other District Roads and Village Roads. The first three classes (i.e. NH, SH and MDR) together were termed as the "main roads" and the other two i.e., ODRs and VRs as "Other roads". While working out the targets of total mileage of road lengths for the two categories, the areas under the then "princely States" were not taken into consideration. The formulas were applied to the areas and population of the then "British India". As for the Princely States, an ad-hoc provision of 30,000 miles for main roads and 40,000 miles for other roads was made. The Nagpur Plan envisaged planned development of all types of roads in such a manner as to increase the road mileage of main roads from 88,000 miles to 1,23,000 miles and of other roads from 1,32,000 miles to 2,08,000 miles (post Partition India). This gave a target of 26 miles of roads per 100 square miles of area.



1961-82 Road Development Plan

Soon after independence, the pace of road development in the country was enhanced with the result that the targets of road mileage laid down in the Nagpur Plan were within sight by 1958. It was expected that by the end of Second Five Year Plan i.e. by 1961, the length of the main roads would be 1,44,000 miles and that of the other roads 2,35,000 miles, thus exceeding the targets of the Nagpur Plan. Although the progress of road development was considered quite satisfactory from the point of view of mileage targets of the Nagpur Plan, there were serious deficiencies in respect of road surfaces, cross drainage works, bridges, etc. The second attempt for preparing the road development plan on an All India basis was started in 1958 and the 1961-81 Road Development Plan popularly known as Bombay Plan was formulated taking into consideration the position of road development then, including the deficiencies in the road system. Considering the limited financial resources of the country, the overall objective of the 1961-81 Road Development Plan was to raise the density of the road mileage from 26 to 52 miles per 100 square miles of the area. This target was set taking into account the level of expected development, and the need of the rural as well as the urban areas. The requirement of connecting administrative headquarters, industrial and commercial centres was also given due consideration apart from the strategic needs of the country. The modified grid and star formulae were proposed for different classes of roads. The general distribution of area then prevailing was 60.5 square miles of agricultural area 20.5 sq. miles of under-developed area per 100 sq. miles. For obtaining the overall road mileage of 52 miles per 100 sq.

miles and with the above distribution assumed, the objective in regard to the distances of any place from a metalled road and from any road were kept as under :

Description of Area	Maximum distance (miles) of any place		Mileage per 100 sq miles of area
	From a metalled road.	From any road.	
Developed and agricultural area	4	1.5	70
Semi-developed area	8	3.0	30
Underdeveloped and uncultivable area	12	5.0	19

The suggested formulae gave the following mileages for developed and agricultural areas :

Main roads	-	27 miles
Other roads	-	43 miles
<b>Total :</b>		<u>70 miles per 100 sq. miles areas.</u>

The 1961-81 Plan also laid down certain standards and specifications about the road system to be developed.

Summary of Recommendations of the Working Group set up by Railway Reforms Committee :

A Working Group had also been set up by Railway Reforms Committee to look into creation of transportation network in the region. Summary of major constraints of operation and findings are given below.

According to NE Railways some of the major constraints of operation are as follows :

- (i) Only 30 to 50 percent of incoming stock is returned loaded.
- (ii) Traffic coming from and over the eastern railway has to undergo transshipment in meter gauge.
- (iii) While the movement of traffic to NE Railway is generally unrestricted loading from NE Railway is considerably restricted especially of forest produce due to limitations at the receiving end.
- (iv) There are 10 uneconomic branch-line on the NE Railway in the NE Region resulting in large losses.
- (v) Movement of high rated traffic of Jute and Tea is preferred by road by the consignees to avoid detention and damage at Transshipment points and the limitations at receiving end by rail.
- (vi) There are also problems of synchronising movement of matching stock at from shipment points. This has been aggravated with the bulk movement of goods in Jumbo (EG) and Atlas (MC) rakes. The density of population in different areas does not generate demand in train loads nor are the terminals designed to deal with heavy influx of wagons either for unloading.

- (vii) The average speed of goods-trains is low. For various reasons such as non availability of adequate funds, there are areas in the maintenance of permanent way resulting in numerous speed restrictions. The programme of track-renewal is also stated to be in arrears.
- (viii) In addition to restrictions mostly due to natural weather conditions such as floods, smooth train running have been disrupted for the last couple of years by anti-social elements who have interfered with track fittings. The continued agitation in the region has led to deterioration in morale of the staff and in general performance of the Railway.

Keeping in view daily trains required to be run present line capacity and its utilisation, works in progress and their impact of Line capacity and works proposed in Seventh Plan period and their impact on total railway system, the Working Group has made additional recommendations to make system capable to handle anticipated traffic. These recommendations include the development of critical sections keeping in view the line capacity required, anticipated capacity on completion of works and additional measures necessary like capacity of Bridges over Brahmaputra, development of terminal facilities, development of goods yards and transshipment points open line maintenance facilities, workshop facilities, allotment of rolling stock, communication channels. The Working Group has also recommended that steps should be taken to complete all line capacity works in progress urgently, works proposed by NE Railway should be sanctioned. The survey for BG Link from Lanka to Silchar should be completed as per target and construction work started early and Gauhati may linked to New Bongaigaon via Jogighopa. The Working

Group also recommended that movement of goods may be rationalised by way of development of waterways, rail movement through Bangladesh and stress that in context of increasing requirements of region agencies capable of receiving block rack by rail and distributing it over the region by secondary modes of transport may be formed. These agencies can be in the form of corporations under the NEC or Co-operative Federations etc. working under the State Govts./ Union Territories. The former would be preferable in the interest of co-ordinated movement.

Keeping in view physical absence of railways in many part of the NE Region, the Working Group has recommended that to begin with out agencies may established in all State Capitals/U Ts which are not linked by rail. For this purpose the system can be introduced in the following 20 places :

- |              |                           |              |
|--------------|---------------------------|--------------|
| 1. Shillong  | 8. Kohima                 | 14. Itanagar |
| 2. Nongstoin | 9. Mokokchung             | 15. Bomdilla |
| 3. Jowai     | 10. Imphal                | 16. Zero     |
| 4. Tura      | 11. Churni-<br>Chendrapur | 17. Tezu     |
| 5. Agartala  |                           | 18. Pasighat |
| 6. Ambasa    | 12. Aizawl                | 19. Along    |
| 7. Udipur    | 13. Lunglei               |              |

In each these places, the outagent should be in a position to book passenger traffic and offer a certain number of reservations for long distance traffic. As regards the goods traffic booking to and from these outagencies will be on the basis of telegraphic rates as applicable on the railways. This may involve a subsidy amounting to Rs. 29.95 crores per annum which should be born by the Government.

Recommendation of the Working Group on  
Development of Inland Water Transport  
for the 7th Five Year Plan

Planning Commission has set up a Working Group on Development of Inland Water Transport for the Seventh Five Year Plan with Secretary, Ministry of Shipping and Transport as Chairman. The Working Group keeping in view (a) promotion of efficiency in the use of resources and (b) conservation of efficiency in energy used particularly of POL has made following recommendations for development of IWT in the Seventh Five Year Plan .

- (i) The development of IWT should form part of the overall transport plan of the country alongwith other modes such as railways, roads, airways, coastal shipping, pipelines, etc. Each mode should be developed considering the suitability and potentialities of each, keeping in view, the least resource cost principle.
- (ii) In view of the emerging energy situation IWT should be developed on priority basis. Emphasis should be placed on creation of infrastructural facilities including conservancy measures, terminals, fleet capacity, etc.
- (iii) In view of the high unemployment situation in India, IWT development could be used successfully as an instrument for creating high employment potential, especially among the weaker section of the society.
- (iv) The proposed Inland Waterways Authority of India should be set up as early as possible to attend the works related to provision of infrastructural facilities, maintenance and management of the National Waterways.
- (v) The Central Government was giving 100% of the sanctioned cost, as loan assistance to State Governments for viable schemes for development of IWT upto 1978-79. After the decision of the National Development Council, the loan assistance has been restricted to 50% from 1979-80. Now, it is proposed 75% loan assistance to give the necessary thrust for IWT development.

- (vi) While appraising IWT projects, due consideration should be given for other social benefits.
- (vii) Hydrographic surveys and techno-economic studies should be undertaken by the Central Government on all the important waterways.
- (viii) The State Directorate of Industries, Central Industries licensing authority and financial institutions may be requested to explore the possibility of locating new industries near the water front where IWT exists through suitable regulations. Efforts should also be made to locate industries like fertilizers, paper, cement, steel thermal power stations, etc. with suitable anti-pollution devices.
- (ix) The Working Group felt that there should be unified agency in each State where there is potential for development of IWT in the form of a Corpn. or an undertaking to develop, maintain and manage the IWT in that State. Such Corporations or Undertakings can also take care of collecting and publishing traffic data. It has been observed that the absence of such Corporations or Undertakings has inhibited development of IWT in a unified and systematic manner.
- (x) Hydel power stations create the possibility of establishing industries near the water front. The Ministry of Irrigation and Ministry of Energy may be requested to set up as many hydel power stations as possible near the locks and barrages.
- (xi) The possibility of inclusion of the cost of maintenance of waterway with hydel power stations being borne by the power tariff as done in countries like France, U.K., Netherlands, etc. may be examined by the concerned authorities.
- (xii) A pilot project to run river services on stretches like Haldia-Patna on the Ganga-Hooghly river system may be implemented to demonstrate the viability of inland water transport to the potential users.

- (xiii) Necessary steps should be taken to strengthen the data base in IWT section by taking up suitable studies at regular intervals.
- (xiv) Financial incentives may be provided for setting up such industries on water front by declaring water front as backward areas.
- (xv) Working Group also feels that IWT should be declared as an industry for purpose of attracting bank loans and other loans from financial institutions on soft terms.
- (xvi) For all future irrigation projects, the navigational aspects have to be kept in view at the time of project formulation.



ANNEXURE VI

STATEMENT SHOWING LENGTH OF NATIONAL HIGHWAY WITH THE STARTING AND TERMINAL STATION

Sr. No.	NH No.	Length in km	Starting Station	Terminal station
1.	31	187	Bahri (in Bengal)	Gauhati (length in Assam 187 Total NH 1000)
2.	31B	19	North Salmara	Jogighopa
3.	31B	235	Near Galgalua	Junction with NH 31 (near Bijni)
4.	36	170	Nowgong	Dimapur
5.	37	680	Pancharatna (near Goalpara)	Saikhowaghat
6.	38	54	Makum	Iekhapani
7.	39	436	Numaligarh	Burma Border (near Mohoh)
8.	40	161	Jorabat	Dawki (Bangladesh Border)
9.	44	495	Shillong	Agartala
10.	51	140	Paikan (on NH 37)	Dalu
11.	52	850	Baihata Charali	Junction with NH 37 (near Saikhowaghat)
12.	52A	25	Banderdewa (on NH 37)	Itanagar
13.	53	320	Near Badarpur (on NH 44)	Near Imphal (on NH 39)
14.	54	200	Silchar	Lunglei
Total:		4062		

POSITION OF NATIONAL HIGHWAY IN NE REGION

ANNEXURE VII

Sr. No.	Name of State/UT	Length of NH in km	Area in 1000 sq. km	Length of NH per sq. km	Population in lakhs (21 census except Assam)	Length of NH per lac population
1.	Arunachal Pradesh	330	83.5	3.94	6.28	52.55
2.	Assam	2278	78.5	29.02	199.03	11.44
3.	Manipur	431	22.4	19.24	14.34	30.05
4.	Meghalaya	472	22.5	20.90	13.28	35.54
5.	Mizoram	240	21.1	11.37	4.88	49.10
6.	Nagaland	111	16.5	6.85	7.73	14.62
7.	Tripura	200	10.5	9.05	20.60	9.71
8.	Total for NE Region	4062	255.1	15.92	266.14	15.26
9.	All India	31,350	3287.6	9.53	6838.1	4.59

ANNEXURE VIII

LIST OF ROADS TO BE DECLARED AS NATIONAL HIGHWAYS IN NE REGION

Sl. No.	State/UT it passes	Approx. length with Statewise roadway	Approx cost to develop NH Standard	Priority	Remarks	
1.	Extension of NH 36 from Lekhapani to Joyrampur	Assam	30	240	II	Proposed by 15 yeas master plan.
		Arunachal	70	560	II	
			100	800	III	
		200	1600			
2.	Alignment beyond Monup to Lakhapani via Niauxa-Zedoa-Sonua-Khonsa-Deomali	Assam	13	130	IV	-do-
		Arunachal	90	900	III	
		Pradesh	20	200	II	
		Nagaland	16	160	II	
			1390			
3.	Haflong-Laike-Kohima	Assam	75	750	I	-do-
		Nagaland	152	1520	I	
			2270			
4.	Kohima-Jossami-Tuensang Mon-Sonari-Moranhat (NH 37)	Assam	32	320	II	-do-
		Nagaland	200	2000	II	
		Manipur	10	100	II	
5.	Laphal-Ukhrul-Jasami rd.	Manipur	197	1970	II	-do-
6.	Dobaka (NH36) Lumding Haflong-Silchar Lunlei-Laisang	Assam	204	1632	I	-do-
			116	928	I	
		Mizoram	50	500	I	
7.	Passi (NH44) - Shangpung Baling-Garampani	Assam	78	780	III	-do-
		Meghalaya	42	420	III	
8.	Shillong (NH40) - Maibrang Nongstoin-Mawshynrut Fongjeng-Damra-Krishnai on NH 37	Assam	14	140	II	-do-
			175	1750	II	
		Meghalaya				
9.	Bypass at Dimapur with length over river Dhansiri	Nagaland	15	150	II	-do-
10.	Imphal-Bishanpur-Chura-chandpur-Tipaimukh-Kopran-Seiling	Manipur	330	2640	III	-do-
		Mizoram	110	1100	III	
11.	Ambassa (NH44) Phuldungsi Tuipabari-Aizawl	Mizoram	107	1070	III	-do-
		Tripura	130	1040	III	
12.	Agartala-Udaipur-Bogafa Sabrum	Tripura	130	1300	II	-do-
13.	Fongjeng-Darugiri-Asem-giri-Tura (Trial of Shillong-Krishnai (proposed NH))	Meghalaya	108	1080	III	-do-
14.	Bypass of Shillong Jowai	Meghalaya	15	150	II	-do-
15.	Bridge across Brahmaputra near Silghat & approach rd.	Assam	23	-	III	Bridge taken under NEC to be declared as NH.
16.	Bridge across Dhansiri at Silbori at Orang-Dalgaon road.	Assam		400	-	New proposal
17.	Furkating (NH39) Titabar Mariani-Anguri-Samaluguri		250	3750		-do-
18.	Sonari Bimalpur-Joyrampur Digbol (NH38)		200	1600	I	-do- (Traffic more than 300 vehicle per day ply on this road)
			3590	310		
				crores		

say: 3600 km

CHAPTER IV. II  
COMMUNICATION

North Eastern region is strategically important as it is bordering China on north, Burma on east and Bangladesh on west. The terrain is hilly and mountaneous except Assam Valley. The communication facilities in this region are not at par with the rest of the country. Rapid expansion of the network of the telecommunication is highly essential for timely fulfilment of development plans, growth of commerce and industry and to achieve emotional integration. It is repeatedly pointed out by the representatives of States/UTs at various Council meetings about the inadequacy of the postal and telecommunication system. The efficient and improved postal and telecommunication services would have a very wholesome effect on the public mind and remove the general sense of isolation in the NE Region from the rest of the country.

Postal Services

2. North Eastern Postal Circle caters to the postal requirements of five States and two Union Territories in the region. It covers an area of approximately 2,55,037 square kilometers. The Circle is headed by a Postmaster General and an Additional Postmaster General. We have a Regional Director of Postal Services for Assam State with his Headquarters at Gauhati., while the States of Meghalaya, Tripura, Nagaland, Manipur and Union Territories of Arunachal Pradesh and Mizoram have one Director of Postal Services each in the respective capitals of the States/Union Territories.

3. There are at present 24 Head Post Offices, 863 Departmental Sub Post Offices, 108 Extra Departmental Sub Post Offices and 4709 Extra Departmental Branch Post Offices in the Circle. These are distributed in 16 Postal Divisions throughout the Circle. The post office to population/area ratio in the Circle by the end of Sixth Plan will be as per Annexure 1. The Circle average at the end of the Sixth Plan works out to 45 sq. km area and 4700 population per post office. There are, besides two Railway Mail Service Divisions at Gauhati and Silchar, and a Circle Stamp Depot at Gauhati and Silchar, and a Circle Stamp Depot at Gauhati and two Postal Stores Depots at Gauhati and Silchar. The Returned Letter Office for the Circle is located

at Shillong, while there is a major departmental Mail Motor Service unit at Gauhati.

4. It has been found that a Post Office serves, on an average, an area of 7 Sq. KM in Assam and 355 Sq. KM in Arunachal Pradesh. In respect of population, it would be found that a post office on an average would serve 1500 population in Tribal area of Manipur and highest of 7500 population in normal rural areas of Assam. The variation as revealed is mainly because of the sparse population in hilly areas and thick population in normal rural area. The density of population as per 1981 census is lowest in Arunachal Pradesh being only 7 and the highest in Assam being 253 (Projected).

5. The State of communications being relatively underdeveloped in vast areas of the region, the expansion of postal facilities/services has been found to be somewhat inadequate despite steady progress made during the last few years as shown in Annexure 2. The comparatively lower level of economic activity in the region often makes it difficult to achieve even the specially-relaxed norms and standards evolved for the expansion of postal services in backward, hilly and tribal areas of the country. This is a pointer to the need for greater relaxation of standards specially for this region, regardless of their applicability to other backward/tribal/hilly tracts elsewhere in the country.

#### Telecommunications

6. The persistent demand by the States/UTs are to provide STD and Trunk Telephone links between the State capital and district headquarters for the better maintenance of law and order problems; normal day to day public services. The Hon'ble Minister of Communication in the Sixth Five Year Plan for Telecommunications '80-'85 has stressed the need to provide the telecommunication service into the interior particularly hilly, backward, tribal, rural and remote areas. There is at present one Trunk Auto Exchange (TAX) at Shillong. The State Capitals of Assam (Gauhati), Mizoram (Aizawl), Nagaland (Kohima), Arunachal Pradesh (Itanagar) are connected to Shillong (TAX)

and hence have the access to the national network while the other capital Imphal, Agartala are yet to connect. The present telecommunication facilities Stat-wise is as under :-

TABLE-I

TELECOMMUNICATION FACILITIES IN NE REGION AS ON 31.3.84 (Nos)							
	Aruna- chal Pradesh	Assam	Mani- pur	Megha- laya	Mizo- ram	Naga- land	Tripura
1	2	3	4	5	6	7	8
1. Total auto exchanges	23	131	16	18	7	24	20
2. Total Manual exchanges	1	28	1	1	1	5	5
3. Total equipped capacity of exchanges.	1775	1114	2745	5275	1210	3510	3920
4. Total working connections	1268	16916	2342	4383	959	2824	3006
5. Total waiting list	74	1554	187	630	222	442	260
6. Total long distance public call office (P.C.O)	17	270	36	51	9	21	45
7. Manual Trunk exchange (as on 31-3-83)	2	31	1	4	1	3	5

SOURCE : Deptt. of Telecommunications.

7. The following strategies concerning development of communication services in north eastern region are as such suggested :-

(a) Creation of Postal Divisions at District Headquarters :-

As a matter of policy, the area of a postal division is generally made co-terminus with the jurisdiction of a revenue district. Many district headquarters in the Circle are, however, without a postal division.

It is proposed that separate postal divisions be created at the following district headquarters :-

Mizoram	-	Lunglei
Tripura	-	Radhakishrepur
Manipur	-	Churachandpur and Ukhrul
Meghalaya	-	Tura and Jowai
Nagaland	-	Mokokchung
Assam	-	Diphu and North Lakhimpur.

(b) Upgradation of posts of Inspectors of Post Offices to Assistant Superintendents of Post Offices :- Some district headquarters in the region do not at present have even an Assistant Superintendent of Post Offices. It is necessary that the Inspectors of Post Offices who are at present located at the following places be upgraded to Assistant Superintendents of Post Offices for better administration :

Manipur	-	Kangpokpi
Arunachal Pradesh	-	Khonsa and Bomdila
Mizoram	-	Chimtuipui
Meghalaya	-	Williamnagar

(c) Creation of posts of Inspectors of Post Offices :- The following district headquarters are at present even without an Inspector of Post Offices.

Arunachal Pradesh	-	East Kameng (Soepa) Upper Subansiri (Daporijo) West Siang (Along) East Siang (Pasighat) Debong Valley (Anini) Lohit (Tezu) Tawang (Tawang) Changlong (Changlong)
Nagaland	-	Tuensung (Tuensung) Phek (Phek) Wokha (Wokha) Zunhebota (Zunhebota) Mon (Mon)
Manipur	-	Manipur West (Tambong) Manipur North (Kailang) Tengnopal (Chandel)
Meghalaya	-	West Khasi Hills (Nongstoin)

It is necessary that at least an Inspector of Post Offices be sanctioned at each of the above District Headquarters in relaxation of existing norms.

(d) Upgradation of Departmental Sub Post Offices into Head Post Offices :- At present there are 24 Head Post Offices in the Circle. This is grossly inadequate considering the number of Sub Post Offices which are placed in account with many of these Head Offices, not to mention the recurring difficulties in financing x

and accounting due to communication and allied bottlenecks. It is, therefore, proposed that the following departmental Sub Post Offices be upgraded into Head Offices by relaxing the existing norms and standards, if necessary :-

Lunglei (Mizoram)  
Golaghat (Assam)  
Goalpara (Assam)  
Mokokchung or Tuensang (Nagaland)  
Dimapur (Nagaland)  
Churachandpur (Manipur)

(e) Upgradation of Extra Departmental Sub Post Offices into Departmental Sub Post Offices :- There are number of Extra Departmental Sub Post Offices which need to be converted into Departmental Sub Post Offices for better financial and postal control and better administration. The existing norms in this regard are difficult to achieve in most cases in this Circle. A relaxing upto 20% is needed with regard to each of the parameters prescribed in this regard.

(f) Upgradation of Extra Departmental Branch Post Offices into Departmental Sub-Post Offices :- The same is the case with the upgradation of the Extra Departmental Branch Post Offices into Departmental sub Post Offices. These offices, located as they are in small, remote villages, constitute the key to postal development specially relaxed norms exist as regards (i) population to be served (ii) distance between two post offices, and (iii) financial viability for backward, hilly and tribal areas. But even these relaxed norms are difficult of achievement in this Circle.

It is suggested that the present standards as regards population be further relaxed to facilitate the expansion of postal facilities in this Circle. The following rough guidelines are recommended for consideration :-

1. Assam-Tripura (plains) : 1000 population
2. Assam, Meghalaya, Mizoram, Manipur & Nagaland (tribal & backward areas) : 500 population
3. Arunachal Pradesh : 300 population

(g) One persistent difficulty that has been experienced in this circle is the inability of the Inspecting staff (ASPS, IPOs and Main Overseers) to move freely within their jurisdiction for even routine statutory checks and inspections. This is primarily due to insufficiency of transport infrastructure in the interiors of hill states. There are instance when a long foot-march is required to be undertaken to reach a post office. This is not conducive to efficiency. It is, therefore, proposed that adequate conveyance allowance be granted to these touring officials in regions where suitable transport facilities cannot be provided.

(h) Postal Training Centre in NE Region :- At present there is no training centre in the region and the closet is at Darbhanga in Bihar. It is proposed to set up a training centre at Diphu in the region.

(i) There is also a need for opening a departmental building and godown in the postal source and a bag washing plant preferably at Gauhati.

(j) One post of General Manager (Task Force) has been created with the headquarters at Gauhati. The telecom Department has already evolved a works development programme for the North Eastern Region. According to this, the projects which will be commissioned in 1984-85 are shown Annexure 3. The Projects which can be commissioned in 1984-85 subject to fulfilling of certain conditions are detailed in Annexure 4. The projects which are likely to be commissioned in 1985-86 are shown in Annexure 5. The Telecommunication Department has faced certain handicaps during the course of implementation of various schemes, these have been shown in Annexure 6 alongwith the assistance needed by the Department to minimise or overcome these difficulties.

(k) The Seventh Plan programme for development of telecommunication in the region should aim at providing telephone connections practically on demand by 1987.



- (l) All district headquarters should have automatic exchanges by 1987.
- (m) By the end of the Seventh Plan all the State/UT capitals of the region should be connected to the national subscribers' dialing telecommunication network for STD and all district headquarters should be connected to State/UT capitals by STD.
- (n) Telex connections on demand should be provided by 1990.
- (o) Telegraph services in the region should be modernised by using stores and forward telegraph (SFT) system.
- (p) Connecting of district headquarters to state capital through satellite medium (except where reliable terrestrial medium available) in the States of Tripura, Meghalaya, Mizoram, Manipur, Arunachal Pradesh and Nagaland. In addition provision of earth stations at Gauhati, Diphu and Haflong in the State of Assam as also the provision of around 18 low cost satellite earth stations at places of strategic importance.
- (q) Efforts should be made to open new small automatic exchanges at sub-divisions, Tehsils, Block headquarters and to connect sub-divisions, Tehsils, Block headquarters on stable radio media progressively eliminating replacement of open wire trunk routes by radio link in order to provide tele-communication facility from State to Block headquarters in all the constituent units.
- (r) Integrated digital network should be provided in all States/UTs of the region by the end of Seventh Plan excepting Assam, which may be fully covered in the subsequent plan.
- (s) For better long distance rural tele-communication all overhead lines/trunk circuits on carrier channel should be progressively replaced by radio link.

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POST OFFICE -- POPULATION/AREA RATIO

Name of State/ U.T.	Area served in KM			Population served		
	Entire	Normal rural	Tribal	Entire	Normal rural	Tribal
<del>Assam</del>	23.7 Sq. km.	7	25 *101	6011	7500	2700 *3000
Tripura	17.03 Sq. Km.	11	16	3338	4300	4100
Manipur	40.35 Sq. km.	10	71	2537	4000	1500
Meghalaya	50.76 Sq. km.		52	3018		3100
Mizoram	76.13 Sq. km.		77	1760		1800
Nagaland	65.84 Sq. km.		68	3087		3000
Arunachal Pradesh	350.38 Sq. km.		355	2643		2600

\* Figure represents backward areas.

All India Average : Population : 48.06  
Area : 22 Sq. km.

I. Growth of Post Offices

State/UT	1980-81	1981-82	1982-83	1983-84	1984-85 (Tentative)
Assam	56	53	25	103	74
Arunachal Pradesh	9	7	15	15	12
Tripura	5	9	5	4	5
Meghalaya	9	9	9	6	10
Manipur	10	11	11	15	14
Mizoram	8	7	8	6	9
Nagaland	9	9	9	16	12

II. Appointment of additional ED Staff for strengthening  
Daily rural delivery services

State/UT	1980-81	1981-82	1982-83	1983-84	1984-85 (Tentative)
Assam	73	91	60	95	50
Arunachal Pradesh	10	45	14	15	4
Tripura	5	16	14	4	6
Meghalaya	6	20	12	6	3
Manipur	10	18	20	5	7
Mizoram	8	12	14	10	2
Nagaland	8	18	17	10	3

III. Provision of rural counter service facilities:

State/UT	1980-81	1981-82	1982-83	1983-84	1984-85 (Tentative)
Assam	115	70	35	83	48
Manipur	40	6	6	11	6
Tripura	-	4	9	26	6

IV. Installation of new letter boxes in rural areas

State/UT	1980-81	1981-82	1982-83	1983-84	1984-85 (Tentative)
Assam	196	35	4	34	31
Arunachal Pradesh	10	-	-	10	2
Tripura	7	2	1	6	5
Meghalaya	10	-	-	4	1
Manipur	-	-	-	-	3
Mizoram	-	-	-	-	2
Nagaland	-	-	-	-	1

The projects which will be commissioned in 1984-85

1. Microwaves Scheme

<u>Sl.No.</u>	<u>Name of the Scheme</u>	<u>Present status</u>
1.	Gauhati-End link 11 GHz(3+1)	Commissioned in July '84
2.	GHz(1+*) Shillong End link	Commissioned in July '84
3.	Gauhati-Nowgong W/B route(1+1) 6 GHz	Commissioned on 14-03/84
4.	Nowgong-Jorhat W/B M/W route (1+1) W/B M/W route.	Commissioned on 14-03/84
5.	Gauhati-Goalpara-Bongaigaon N/3 M/W	Installation in progress.

2. UHF Schemes

<u>Sl.No.</u>	<u>Name of the Scheme</u>	<u>Route Km</u>
1.	Tinsukia- Khonsa	
2.	Champakhwa-Passighat	
3.	Tinsukia-Tezu	
4.	Tura-Dhubri	
5.	Shillong-Jowai	
6.	Silchar-Haflong	
7.	Silchar-Aizawl	

3. Carrier & VFT Installation

<u>Sl. No.</u>	<u>Name of system</u>	<u>Programme</u>
1.	Tinsukia-Dinjan HI	July '84
2.	Santirbazar-Belonia GI	- do -
3.	Silchar-Badarpur HI	August '84
4.	Mokokchung-Zakhoboto GI	- do -
5.	Jowai-Garampani GI	Sept'84
6.	Dhubri-Gorupur HI	- do -
7.	Sibsagar-Simulguri GI	October '84
8.	Jorhat-Janguri GI	- do -
9.	Silchar-Hailakandi HI	November '84
10.	Silchar-Kumbhigram GI	- do -
11.	Agartala-Telliamura HI	December '84
12.	Agartala-Kailasbar GI	- do -
13.	R.K. Pur-Sonamura GI	- do -
14.	Nowgong-Kouritola GI	Jan '85
15.	Sarupathat-Golaghat GI	- do -
16.	Tura-Williamnagar HI	Feb '85
17.	Charali-Gahaigaon GI	- do -
18.	Tuensang-Khipren GI	March '85
19.	Agartala-Dharmnagar HI	- do -

4. Switching Projects

<u>Sl.No.</u>	<u>Name of work</u>	<u>Commissioning Programme</u>	<u>Remarks</u>
1.	2700 Lines MAX-I at Agartala	December, 1984	
2.	600 lines MAX-II at Bongaigaon	December, 1984	
3.	2000 lines containerised Electronic Exchange at Imphal	December, 1984	
4.	2000 lines containerised Electronic Exchange at Dibrugarh	March, 1985.	
5.	300 lines installations at Gauhati Exch. Unit-II(1200-1500)	October, 1984	
6.	300 lines installation at Gauhati Exchange, Unit-II.(1500-1600)	December, 1984.	
7.	200 lines MAX-II at R.K. Pur	March, 1985	
8.	100 lines MAX at Churachandpur	March, 1985	
9.	Lamphepat-Shillong TAX-STD	March, 1985	
10.	Kohima-Dimapur STD	March, 1985	
11.	100 lines installation at Bispur	Commissioned August, 1984	
12.	Imphal-Shillong TAX-STD	March, 1985.	
13.	Dibrugarh-Shillong TAX	March, 1985	
14.	Agartala-Shillong TAX	March, 1985	
15.	Jowai-Shillong TAX	September, 1984	
16.	Churachandpur-Imphal STD	March, 1985	
17.	200 lines MAX-II at Aizawl	December, 1985.	
18.	200 lines MAX-II at Sibsagar	December, 1985.	

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The projects which can be commissioned in 1984-85 if certain conditions are fulfilled

1. (UHF) Transmission Projects (provided MUX equipment are received by October '84 and Civil Works completed by December '84).

<u>Sl. No.</u>	<u>Name of Scheme</u>	<u>Sl.No</u>	<u>Name of Scheme</u>
1.	Kohima-Wokha	2.	Wokha-Mokokchung
2.	Wokha-Zonhebato	4.	Kohima-Phek
3.	Jorhat-Nazira	6.	Silchar-Panchagram-Badarpur
6.	Imphal-Karang		

2. Switching Projects (provided stores received by Oct '84)

<u>Sl.No.</u>	<u>Name of work</u>	<u>Remarks</u>
1.	400 lines MAX-II at Mokokchung	
2.	100 lines MAX-II work at Doom Dooma	
3.	200 lines MAX-II at Digboi	
4.	200 lines MAX-II at Namrup	
5.	100 lines MAX-II work at Tamphelpat	
6.	200 lines installation at Jhailubari	
7.	Interdialling facility between Gauhati and Borjhar system	
8.	Tura-Shillong T.X STD	
9.	Nahariagar-Itanagar Dilling	
10.	Dhubri-Gauhati STD	
11.	Bongaigaon-Gauhati STD	
12.	Agartala-R.K. Pur STD	

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The Projects which are likely to be commissioned in 1985-86

1. Transmission (UHF) Projects for 1985-86

<u>Sl. No.</u>	<u>Name of the Scheme</u>	<u>Sl. No.</u>	<u>Name of the Scheme</u>
1.	Mokokchung-Tuensang	2.	Imphal-Chandel
3.	Imphal-Ukhrul	4.	Imphal-Churachandpur
5.	Mill at Imphal	6.	Shillong-Nongstoin
7.	Nongstoin-Williamnagar	8.	Agartala-RK Pur
9.	Aizawl-Lunglei	10.	Agartala-Kailashahar
11.	Silchar-Karimganj		

2. Switching Projects for 1985-86

Sl. No.    Name of Work

1. Shillong TAX Extension from 800 to 1500
2. 2000 lines containerised electronic Exch. at Tinsukia.
3. 2000 lines containerised electronic exchange at Jorhat.
4. 1200 lines MAX-I at Kohima
5. 1200 lines MAX-I at Dimapur
6. 1000 lines expansion of Shillong X-Bar Exchange
7. Gauhati MAX-I, Unit-II expansion from 2400-3000
8. 300 lines MAX-I (2700 to 3000) at Agartala
9. 2000 lines containerised Exchange installation at Silchar.
10. 2700 lines MAX-I at Imphal
11. 1600 lines MAX-I installation at Newjong
12. 1500 lines MAX-I installation at Tezpur.
13. 200 lines MAX-II at Dhalighat
14. 200 lines MAX-II at Tingla
15. 300 lines MAX-II at Haflong.

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HANDICAPS AND PROPOSED FRAMEWORK FOR DEVELOPMENT OF TELECOMMUNICATION SERVICES IN THE NORTH EASTERN REGION

During the course of implementation of various schemes in the N.E. Region, several handicaps were faced as mentioned below :-

(a) Quick clearance of land acquisition cases has not been forthcoming with the result that progress of various schemes got held up at the initial stage itself. About 67 cases in the N.E. Region fall in this category.

(b) Power connections have not been available on priority resulting in delay in commissioning of installed equipment. There are some 19 such instances.

(c) Construction of buildings and approach roads on the scale required has not been possible in several cases due to remoteness of the places, non-availability of materials, difficulties faced in transportation of material, paucity of skilled labour and contractors etc.

(d) Acute shortage of skilled and experienced staff;

(e) There are other general limitations due to non-availability or delays in supply of various types of equipments and delays in SACFA clearance for radio station sites, etc.

(f) Shortage of residential accommodation is also one of the main inhibiting factors.

Department of Telecommunications has projected the following requirements:

Areas where assistance by NEC/State Govts. is considered essential for expeditious provision of telecom. facilities in the N.E. Region are indicated below :

i) Provision of land, approach roads and buildings by State Governments - It may be mentioned here that Arunachal Pradesh Govt. has already taken a lead in this matter.

ii) Co-opting of telecommunication representatives in States Planning Boards of the North Eastern States - This will bring the telecommunications project planners and State Project planners together so that advance action by the Telecommunications Project authorities can be initiated

without loss of time. This observation is based on the experience with reference to Chandrapur, the proposed State capital of Assam. The P&T came to know about this project only through news-paper report and in spite of attempts made to obtain detailed plans no success has been achieved so far. It may be pointed out that the Govt. of Arunachal Pradesh and Nagaland have already taken a lead in this matter.

iii) Permanent representation in the Secretariat of NEC - In view of the importance of speedy provision of telecom facilities and taking into account the enormity of this task in N.E. region, presence of a P&T representative in the NEC Secretariat is expected to be very helpful.

iv) Land acquisition and provision of power connections with independent feeders for telecom installations ; According of such high priority will reduce substantially the total period of execution of projects.

v) Assistance in the local recruitment of skilled labour, Technicians, office staff, etc.

vi) Need of quick import clearance - The N.E. Council may urge special priority for quick import clearance by Department of Electronics for procurement of smaller capacity containerised exchanges, radio systems and related items needed in the N.E. States. The Chief Ministers of North-Eastern States may like to take up the matter with the DOE.

vii) Security of telecom installations and staff : The present arrangements are inadequate and there is a need for better security arrangements.

viii) Funding support by the N.E. Council : Most of the schemes required for achieving the objectives as spelled out at paras (j) to (n) would not be remunerative. Funding support specifically for the items of the Plan proposals at paras (p) (r) & (s) as mentioned above is likely to be necessary if these objectives have to be retained.

CHAPTER IV.12

MANPOWER DEVELOPMENT

Manpower planning based on realistic estimates of present and perspective manpower requirements, is essential for the success of development planning in the North East. In view of the severe shortage of technical and non-technical manpower, various sectoral development programmes as well as large number of projects have to face serious manpower constraints. The National Committee on Development of Backward Areas (1981) has rightly observed, "The development programmes taken up in the North Eastern Region will run aground for lack of technical personnel if suitable programmes of manpower development are not taken up". As the first essential step towards effective manpower planning the NEC has asked the North Eastern States/U.Ts to assess their manpower requirements in three phases viz. (a) for the Sixth Plan period upto 1985; (b) for the period of Seventh Plan ~~basic 1985-80~~ (c) perspective upto 2000 A.D. Due to the shortage of trained personnel the newly set up machinery for manpower planning in most of these States/U.Ts are now finding it difficult to build up these estimates of manpower requirements.

2. Recognising the crucial role of manpower as an essential input in development planning and also the practical constraints in developing both technical and non-technical manpower in the North East, the NEC requested the Institute of Applied Manpower Research (IAMR), New Delhi to build up the estimates of projected manpower requirements in different fields of specialisation upto 1989. The study carried out by the IAMR revealed, inter alia, that by 1989 the N.E. Region would require about 3506 Diploma Holders in Engineering, 4889 Agricultural Graduates, 2476 Veterinary Graduates, 14,699 Post-Graduates in Arts and Commerce and 15,256 Post-Graduates in Science. Besides, 3,799 Draftsmen, 3,012 Stockmen, 1050 Forest Rangers were also included in the estimates of projected manpower requirements upto 1989. On the basis of these estimates as well

as in the light of some proposals of an Expert Committee, the NFC initiated the following programme of activities in order to supplement substantially the activities undertaken by the States/U.Ts for accelerating manpower development in this region :-

- i) Sponsoring of students from this region for various undergraduates, postgraduates and Ph.D. studies in Agriculture and allied subjects and granting of stipend etc. in selected engineering courses;
- ii) Sponsoring of inservice personnel for short duration specialised courses including the executive development and management development programmes.
- iii) Expansion or strengthening of existing technical Institutions in the region; and
- iv) Setting up of new technical institutions in the region.

3. In the over-all context of human resources development in a backward region manpower planning needs to be geared to the specific job requirements not only of the large investment projects but also of various sectoral development programmes in which adequate manpower is a basic pre-requisite for successful implementation. Such scattered and diverse requirements for manpower can be met effectively only if concerted efforts are made to organise proper linkage between educational output and employment opportunities. This is basically a question of matching of manpower planning with educational planning so that it is possible to avoid imbalance between demand for and supply of manpower. This calls for adjustment of the educational and training arrangements to the manpower needs at all levels. The best way to achieve this objective is to vocationalise the middle school and secondary school level education after creating motivation and attitude towards work orientation. For building up higher level manpower the facilities for specialised professional courses of education within the region need to be expanded considerably apart from sponsoring local candidates to institutions outside the region. For building up

middle level and lower level manpower the decentralised arrangements for non-formal education, apprenticeship, on the job training etc. are to be strengthened and utilised for specific purposes. In this regard the Planning Commission spells out the main thrusts in the following observations - "Existing training programmes would need to be reviewed in order to re-orient them to the felt needs or demand for manpower of different categories and link them to the target groups. The development of intermediate level technical skills among matriculates and secondary school leavers need emphasis." (The Approach to the Seventh Five Year Plan 1985-1990, Planning Commission).

4. In the second meeting of the Nodal Group held on 3rd May 1984, it was emphasised that the development of Manpower in the primary sectors needs introduction of new courses of primary activities such as agriculture, animal husbandry, jhum cultivation and ecology, mining etc. Several agriculture based vocational course including those facilitating self employment may be blended with usual academic courses. In order to keep abreast with the changing technologies it was felt necessary to start refresher courses and establish science museum with upto date library facilities. The Nodal Group also suggested that for strengthening the Science and Mathematics base, efforts should be made to provide teaching staff according to assessed requirement and appointment of teachers, preferably on long term basis, should be made on attractive terms after reviewing the policies for recruitment.

5. By and large, manpower development in N.E. Region has to be stimulated by establishing and strengthening adequate institutional and administrative set up which would facilitate taking greater advantage of the national level progress and systems initiated by the central agencies. Particular mention may be made of the recently approved central scheme for establishing a National Technical Manpower Information System consisting of 17 nodal centre in various regions of the country with a view to collecting data on technical manpower (especially covering

the fields of engineering in collaboration with the State level manpower units and Directorates of Technical Education). The co-ordination of activities under this information system would be done with the help of one 'Lead Centre' set up in the I.A.M.P. and a Manpower Cell in the Ministry of Education and Culture. The N.E. Region can take full advantage of this national endeavour by organising manpower cells at State level and participating in the assessment of manpower requirements. The Directorate General of Employment and Training (DGET) should also set up a manpower planning cell which along with the State level cells would be able to collect and compile manpower data and also maintain liaison with the sources of manpower demand particularly in the field of vocational training. The working of these manpower units will have to be co-ordinated with the functioning of the regional level unit established at the NEC. To sum up the above, the following may be stated :

- (a) At the State-level the manpower cell should be established/strengthened with proper staff during the 7th Plan Period to keep linkage with the National Technical Manpower Information System, DGET, all Departments of the State Govt and the Regional level manpower set-up in the NEC Secretariat. For this Central or NEC's assistance should be made available, if necessary.
- (b) The regional level manpower set-up should be developed and adequately strengthened in NEC Secretariat to oversee all educational, vocational training and other manpower development programmes of the State Govts and Central agencies including the Public Sector Enterprise etc. and to provide additional NEC's input, where considered necessary.
- (c) At the State Govts level, at least the major Departments like Education (including Technical Education), Health, Agriculture, Animal Husbandry & Veterinary, Industry, PWD etc. should have manpower unit incorporated in the Planning Cells of the Departments for maintaining linkage between economic planning, manpower planning and education planning, including the training needs of the in-service personnel of the Department. Some of the technically qualified staff required for these units may be drawn from the common cadre of the Department of Economics & Statistics of the concerned State.

Manpower approach at District level:

6. Any planning at the District level ceases to be realistic unless unemployment and under-employment are contained within the limit of tolerance. The 6th Five Year Plan has provided for establishment of "Manpower Planning and Employment Generation Council" at the district level. Its main functions are skill development, manpower planning, budgeting and utilisation of existing resources. But, in the North Eastern Region there has been no tangible progress in the establishment of Manpower Planning and Employment Generation Councils at the district level. High-level manpower generally migrate to seek gainful employment, where job opportunities are available and vast mass of unskilled labour are rooted to their soil for agricultural and allied activities. Hence, the district level planning requires mainly for the middle-level and low-level manpower as their mobility is generally restricted and, as such, there will be a shift of emphasis from the formal education system to informal traditional training shop-floor training and apprenticeship to supply the mass of lower grade technicians and skilled workers from within the district itself. There is a need to develop proper motivation amongst youngmen and guiding them to take up their own self-employment ventures. District Industries Centres and Employment Exchanges have to play significant role in this direction. The correct strategy will be to regard every human being, every natural resource and every organisation/institutions engaged in production or service activities as a valuable resource and bring them together suitably for the purpose of making production or providing services. Manpower Planning at the district level can contain (a) aimless drift of rural labour in search of gainful employment right to the urban centres, generally contributing to the growth of slums around these centres and (b) 'Brain-drain' from rural areas to the urban areas, thereby denuding the rural areas of both the skills and leadership necessary for their development.

7. During the 7th Plan period, proper emphasis should be laid to integrate manpower planning effectively with district planning. Since the estimation of manpower budget i.e. stock, supply and demand are of technical in nature, it would be necessary, in the north eastern region, to provide necessary technical assistance to the District Manpower Planning and Employment Generation Council. The services of the technically qualified persons should be made available at the district level and for that, the staff structure of the District Statistical Officer should be properly strengthened and trained to undertake the above tasks during the 7th Plan period. Further this Council needs considerable assistance from the national employment service by actively promoting self-employment through Vocational guidance and training.

8. In order that vocational training facilities may be improved both quantitatively and qualitatively, the Working Group constituted by the Planning Commission has suggested a review of the existing system of courses and curricula so as to facilitate restructuring some of the courses ensuring more effective utilisation of infrastructural facilities and accommodating new occupations and skills. Besides, the quality of trainers also needs to be improved by giving them incentives to complete trainers training courses and join the Advance Training Institutes (ATIs).

9. The present system of vocational training needs a lot of improvement particularly in respect of organising job-oriented courses, accommodating new occupations and skills and toning up the quality of trainers and modernising the institutions such as I.T.Is. and Polytechnics by providing them with better machinery and equipments. In this connection, it is also necessary to extend adequate support to the Ministry of Rural Development for implementation of TRYSEM in close collaboration with the I.T.Is. With a view to adding new dimensions to the field of manpower development in the North-East the education and training facilities for electronics, telecommunication, engineering,



computer science, food technology etc. need to be accorded priority at the diploma level programmes of the polytechnics and degree programme of the engineering colleges. At the craftsmen level self-employment generating programmes covering automobile mechanics and electricians, general electricians, TV and radio technicians, tyre retreading technicians etc. call for priority treatment. Moreover, manpower development should also be oriented to the application of science and technology for the development of large, medium, small and cottage industries and for this purpose proper identification and diffusion of technologies should be done. The North Eastern Regional Institute of Science and Technology which has recently been established should be properly equipped to play the expected role in building up the manpower base for technical improvement in identified fields. In the peculiar situation of the North East manpower programme has to tackle the dearth of trained personnel in the most critical shortage areas which require knowledge of science and mathematics teaching is the first necessary step towards overcoming this difficulty.

#### Training need at Grass-Root Level:

10. Inservice Training: All developing Countries which are facing the challenge of accelerating economic and social development, with consequent responsibility for providing human and material infrastructure, depend critically on the capability, motivation and the performance of the personnel. It is, therefore, important to recognise the 'work force' as an indispensable element in national development and, irrespective of the system of recruitment of these personnel, there is a need to improve their capability through inservice training. Training is necessary because no matter how well qualified a person may be at the time of recruitment, he or she still has certain inadequacies and, therefore, much to learn before becoming a really effective person in his organisation. For this important reason the Scheme for inservice training will have to be continued during the 7th Plan period to update and upgrade the

knowledge and skill of the personnel at the supervisory level and, at the middle and senior levels, the Executive and Management Development Programmes will have to be arranged to acquaint the Officers with the modern tools of management.

11. The Need at Grass-Root level : The officials at the grass-root level come into contact with the public directly or indirectly. In spite of best planning and resources, the actual implementation gets diluted without properly motivated and trained staff at the field level. The image of the Government depends to a large extent, on the inter-action between them and public. Hence, there is a need to assign proper priority for the training of the officials at the grass-root level during the 7th Plan. The objectives of the training should be to (a) Get work done better, (b) put meaning into work, (c) facilitate optimum utilization of employee's ability, (d) develop new skills, knowledge and concepts, (e) foster employee's understanding of goals of the department and contributions to work improvement, (f) prepare them for more responsible work, (g) reduce tensions and conflicts, (h) overcome complacency and foster excellence, (i) improve quality of supervision, (j) improve efficiency and effectiveness and (k) improve image of Government among people.

12. Training Content at Grass-Root Level : The training content for the grass-root level functionaries may broadly be divided into two categories viz. (a) Core elements and (b) elements governing vocational knowledge and skills. While skill development programme may vary from department to department the 'Core' elements should focus on attitudes, values and motivation. Considering the magnitude of personnel to be covered at the grass-root level the institution based training for them may not be feasible. However, the situation may be handled in the North-Eastern Region as follows :-

- (a) Establishing and strengthening training Institutes for each State/UT.

- (b) Development of training supervisors for each department for organising and conducting in-house training programmes at the work-place,
- (c) Training of Trainers,
- (d) Workshops, Seminars and Training Camps;
- (e) Peripatetic training, and
- (f) Development of instructional materials.

13. The NEC may extend support, during the 7th Plan period, for strengthening the training institutions, training of trainers and development of instructional materials.

14. In the North Eastern Region improvement and modernisation of employment exchanges and more effective organisation of Employment Market Information will greatly facilitate manpower planning to produce tangible results. Employment Exchanges should continue to do the work of motivation, guidance, publicity, supply of information and registration of persons interested in self-employment. Employment Exchanges should be equipped with latest information on financial assistance from banks, availability of raw materials, work sites, machinery and equipment, marketing channels, training facilities for skill development etc. In addition, Employment Exchanges should provide complete profile of information on various kinds of economic activities/ventures, rules and procedures, municipal regulations, licensing, taxation and labour law etc. Most important requirements for promotion of self-employment is to generate the aptitude and qualities of entrepreneurship. Generation of entrepreneurship should be done at various levels i.e. through the educational systems, by publicity regarding success stories in the field of self-employment and including entrepreneurship training as an integral part of all vocational training schemes and professional courses. At present, the craftment training scheme in the ITI's is mainly confined to craftsmen and production process workers. There is a need to develop short duration of entrepreneurship courses, as distinct from skill development courses,

through which perspective self-employment seekers can be acquainted with management procedures, rules and regulations governing self-employment activities. The DGFT and the State Directorates of Employment and Training should try to develop courses in collaboration with other expert agencies, so that employment officers may be able to arrange entrepreneurship training to young job-seekers as a part of their guidance and motivation activities. The NIC may support the suitably developed entrepreneurship training modules on 50% sharing basis with other financial institutions during the 7th Plan period.

15. After more than three decades of evolution of Vocational Training activities in India, the National System has come of age. There is, therefore, an urgent need to take an overall view of the present system and make efforts during the 7th Plan period towards the consolidation of the existing schemes for further filling up the gaps in the infrastructure to meet future demands. The Working Group constituted by the Planning Commission highlighted, among others, the following points :

(a) The existing infrastructure facilities for Vocational Training both in the Govt. and private sectors should be fully utilised by improving the efficiency of their operation.

(b) The existing training schemes should be made more flexible by adopting modular approach in order to accommodate in the system new occupations, skills and programmes of training, in future.

(c) The various training programmes should be designed and conducted as to establish a graded linkage by which a worker could rise from the lowest level in the rung to the highest level in the supervisory cadre by acquiring requisite skills and knowledge both through institutional training and on-the-job training.

(d) There should be complete dovetailing of

training both in the institutions and on-the-job so that a national pattern of trade testing, certification and recognition of qualifications, at various levels, is established.

(e) The quality of the Vocational training is mainly dependent on the quality of the trainers. It is, therefore, essential that the trainers' up-gradation programmes are accorded utmost importance during the 7th Plan period broadly on following pattern :

- i) Adequate motivation of the trainers to do their jobs more seriously by providing suitable remuneration, pay-scales etc. There should be horizontal as well as vertical mobility of the teachers and in the career-planning there should at least two promotions in the lifetime of a trainer.
- ii) Granting of advance increments for successfully completing trainers' training courses.
- iii) They should be deputed to Advance Training Institutes (ATIs) at least once in 5 years, for up-gradation of their skills/qualifications.
- iv) More facilities should be provided for on-the-job training of trainers in the industries, particularly in those trades for which training facilities do not exist in the ATIs.
- v) ATIs should be equiped with modern machines and equipment and fully updated with latest technology and Vocational pedagogy. It should develop more short-term modular courses to train the trainers in the specific areas of weakness.
- vi) The trainers should also be deputed to the industrial enterprises more frequently to acquaint them with latest production and productivity techniques.

#### Modernisation of Technical Education at the Diploma and Degree Levels:

16. There is a need, during coming decades, for re-orientation and improvement of existing technical education programmes in our Country, in the context of fast anticipated technological development and product diversification. A

reliable information system is, therefore, a pre-requisite to planning specially in the field of technical education and training. In absence of up-to-date and meaningful manpower information, it will neither be possible to anticipate areas of growth in the field of science and technology nor plan for technical manpower development. Therefore, in absence of such a system, necessary data are not even collected much less updated, systematised and stored suitably for retrieval as and when necessary. Thus from the available data, it is not possible to undertake studies relating to the productivity of educational programmes or absorption pattern of the educated in the employment market. A reliable information system is, therefore, pre-requisite to planning specially in the field of technical education and training. The Govt. of India, Ministry of Education & Culture have, therefore, approved a Scheme of National Technical Manpower Information System to provide upto date and meaningful manpower data on continuing basis to enable the various concerned authorities to anticipate areas of growth in the field of science & technology and consequently plan for technical manpower development.

17. Having regard to the present trend of technical manpower need in the country, it may be suggested that education and training facilities in Electronics, Telecommunication Engineering, Computer Science, Food Technology etc. will have to accorded priority at the diploma level programmes of the Polytechnics and degree programmes of the Engineering Colleges. At the craftsmen level, self-employment generating programmes like (a) Scooter and Motor Cycle service Mechanic, (b) Auto Electricians, (c) General Electricians, (d) TV & Radio Service Mechanic, (e) Garment manufacturing, and (f) retreading of tyres etc may be accorded priority. These educational programmes visualised for the present are only the tentative ones and the full content and varieties of the programmes could be assessed after variety of studies have been completed in the National Technical Manpower Information System. The NTC may support the expansion and modernisation schemes of

the polytechnics and the Engineering Colleges, where necessary. However, the post-graduate programmes like Petroleum Technology, Power System Engineering etc will have to be fully financed by the Government of India (UGC) as per existing policy of the Govt. of India.

18. It is now necessary to provide linkage from diploma to degree courses so that a student could continue study upto degree level after passing the diploma course by getting an entry in the degree course at appropriate level through the required bridge course.

19. In order to update the teaching programme in the Polytechnics the old and obsolete machines and equipment should be replaced. Trainers should be periodically sent to the Technical Teachers' Training Institute, Calcutta for updating and upgrading their areas of specialisation. Teachers should be deputed to the industrial enterprises more frequently to acquaint them with latest production and productivity techniques. Further, the Inspection Machinery should be suitably strengthened so as to avoid dilution of existing training programmes in the polytechnics. Similarly, steps should also be taken for updating and modernisation of technical education and the degree level on the basis of dimensions and diversifications being assessed through National Technical Manpower Information System. The NEC's financial support may be extended for introduction of new courses both at the Polytechnic and degree levels which are of great relevance to the area.

#### STRATEGIES FOR DEVELOPMENT:

20. With a view to accelerating Manpower development keeping in view the needs and condition of the North Eastern Region, it is necessary to take into account the following aspects of strategy for realistic manpower planning during the Seventh Five Year Plan :-

i) NEC's programme of activities in the field of manpower development can be made more effective if the concerned State Govts. come up with requests for sponsoring candidates or creation/expansion of facilities for training/education on the basis of specific manpower requirements on the one hand and their absorptive capacity on the other. Thus, the problems of excess or shortage of manpower in particular fields can be adequately tackled if educational and training facilities could be geared to need-based as well as job-oriented proposals.

ii) Development of manpower in the primary sector should be accelerated preferably by introducing new courses of primary activities such as agriculture, animal husbandry, ecology, jhum cultivation and mining etc. Arrangements for refresher courses and establishment of science museum with upto date library facilities should be encouraged.

iii) The dynamics of manpower development calls regular monitoring and review which might necessitate realistic shift of emphasis as well as diversification of the field of manpower development to embrace new dimensions such as entrepreneurial development, electronics, computer technology, food technology etc.

iv) It is necessary to establish/strengthen manpower cells in the States so that they might maintain adequate linkage with the National Technical Manpower System, D.G. C.T. and regional level manpower set-up in the N.E.C. There should be co-ordination among the activities of all these specialised agencies as well as inter-departmental co-ordination within the States themselves keeping in view the directives and guidelines of the Lead Centre at the I.A.M.R., New Delhi and the Manpower Cell in the Ministry of Education.

v) In order that improvement in the vocational training facilities can be made in the context of growing requirements in all the sectors of economy the existing



institutions like the I.T.s, Polytechnics, training centres for nurses and ANMs etc., need to be expanded and modernised. All vocational and technical courses in the I.T.s and Engineering Colleges need to be diversified and restructured so that they might be capable of meeting the overall requirements of technical personnel in the entire region. More avenues for vocational training of women need to be opened up. As the Planning Commission suggests, the training facilities for identified critical shortage categories of manpower and emerging types of new schemes will have to be organised with special efforts.

vi) In view of the importance of self-employment in the unorganised sectors of agriculture and cottage craft and the high potential in the organised industrial sector manpower development in this region should be organised in such a manner that with the proper motivation, training and assistance, it would be possible to generate and sustain self employment ventures for the benefit of both rural and urban people. In this regard expansion and modernisation of Employment Exchanges to meet the special requirements of this region as well as implementation of special schemes for the benefit of the weaker sections and physically handicapped persons will go a long way in providing adequate linkage between the output of particular categories of manpower and their prospective utilisation.

vii) The field of career guidance needs suitable improvement, since a lot of ignorance about the promising careers and courses as well as lack of adequate competitive strength of the local candidates are at present hindering the progress of manpower development particularly in the fields of science, technology accountancy and management. By and large, training for manpower development calls for guidance on the one hand and adequate follow-up on the other. As a feasible proposition, it may be suggested that in every state at least two districts should be chosen for starting career guidance cells.

viii) For the purpose of achieving adequate co-ordination and operational efficiency some organisational improvement may be made by activating District Manpower Planning and Employment Generation Councils which might be entrusted with the task of guiding and watching the integration of sector-wise production plans with the employment plans in the North Eastern Region.

CHAPTER IV. 13

H E A L T H

One of the pre-requisites for Socio-economic development in the country is the maintenance of good health in the community. A sound and strong health services, therefore, is imperative for the progress and prosperity of the country. A variety of diseases are produced inherently in man himself and are passed from generation to generation as hereditary diseases. While some of them are manifested, others are dormant till they re-appear after some generation. The health status of the community does not remain one in isolation but is interdependent on a host of other factors besides social and economic factors like poverty, lack of sanitation, ignorance, apathy, lack of transport and communication and other. While these are important factors the health services measures under promotive, preventive, curative and rehabilitative aspects are to be intensified to secure healthy and happy life. This can be solved by judicious choice of priority areas which if delayed the future investments may have to be increased manifold.

2. National Health Policy has laid stress on Primary Health Care and the emphasis of Health Care has changed from Curative to Preventive, Promotive and Rehabilitation and extension of facilities from urban to rural areas. Primary Health Care also includes Mother and Child Care (MCC), Family Welfare Programme, nutrition, environmental, sanitation besides diagnosing and treatment of minor ailments, spotting of major ailments with referral services to PHC's or bigger hospitals and putting greater inputs in the control of the communicable diseases.

3. The 20 points programme also has put emphasis on the need to provide Primary Health Care with emphasis on the preventive, promotive and rehabilitative aspects. This warrants the need for trained personnel and the training programme requires training workers at all levels.

4. By and large, the important health problems of North Eastern Region are created by malaria, tuberculosis, goitre, intestinal diseases such as gastro-enteritis, dysentery and parasitic diarrhoea apart from the general problem of malnutrition being widespread. Water borne diseases such as dysentery, diarrhoea and gastro-enteritis account for the largest number of cases treated in hospitals and dispensaries (e.g. in Meghalaya and Manipur about 5 percent of the total cases may be described waterborne diseases).

The base line ICDS data reveal that the preventive services like immunisation and distribution of nutrition supplements have reached only a small minority of people in this region. According to the feedback report received from Central Technical Committee, AIIMS, New Delhi, the immunisation coverage (in percent) for children up to 2 years of age is found to be 2.5 (BCG), 27.4 (DPT) and 37.2 (Polio) in case of Arunachal Pradesh, 58.5 (BCG), 74.9 (DPT) and 36.4 (Polio) in case of Assam, 36.1 (BCG), 33.7 (DT) and 32.0 (Polio) in case of Meghalaya. Such immunisation figures are not available for Nagaland while in case of Manipur, Mizoram and Tripura the immunisation coverage is either nil or negligible.

5. The era after independence gave a new awakening of health needs in the region. With a network of hospitals, dispensaries, health centres and sub-centres and various categories of doctors compounders, nurses and ANMs as well as paramedical staff pressed into service, the medical and health services in the North East have recorded gradual development more or less according to all India pattern. It is necessary to expand and diversify these services to a considerable extent. In January, 1983 this region has 106 hospitals in rural areas with 4152 beds and 119 hospitals in urban areas with 12281 beds. Out of these, 181 were Government hospitals while 44 were private. Besides, there were 2 specialised cancer hospitals and 2 mental hospitals. There were 1 Government Ayurvedic hospital, 45 Government Ayurvedic dispensaries and 60 Privately run Ayurvedic dispensaries. There were 24 Homeopathic dispensaries run by the State Government. The number of doctors for an average population is low in the region. According to estimate for Assam, the doctor population ratio was 1/11,879 (as on 1.1.80), for Meghalaya 1/6155, for Tripura 1/5466 and for Mizoram 1/7173. Nagaland and Manipur were in slightly better position with a ratio of 1/3463 and 1/4095 respectively. The situation in Arunachal Pradesh is equally poor.

6. From the data presented in Table 1 an idea about decentralised arrangements for extending medical facilities during the Sixth Plan (1980-85) can be formed.

TABLE -I

Decentralised Arrangements for Medical Facilities  
under the Sixth Five Year Plan 1980-85.

States/UTs	Establishment of PHCs		Establishment of Sub-Centre	
	Sixth Plan targets.	Likely achievement upto 83-84	Sixth Plan targets	Likely achievement upto 1983-84
1	2	3	4	5
Arunachal Pradesh	-	2	10	-
Assam	16	9	905	540
Manipur	15	8	284	156
Meghalaya	11	7	150	66
Mizoram	10	8	30	30
Uttar Pradesh	11	7	140	77
Tripura	7	3	238	43

Explanatory Notes:- '-' means not available.  
In Arunachal Pradesh the health Units do not conform to the staffing pattern of PHC.

Source :- Health Statistics of India, Central Bureau of Health Intelligence (BGHS), Government of India.

7. As will be seen in the table above, in regard to PHCs, all States/UTs except Mizoram are not likely to reach the Sixth Plan targets. In case of sub-centres also there will be shortfalls in all the units. The shortfalls are mainly due to non-availability of trained staff such as doctors ANMs while in some cases inaccessibility of areas had also been an obstacle.

8.

Assam has now three Medical Colleges with an intake capacity of 300 annually and have long since established Post-graduate degree in most specialties of medicine in two of the three Medical Colleges in the State. The establishment of the Medical Colleges at Imphal in 1972 has also improved the situation. With the present annual intake of 75 students in Regional Medical College and with the quota of only 5 students each for the two Union Territories in this college, these two UTs will still face acute shortage of doctors for a long time to come. The process of training more doctors for future requirement will have to continue.

9. The multi purpose workers scheme implies that a Uni purpose worker is to undergo a course of training to enable him or her to be able to function as a multi purpose worker. This is done in 3 tiers of training centres (1) for Key trainers and for District Level Medical Officers (2) for Medical Officers and Block extension educators and (3) for para medical staff at selected PHCs. Now, unless the middle category of staff will not be able to deliver the goods. The health guides are voluntary health workers selected by the community. These also are in position to deliver Primary Health Care Services at the grass root level. The training Centre also being at the PHC, the Medical Officer or Officers at the PHC must be active and sincere so as to bring out desired results. All these go to show that the Medical Officers at the level of PHC must function as leaders and must be properly trained and must be exposed to training programmes workshops and be conversant with local conditions and local needs, and are to be given all help and support.

10. The reluctance of doctors to work in the rural areas thus, depriving people living in these areas the services of such personnel, need consideration in the N.E. Region also. One of the postulates of the National Medical and Health Education Policy is to ensure that personnel at all levels be socially motivated towards rendering community health services. The Re-orientation of Medical Education Scheme seeks to involve the various colleges in the country in the direct dealing of health care services to their rural areas and to create positive bias to be medical students and the teachers in Medical Colleges towards community health care. Thus each of the Medical Colleges in the country are to adopt three Primary Health Centres in the State and students are required to fulfil six months compulsory internship in these rural institutions as prescribed by the Medical Council of India. Even with this exposure to make young doctors acclimatized to the rural setting, on a slight pretext doctors still try to avoid posting to rural areas. Health being a stage subject, the States may devise ways and means in the form of incentives, provision of quarters and other amenities and a definite policy of posting of doctors by rotation to other better areas.

11. The national Health Policy also envisage the establishment of a chain of sanitary and epidemiological stations to identify, plan and provide preventive, promotive and mental health care services. Such units, if set up in urban areas, e.g. Municipalities and Local Boards, will also help take care of local preventable Public Health Problems in towns including slum areas.

12. Another aspect in the delivery of Health Services is the proper production and distribution of drugs. According to the Drugs and Cosmetic Act 1940 these are to be properly regulated. Only registered Pharmacists can dispense medicine and this warrants that only qualified and registered Pharmacists are to look after the sale and use of drugs. Drug manufacture requires observance of strict rules and regulations and inspection of Drug Stores and Pharmacies can be done only by qualified staff. Years ago a Compounder's School was opened in Assam and with a training of less than a year's duration certificates were issued to trainees on the completion of training. Many of them were under-matric, they were allowed registration as compounders and in fact the compounder's posts, in the big hospitals in towns, to dispensaries in villages were manned by them. Due to shortage of such compounders even those who had worked for a number of years as apprentice under a qualified doctor could practice as compounders. The Pharmacy Council has now disapproved of this kind of training. Compounders are now known as Pharmacists and are now required to undergo training at least for 2 years after matriculation for a Diploma and 4 years after PU (Science) for a Degree in Pharmacy. Only such persons are allowed to be registered at the moment. Two institutes for Diploma in Pharmacy are running in NE region, one at Dibrugarh under the Assam Govt. and the other at Tripura as an NEC Project.

13. The opening of a degree college of Pharmacy at the Dibrugarh University is a step in the right direction. Every State requires a complement of staff to implement the drug control policy. These include Inspectors, Assistant Controllers and Controllers of drugs. There is an acute shortage in the line in all the States. It is expected that the Pharmacy Institute at Dibrugarh as an NEC Project will soon start producing Pharmac graduates who will slowly fill in the gap.

14. The North Eastern Region depends for its supply of medicines and drugs from outside the region. Except a few private firms in Assam, drug manufacture in North East is almost non-existent. Government venture on this aspect has been only in the production of a few infusions like saline and glucose preparations and distilled water. This is mainly done in the Medical Colleges and in a few big hospitals. Only one institute, namely the Pasteur Institute, Shillong, produces vaccines. In fact this is the only centre in North Eastern Region producing anti-rabic vaccine besides cholera vaccines and typhoid vaccine. Through NEC funding, production of these vaccines have been augmented in recent years and Medical Officers and Biochemists of the Institute have been sent out to obtain special training in other parts of the country and outside. The Institute is also engaged in the production of D&T Vaccines with NEC funds.

15. States and Private Enterprise are to be encouraged in drug manufacture in the next Plan and after. By then enough drug Inspectors also will be coming out to see that the region does not become a dumping place of substandard drugs, from other parts of the country and even from beyond the borders. Drug industry in a region with a rich flora and fauna is yet to be given a start.

16. All the States in North East are functioning with a very meagre staff in the Directorate of Health and many are not sufficiently qualified. Even the Directors of Health Services who are currently acting as Controller of Drugs in the States are not sufficiently qualified but in the absence of qualified persons they have to function with the help of a few qualified staff. The urgent need for such staff cannot be over emphasized. Moreover, the drugs Inspector or Assistant Controllers of Drugs have to depend on Central Drug Laboratories for their seized articles all of which are outside this region. Of the 4 Central Drugs Standard Control Organisations, one is situated in Bombay, one in Calcutta, one in Madras and in Ghaziabad. States of this region have to send their suspected spurious or sub-standard drugs to the Calcutta Laboratory mainly and due to the large number of specimens to be tackled, reports from the laboratory are very much delayed. It is only in the fitness of things and for better drug control in this region that a Regional Drug



Standard Control Organisation (Laboratory) be established in this region.

17. Health standard goes hand in hand with food standard. The Prevention of Food Adulteration Act of 1954 envisaged the supply of pure and wholesome foods to consumers. Supply of substandard food stuff or of adulterated food stuff are often voiced in this area and the law provides prosecution of the culprits. But this requires proper investigation and tackling of the cases by properly qualified and trained persons. The States in North Eastern region have to depend on the food laboratory of the Govt. of Assam at Gauhati. This single laboratory may help solve the problem for the State of Assam, while the other States are still at a disadvantage. Here two things are to be taken into consideration. Firstly, the question of training of the Chemists and the Food Inspectors. The Sanitary Inspectors after under-going training for the required length of time under a qualified Chemists, who are otherwise qualified to be appointed as Assistant Analysts, have to undergo a period of training under the Chemical Analyst to be able to function both in the laboratory as Expert Witness in the Court. Only qualified persons with sufficient experience in the line are recognised by the Courts. The second consideration is the need to establish food laboratories. Whether one is to be established for each State or a Regional one common to all States is to be decided. In order to save time and money it would be better to upgrade the present Food Laboratory of the Govt. of Assam by the augmentation of staff, equipments and space with facilities to impart teaching and practical training to the staff sent by the States for this purpose. Instructions, both theoretical and practical, have to be imparted to the candidates on the latest techniques of inspecting articles of food, collecting and despatching of food stuffs seized and to be familiar with the usual ways and methods of adulteration of food stuff common in this region as well as to be conversant with the rules and regulations of Food Adulteration Act.

18. The region is, however, very much in dearth of Post graduate degree holders. With the increase in the number of hospitals, upgraded the PHC's and Community Health Centres the need is more. Except in a few specialities like surgery, medicine and gynecology and that too in State Hospitals mostly, the other hospitals in this region are without the services of specialists. Up till now Medical graduates from this region aspiring for P.G. training are at a disadvantage as admission to all the Post graduate Institutions are by merit considered on the marks obtained in MBBS course or by open competition through Entrance Examinations. Other Institutes go a step further by disqualifying candidates except those sponsored by their State Govts. This may be solved in a number of ways :-

1) Establishment of Regional Medical Institute in NE region with facilities to undertake Post graduate teaching in Medical subjects.

2) By NEO sponsoring the candidates of State Govts. in specialities desired by their Govt. in Post graduate Institutes within the country.

The National Academy of Medical Sciences can also be called upon to extend their continuing Medical Education Programme to all doctors including even private practitioners by arranging seminars, workshops, short time courses etc. Those who could not otherwise avail formal P.G. Courses can get the benefit of these facilities which will enable them to sit for the Entrance Examinations in different parts of the country.

19. With the stress and strain of modern life another aspect of health care which has come almost to the forefront is Psychiatry. This includes well-known diseases like epilepsy, mental retardation in children, cases of ~~mal~~ lingering an insomnia, depression and excitement, addiction and alcoholism child delinquency and others. It is a common experience that there is no dearth of alcohol in any form and make in the North Eastern Region. The health hazards associated with the habit of drinking are quite well known. De-drugging of addicts in drugs as well as breaking of the alcohol habit can be done in Psychiatric Centres.

20. Cases of a mental and behavioral nature have, for a long period of years, been tackled very hap-hazardly and those who turn violent either land in jails, as criminal or non-criminal lunatic or have to enter the lunatic asylums. From this

region cases are referred to the Mental Hospitals previously known as Lunatic Asylum at Tezpur or at Ranchi. The Mental Hospital at Tezpur mainly due to lack of funds has not been able to come up well, although, it has, during its long years of existence, been of immense service to the region. If the Mental Hospital can be upgraded to a Regional Institute of Psychiatry, it will serve as an Apex Institution for Mental Health and all the Psychiatric Centres in the States which may be provided with beds (not more than 50) will help to meet the requirement in this region.

21. Medical graduates from the States may also take up Post graduate courses in Psychiatry in the Central Institute of Psychiatry, Ranchi or in any other P.G. Institutes. Simultaneously, nursing personnel have also to be given opportunity to do a diploma course in Psychiatric Nursing in the same Institutes. This will facilitate the establishment of functioning and good Psychiatric Centres in the States.

22. Besides general services, nurses would be required in all the specialities available in our hospitals. But Public Health Nursing is especially important as the Twenty Points Programme envisaged expansion of Primary Health Care to the rural areas where preventive and promotive measures are considered more important than curative. Nurses with Public Health Certificates are, therefore, in a better position to deliver the goods than those without. Training for General Nursing and Midwifery after matriculation or equivalent may be encouraged in the region.

23. A right step in this direction would be that the Graduate Nursing College at Gauhati which is just coming up should be allowed to grow with financial assistance in the 7th Plan also, so as to meet the demand for graduate nurses in the region and help improve nursing care which is an essential element of Medical Care. It would not be wise to stop lending a helping hand to this Graduate Nursing College at the time when it is most needed.

24. Nurses, like doctors and Pharmacists, have to be registered in their respective Councils. Assam, utilising part-time services of the Director of Health Services, Assam are still continuing registry of all the doctors practising in this region, as well as registration of the nurses and pharmacists.

But while registration of doctors and pharmacists, is only done with the purpose of giving them credence for applying for jobs or for practising in the line the Nursing Council has the added responsibility of conducting examinations and inspections for General Nursing and Midwifery and of awarding certificates of completion to successful candidates. Of late, the Trained Nurses Association of India of NE Region have proposed the establishment of a separate Nursing Council for the NE region comprising all the States and UTs except Assam. Such a Nursing Council may be considered for establishment with the help and advice of the Nursing council of India and with the consent of the Constituent States.

25. The maintenance of instruments and appliance specially those which are electrically operated need specific attention. A Regional Workshop for repair of more commonly used instruments in this region may be set up. It may be possible that with luck and patience this may even hit upon ideas of inventing new instruments or cadgets or improvement of existing ones.

26. It is understood a Regional Medical Institute is being established in the Central Sector in Meghalaya. Whether it will provide both teaching facilities and Health Services in the line of the All India Institute of Medical Sciences or in the line of Chandigarh is not known. Since there is a dearth of specialists in the different branches of medicine in this region it would be better to combine service with teaching but teaching only at the Post graduate level along with Health Care Services.

27. Cancer of the throat and of the oesophagus is most prevalent in this region as an established fact although the real cause is not known. It has often been attributed to betel nut chewing common in the NE region. In all the 4 Medical Colleges in the region and in some of the hospitals in the State some amount of cancer detection is going on. Since most of the cases came late, proper treatment could not be meted out. Many of the cases are merely labelled as "late" or "inoperable cancerous growth". Up till now it has been seen that those located at places where operation can be done along with radiotherapy have a longer life span with a more or less comfortable and free from pain period.

28. The B. Baruah Cancer Hospital at Gauhati started well with a well-intentioned motive namely to relieve the pain and suffering of people suffering from cancer. But it lacks the infrastructure and although considered as a Regional Cancer Institute it has been approved to cater mainly to the needs of patients suffering from cancer of the throat which will definitely relieve congestion of such types of cancer patients in the Medical Colleges of Assam and other Institutions where Radiotherapy exists. If the staff is augmented, this hospital can to a great extent act as a diagnostic, therapeutic and Research Centre for throat cancer.

29. The Family Welfare Programme is a centrally sponsored scheme and the States and Union Territories continue to receive 100% assistance for the purpose. Starting as a plan scheme it has been made a concurrent subject effective from 1977. Both at the Central and State level a strong organisation is implementing the scheme and is one of the items in the 20 Points Programme.

30. In most of the tribal areas in this region this programme has received a boost by giving special stress in Maternal and Child Health Services as well as the judicious implementation of the Nutrition programmes. The protection of mothers against tetanus as well as the prevention of deficiency diseases including anaemia during the pre-natal period has helped mothers to survive the ordeals of pregnancy and of delivering live healthy babies-mothers thus response more to Family Welfare Programme when they see that their children are alive and well. The expanded programme of immunization by protecting new born babies against Tuberculosis by GGG vaccination and against diphtheria, tetanus and pertussis by DPT combine vaccines and later by DT combine vaccines, as well as oral drops of the polio vaccines have helped children not only to free from diseases but also to grow well. Vitamins specially vitamin 'A' supplied to children have helped protect them against night blindness, kerato-tonalacia and xerophthalmia. The ICPS scheme also supplied nutrition through the supplementary Nutrition Scheme, not only to the tiny tots by giving them the benefit of the Immunization Programme referred to above and free Health Check-up not only for the babies but for mothers as well.

31. The Indian system of Medicine includes among others Ayurveda, Unani, Nature Cure, Yoga. Of these Ayurveda has made some dent in the health structure in the NE region. Ayurvedic system of medicine was brought into prominence with the opening of the Ayurvedic College at Jhalukbari, Gauhati. Somehow this College could not attract with good staff who could also undertake research on herbs and plants available in this region will bring a lot of blessing to this region. It has been seen that there are a number of patent medicine of Ayurvedic origin selling in the General Pharmacies and Drug Stores these days along with allopathic Medicines. The other non-allopathic system of medicine in vogue in the NE region is Homeopathy. There is no College of Homeopathy in this region. States send their nominees to Calcutta and other places. A few Dispensaries and College for teaching Homeopathy may be set up in the region. It can also be considered by the Ministry of Health whether an experiment of having an Integrated Indian Medicines System College could be given a trial by opening one such college in North East.

32. There are Research Councils in these systems of medicine financed by the Govt. of India. There are individuals who are conversant with plants, indigenous to these areas some of which have been tried in some ailments with reported success. Such workers may be encouraged to go ahead with their research works in consultation with the Research Councils.

33. Mental problem is a common sight in this region. It may be due to diet deficiency or unhygienic habits right from childhood or indiscriminate use of medicines, affecting the teeth etc. It is also a well known fact that bad teeth are responsible for most of the ills of the body. Dental care, therefore, forms one of the most important branch of medical services and it is felt that only qualified and trained persons should be involved in it. The Dental Wing of the Gauhati Medical College has not yet been able to bring out their 1st batch of students. With some more space added for the college and a hostel for girls it could be converted into a full fledged Dental College which would be the first of its kind in this NE region.

34. The broad strategy for the Health Sector for the seventh Plan is indicated below :-

- (i) In the North Eastern Region, primary health care should be accorded high priority in the programme for development of health and medical facilities during the Seventh Plan period. In a wider context, the programme of primary health care facilities should be co-ordinated with the Minimum Needs Programme so that there may be an integrated development of health and other facilities having bearing on general health like nutritional measures, water supply and sanitation, housing, etc. It will call for proper inter-sectoral linkages.
- (ii) For better medical coverage, the population health centre ratio be fixed at one centre for every 2000 persons in the hill areas as against the existing norms of one centre for 3000 population in view of the difficult terrain and sparse population.
- (iii) In the plains areas one fully equipped PHC should be available at each Block headquarters which besides providing normal health coverage, should also supervise the work of a cluster of 7/8 Sub-Centres.
- (iv) All the District Hospitals/ Dispensaries in the States/UTs of the region should have improved facilities including specialised units for dental care, mental care, diabetes and coronary heart diseases as well as rehabilitation centres for the physically handicapped. Each individual State/Union Territory should formulate specific schemes for developing these facilities under the Seventh Plan.

- (v) A scheme of "Bare Foot Doctor" should be introduced in the far flung hilly areas and other inaccessible areas. The Chittaranjan Mobile Health Unit model which is in operation in J&K should be considered for adoption with modifications, if necessary, to suit local conditions in this region. A similar scheme has been experimented in Arunachal Pradesh and its performance may be reviewed.
- (vi) In order to remove the shortage of doctors, nurses, ANMs and other para-medical staff, the existing training facilities should be augmented substantially. The indigenous Dai System needs to be strengthened by arranging training locally.
- (vii) Special programmes should be launched for the control and eradication of communicable diseases as well as diseases which have high incidence in the Himalayan and Sub-Himalayan region such as Goitre and Gastro-intestinal diseases.
- (viii) In view of this region's record of relatively high infant mortality rate and inadequate preventive services like immunisation and distribution of nutrition supplements etc., mass immunisation programmes covering BCG, DPT, Polio, Measles and Tetanus vaccines should be launched. At least 75% of the target group should be covered under the nutrition programmes as part of the ICDS by the end of the Seventh Plan.
- (ix) As envisaged by the National Health Policy, a regional scheme needs to be formulated for the establishment of a chain of sanitary-epidemiological stations to identify, plan and provide preventive, promotive and mental health care services.



- (x) Since the NE Region is endowed with vast herbal resources and medicinal plants, a drug manufacturing unit in the public sector should be set up within the region. At the same time, a mechanism for supply/delivery of drugs in remote and inaccessible areas of the region should be developed.
- (xi) A Regional Drug Control Laboratory should be set up in the region with adequate facilities for food analysis.
- (xii) The growth rate of population in the NE Region is much above the all India growth rate, a fact that justifies taking up adequate fertility reduction measures. Motivation of the people should form the crucial part of the Family Welfare Programme and arrangements for free sterilisation backed by incentive measures should form the essential components of a massive drive. Greater use should be made of 'anganwadi' workers for educating".
- (xiii) Groundwater based water supply systems, whenever feasible, are economically more attractive than surface water based supply systems with treatment plants. Extensive groundwater exploration should, therefore, be carried out, both in hill and valley areas to ascertain the feasibility of groundwater as source for community water supply systems in the region. The recent success of exploratory drilling at Bairagipara in West Garo Hills by GGWB and in the GSI complex at Shillong is encouraging. The water is chemically and bacteriologically pure.
- (xiv) Goitre and dental decay are known to be endemic in many hill areas of the region. Inter-disciplinary studies with special emphasis on hydro-geochemical aspects of water supply should be undertaken.

BANKING FACILITIES

For an overall social and economic growth the role of commercial banks has become very crucial in these days. The 'Social Banking' concept has tremendously gained ground. Now that 20 banks have been brought under the fold of nationalisation, the nation's expectation has, naturally, gone up. In the development of backward regions, in particular, the role of commercial banks and other financial institutions is very important. The banks have been playing an increasingly significant role in the development of the NE region. Number of branches have gone up, rural branches have come in operation as well as credit extension has been there in all the sectors.

2.            With respect to deposits and credit, it is only Gauhati and Shillong from this region that qualified among the top 100 centres (as on June 1983.) With 61 offices Gauhati had deposits of Rs. 184.16 lakhs and thus captured the 28th position. With respect to credit it captured 33rd position with Rs. 93.10 lakhs of amount as on that date (these centres together accounted for 60.7 per cent of deposits and 69.4 per cent of credit), Shillong captured 84th position (with 24 offices, Rs. 63.96 lakhs of deposits) with respect to deposits.

3.            The main thrust came from the nationalised banks (Gr. I) Group. Their 430 branches (June 1983) were responsible for Rs. 439.66 lakhs of deposits and Rs. 195.13 lakhs of credit. Assam had the largest share. 331 Assam's such branches accounted for Rs. 344.25 lakhs of deposits and Rs. 157.58 lakhs of credit.

4.            Nationalised Banks' (Gr. II) contribution is also on the rise, their semi-urban branches leading the list. Other scheduled commercial banks also concentrated in Assam (41 out of 47 such branches being there), with virtual no representation in Manipur, Mizoram.

5. Deposit pattern (of SCBs) shows that contribution of term deposits was highest, followed by savings and current deposits. This is true for NE region as a whole, but does not hold good for all of the constituents. For example, in case of Mizoram the main flow came from current, followed by savings and term deposits, But excepting Manipur and Mizoram the regions shared the hierarchy-term, savings and current.

6. Regarding branch expansion, the rural regions's share was highest, Particularly in States like Arunachal Pradesh, Mizoram, these branches virtually overcast the regions.

7. Assam, which accounted for the maximum quantum of credit ( Rs. 219,8855,000), channelled most part to the industry sector ( 40,4 per cent). Group-wise the food manufacturing and processing (mainly tea processing) Textiles, paper, paper products and printing, leather and leather products, chemicals and chemical products, vehicles parts and transport equipment and the engineering sections also grabbed, a good amount. Agriculture which captured 28 per cent of outstanding credit, mainly composed of the direct finance ( 20,5,per cent). Other sections which got bigger shares include wholesale trade and artisan-craftsmen. Number of accounts was particularly higher in the case of trade and agriculture sectors.

8. For Nagaland, also, industrial advances remained at the top (mainly food manufacturing and processing). One interesting feature is about SSI advances for which Nagaland occupied as much as one-fifth of total outstanding credit. Even for Assam this was only 8.4 per cent, In Manipur, transport operators captured the biggest share (29.3 per cent), followed by trade (22.2 per cent) and industry (23.5 per cent). Tea processing electricity generation, transmission and distribution were the main occupants. Direct finance in the agriculture

sector and retail trade in the trade sector accounted for other major functions assisted by institutional finance. For Meghalaya the industry sector got the lowest position (13.8 per cent); the share of SSI being as low as 5.3 per cent. Transport operators 24.2 per cent, trade (23 per cent mainly retail) the direct agriculture finance (21.8 per cent) were the main demanders.

9. For Tripura, the agriculture (mainly direct) finance was very strong (29.9 per cent). Industry there got 16.3 per cent and the share of SSI was 6.6 per cent. Textiles, tea-processing were the major focal points. Transport operators got a good share (29.4 per cent), followed by retail trading.

10. A definite pattern can, therefore, be noticed. In some states the farm sector dominated, while in others transport operators did the same. The reason for such is not difficult to understand. The backward regions development is being fostered by the trade-transport financing. The only exception is Tripura, where direct lending to agriculture dominated, pointing thereby that banks as well as developmental agencies in the Government have been able to motivate farmers in generating credit demands on the banks. Poor share small scale industries sector, as a universal phenomenon in North East, is a matter for concern as this is the main activity which can absorb the diversification of rural traditional economy and ameliorate the living condition of a large number of people.

APPROACH AND STRATEGY

1. Branch Expansion in the North Eastern Region

11. The present picture of banking in the region is as under :

Name of the State/UT	Present BRBs No. of branches as on June, 1983	Reserve Bank of India BRBs	Branches of pending licences	Additional requirement upto March 1985	Total	Credit Deposit Ratio as on December, 1981	As per sanction	As per utilisation
1	2	3	4	5	6	7	8	9
1. Assam	653	5	123	115	469	584	43.04	76.6
2. Arunachal Pradesh	31		-	28	5	33	15.00	22.7
3. Meghalaya	79		13	15	17	32	20.2	15.3
4. Mizoram	15		-	19	3	22	10.9	23.7
5. Nagaland	50		1	4	10	14	34.8	29.4
6. Manipur	44	1	11	23	37	60	35.7	42.8
7. Tripura	88	1	53	31	12	43	66.00	51.1
Total	960	11	201	235	553	788	40.8	62.5

Source : NEC Secretariat.

From the above table it is clear that at the moment there are 960 bank branches in the region as on June, 1983 and to attain the national objective of one bank to cover 17,000 population by March, 1985 the North Eastern Region would need 788 additional bank branches which comprises of 235 pending licences plus 553 additional requirement of branches as per the new branch licencing policy of the Reserve Bank of India, List of identified centres which the RBI had sought from State/UT Governments has been submitted by most of the States/UTs. Those of the State/UT Govts. which have not yet submitted the list should expedite in sending the list of identified centres to the RBI. The RBI should expedite the allotment of branches and the necessary licences on a priority basis, so that the Commercial Banks and Regional Rural Banks functioning in the region are in a position to obtain the required number of 788 branches by March 1985.

12. As for the 7th Plan, the population per branch will have to be brought down to 5,000 in the hill areas, as the population is very scattered and the terrain is difficult. Similarly, in the plain of Assam, Manipur and Tripura our endeavour should be one branch for a population of 10,000 people.

2. Credit Deposit Ratio.

On scrutiny of the Col. No. 8 of the above table it is observed that while the all India Credit Deposit Ratio as on November 1983 had touched 65.4 the region's average is only 40.8 which is much below the national objective of 60% credit deposit ratio set by the RBI for Commercial Banks by March 1979 and if we see the individual ratio of the States/UTs of the region, it is observed that the credit deposit ratio in Mizoram is the lowest in the region, which is now 13.7 in August 1983. The Commercial Banks should therefore, step up their credit activities in the region to attain the national objective of 60% credit deposit ratio. Similarly, the State/UT Govts. in the region should provide the necessary infrastructural facilities to the Commercial Banks and RRBs so that the credit demand increases credit deposit ratio is to operate departmental activities on commercial lines by floating various state-run Corporations like Road Transport Corporation, Plantation Development Corporation, Mineral Development Corporation etc. by these State/UT Govts. in the region, which are still running it on departmental lines financed by budgetary grant. Such Govt. sponsored Corporations can avail of bank finance for their working capital as well as term loan requirements and thus help in increasing the credit deposit ratio of the region.

3. Setting up of Additional Regional Rural Banks.

At the moment there are 11 Regional Rural Banks in the North Eastern Region as under :-

<u>Sl. No</u>	<u>Name of State/UT</u>	<u>No of RRBs</u>
1.	Assam	5
2.	Arunachal Pradesh	1
3.	Meghalaya	1
4.	Manipur	1
5.	Mizoram	1
6.	Nagaland	1
7.	Tripura	1
	Total	<u>11</u>

Out of the 11 RRBs, 2 have been recently set up, one each in the Union Territory of Mizoram and Arunachal Pradesh in the months of September and November 1983 respectively. Thus one of the recommendation of the Ambagankor Committee, which was constituted by the RBI to Study the flow of credit in the North Eastern Region has been fulfilled by establishing RRB at least one each in all the Hill States/UTs of the NE Region. However, within these States/UTs, there are many districts which are still not covered by the RRBs. To fill the gap four more RRBs may be established as under :-

- 1) One additional RRB for Meghalaya with headquarter at Tura for Garo Hills.

At the moment, there is only 1 RRB in Meghalaya with headquarter at Shillong covering the districts of East Khasi Hill West Khasi Hills and Jaintia Hills. However, the most underdeveloped areas of Meghalaya viz; Garo Hills comprising the East and West Garo Hills districts are still not covered by any RRB. Further-more, the number of small farmers and artisans in the area is quite large and scattered. The present Bank branches, therefore, do not meet the requirements of these small farmers and artisans and hence, there is an urgent need for establishing another RRB for Garo Hills with headquarter at Tura.

ii) Setting up of 2 more RRBs for Arunachal Pradesh.

One RRB has been recently set up at Pasighat in November, 1983 which will cover the four districts of East Siang, West Siang, Lower Subansiri and Upper Subansiri. Thus, there are still 5 districts in AP which are not covered by any RRB at the moment. Furthermore, the area of AP is bigger than that of Assam, comprising of difficult terrain and scattered population. Thus 2 more RRBs for AP, one with headquarter at Bumdiala and other with headquarter at Ziro or Tezu, depending upon the convenience of the UT Govt. may be established.

iii) Setting up of another RRB for Nagaland with headquarter at Mokokchung.

At the moment, the Nagaland Rural Bank with headquarter/<sup>at</sup> Kohima is operating in the State. However, though the Central Govt. has declared the entire State of Nagaland and as its area of operation it is not practicable for the present RRB to cover the entire State with Headquarter at Kohima, in view of difficult terrain and scattered population. Therefore, another RRB for Nagaland with headquarter at Mokokchung, to cover the districts of Mokokchung, Mon, Tuensang, and Shunaboto may be established.

4. Joint Training Institute for RRB staff

At the moment, there are 11 RRBs with 201 branches in the region. 4 more RRBs are likely to come up in the near future. On an average, one RRB should have 70-80 branches to make it viable. This means there would be 1100 approx. branches of the RRBs in the region in time to come and the present policy of the RBI and G.O.I is to encourage RRBs to open more branches in rural areas, where they are established. On an average, a RRB branch would have a strength of 3-4 staff members. That means, in time to come, the strength of RRB staff in the



region would be around 4000 and the leave such a large segment of RRB staff untrained, would jeopardise the working of RRBs, particularly in view of the fact that they have to play an important role in the working of RRBs. It is, therefore, suggested that NABARD should take lead in establishing a Regional Institute for training RRB staff.

5. Integrated Rural Development Programme

Under the Integrated Rural Development Programme, the State/UT Govt. are supposed to link their subsidy with loans from Banks. However, the Govt. of Nagaland and Meghalaya have still not linked their subsidy with loans from banks and thus the banks have no role to play in these States. On the one hand, the credit deposit ratio of these States are at a low side and on the other end there is no involvement of banks in important schemes like that of IRDP. The Mizoram Govt. has recently linked it atleast at those places where the banks are operating. The Govt. of Nagaland and Meghalaya should therefore, take urgent-steps to link their subsidy with bank loans under the IRDP scheme. Similarly, all the State/UT Govts. should prepare Developmental plans for each block, so that the Lead Bank can prepare Banking plans for each block.

6. Setting up of Directorate of Institutional Finance.

At the moment, only Assam is having a Directorate of Institutional Finance under its Finance Department to Co-ordinate the activities of the State Govt. with the financial Institutions. In fact, the Reserve Bank of India and the Regional Consultative Committee of Banks have recommended its way back in 1978 to all the State/UT Govts to establish such Directorate of Institutional Finance under the Finance Department. All the other States/UTs Govt. should take urgent steps establish such Directorate so that there is a proper co-ordination between the State Govts and the Financial Institutions.

7. State Level Co-ordination Committee for Banks.

State Level Co-ordination Committee for banks have

been formed in the States of Assam, Meghalaya, Tripura and UT of Arunachal Pradesh and Mizoram. Nagaland and Manipur have not yet formed this Committees. This committee is supposed to meet once in a quarter to coordinate the activities between State Govt. and the Financial Institutions. However, it has been observed that the meetings of this committee are held at irregular intervals. It is, therefore, suggested that the Nagaland and Manipur Govts should immediately form this committee and all the State/UT Govts should hold regular quarterly meeting of this committee to sort out their banking problems.

8. North Eastern Institute of Bank Management.

The above institution started functioning at Gauhati from December 1981. The main aim behind the establishment of this institute in the region is to train both bank officials as well as Govt. officials in such areas of bank management where the Govt. and banks have to work together, such as IRDP, Lead Bank scheme, New 20-point Programme and scheme for Educated unemployed youths etc. However, only few State Govts like Assam have started utilising the services of this institute. All the State/UT Govts of the region may take full advantage of this institution.

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URBAN DEVELOPMENT & MIGRATION

Urbanization at a fast pace has been a world wide phenomenon from which our country has also not remained untouched. The situation in North East may not, however, be following the national pattern in so far as urbanization is concerned. For one thing, the problem is as yet isolated and we have no cities which are reaching breaking point. Further, due to availability of land for expansion of urban areas, availability of house sites is not yet a grave problem. Employment opportunities has also by and large, kept pace with the growth of urban areas. However, as years pass, the problem of finding gainful employment for all the growing and migrating population will be becoming graver, particularly in view of the invisible, and often, illegal migration from across the borders. Further, Formulation of such an urban development plan is all the more essential for the North East as the existing urban areas have only rudimentary facilities and the growth of new urban areas has not followed any plan.

2.            The following table represents the proportion of urban and rural population to their respective totals by States/UTs of the region from 1901 to 1971

Percentage Variation of Population from 1901 to 1971

State/UTs	Total (T) Rural (R) Urban (U)	1901 to 1911	1911 to 1921	1921 to 1931	1931 to 1941	1941 to 1951	1951 to 1961	1961 to 1971	1901 to 1971
	2	3	4	5	6	7	8	9	10
Arunachal Pradesh *	T	-	-	-	-	-	-	+38.91	-
	R	-	-	-	-	-	-	+33.77	-
	U	-	-	-	-	-	-	..	-
Assam	T	+16.99	+20.47	+19.93	+20.37	+19.87	+35.06	+34.95	+344.53
	R	+16.90	+20.07	+19.71	+20.13	+18.39	+30.94	+32.63	+315.06
	U	+20.78	+36.56	+27.56	+25.93	+65.87	+126.67	+64.83	+1374.03
Manipur	T	+21.71	+10.92	+16.04	+14.92	+12.80	+35.04	+37.53	+277.11
	R	+27.96	+11.95	+18.35	+14.61	+39.39	+23.33	+30.74	+338.80
	U	+ 3.34	+ 7.17	+ 7.25	+16.21	-97.13	+226.07	+108.95	+95.88
Mizoram	T	+15.71	+ 7.21	+13.83	+15.59	+ 8.97	+27.03	+31.30	+197.10
	R	+14.95	+ 0.53	+12.12	+13.94	+ 5.71	+19.14	+32.62	+161.26
	U	+41.76	+26.13	-54.25	+43.93	+53.20	+100.78	+25.27	+1429.67
Mizoram	T	+10.64	+ 7.90	+26.42	+22.81	+28.42	+35.61	+24.93	+303.22
	R	+10.64	+ 7.90	+26.42	+22.81	+23.87	-33.05	+17.01	+407.51
	U	-	-	-	-	..	+105.15	+164.84	+443.29
Nagaland**	T	+46.75	+ 6.55	+12.62	+ 6.04	+ 8.60	-14.07	+39.88	+238.20
	R	+48.91	+ 6.41	+12.87	+ 5.71	+ 8.43	- 6.91	+32.86	+196.63
	U	-21.66	+15.15	- 1.11	+27.11	+17.62	-364.41	+168.28	+1561.62
Tripura	T	+32.48	+32.59	+25.63	+34.14	+24.56	-78.71	+36.28	+797.93
	R	+33.47	+33.18	+25.67	+32.48	+20.41	-74.20	+34.16	-735.17
	U	+ 6.48	+13.35	+23.72	+34.69	+140.74	-441.81	+57.64	-2430.94
All India	T	+ 5.73	- 0.30	+11.00	+14.23	+13.31	-21.52	+24.80	-129.64
	R	+ 6.39	- 1.29	- 9.97	+11.81	+ 8.79	-20.55	+21.86	-106.24
	U	+ 0.35	+ 8.27	-19.12	+31.97	-41.42	-25.41	+38.22	-321.93

300

+ Increase, (-) decrease, .. negligible. \* Censused for the first time in 1961.

\*\* In working out percentage decade variation for 1941-51, 1951-61 and 1901 - 1971, the 1951, 1961 and 1971

population figures of Tuensang District have not been taken into account, as this area was censused for the first time in 1951 and the same are not comparable.

@ - The population figures of Karbi Anglong District for 1901, 1911, 1921 and 1931 are not available.

Source: The Office of the Registrar General and Census Commissioner of India.

(Source : Basic Statistics of NE )

3. The overall growth of population in the beginning of the century till 1951 was not high in the region. In fact, the growth rates were lower than earlier decade in certain States/UTs in this period. The corresponding growth in urban population was much higher during that period. From 1951 to 1981 growth rate both of total and urban population were very high as compared to earlier decades. The urban growth rate of Manipur during the decade 1941-51 was negative while from 1951-61 was phenomenally high due to the fact that in 1951, Imphal town which was class II city was reduced to class VI status due to delineation of the area. Thus the urban population decreased resulting in negative growth. In 1951-61 decade, the area was regained and thus there was spectacular rate of growth during the decade. The sharp increase in the urban growth rate during 1941-51 is explained by the heavy influx in the cities due to the partition of the country.

4. Let us now look at the growth of urban population in the North East. The rural-urban population composition of the North Eastern Region is given in the following table:

Table No. 4.

Years	Population (in thousands)		
	Rural	Urban	Total
1901	4104 (93.7%)	1,68 (6.3%)	4,272 (100.00)
1911	4869 (96.2%)	1,90 (3.8%)	5,059 (100.00)
1921	5769 (96.08%)	2,35 (3.92%)	6,004 (100.00)
1931	6086 (95.9%)	2,87 (4.1%)	7,173 (100.00)
1941	8251 (95.7%)	3,67 (4.3%)	8,618 (100.00)
1951	9803 (95.5%)	4,60 (4.5%)	10,263 (100.00)
1961	13398 (92.4%)	11,02 (7.6%)	14,500 (100.00)
1971	17734 (90.5%)	18,47 (9.5%)	19,581 (100.00)

Source : 1) Basic Statistics of NE (1982).

2) Census of India publication.

5. Proportion of **Urban** population to rural population has increased very **sluggishly** over the decades 1911 to 1951 and remained within **4-5 percent** of total population in the region. In 1961 the population increased to 7.6 and 9.5 percent respectively. The proportion of urban population still remains very low as compared to all India, which is 19.9 percent in 1971 as against 9.5 percent in the region.

6. The urban centres in the North Eastern Region remained same in the region except around Brahmaputra valley from 1901 to 1951. The main concentration of urban centres is around Brahmaputra valley. The following table indicates the growth of towns from 1901 to 1981 :

Table No. 5

States/UTs	Number of towns								
	1901	1911	1921	1931	1941	1951	1961	1971	1981
Assam	12	14	22	22	24	25	53	72	81
Manipur	1	1	1	1	1	1	1	8	30
Meghalaya	1	1	1	2	2	2	6	6	12
Nagaland	1	1	1	1	1	1	3	3	3
Tripura	1	1	1	1	1	1	6	6	7
Arunachal Pradesh	-	-	-	-	-	-	-	4	10
Mizoram	-	-	-	-	-	-	1	2	6
<b>Total :</b>	<b>16</b>	<b>18</b>	<b>26</b>	<b>27</b>	<b>29</b>	<b>30</b>	<b>72</b>	<b>101</b>	<b>149</b>

( Source - Census of India )

7. The above table brings out the growth of towns in the region. In 1901, the total number of town was only 16 of these 12 being in the Brahmaputra valley and one each in Manipur (Imphal), Meghalaya (Shillong), Nagaland (Kohima) and Tripura (Aqartala). From 1901 to 1951, the number of towns increased only around Assam Valley with only one addition in Meghalaya i.e. Jowai town. The growth of urban centres took place all over the Region from 1961 onwards. In 1951-61 and 1961-71 decades, the total number of towns in the region increased from 30 in 1951 to 72 in 1961 and 101 in 1971.

8. The size of urban centres in 1901, ranged from 5,00 to 20,000 persons only, the total urban population being 1,68,437. The growth of urban centres and the corresponding population were limited till 1951 which was mainly due to establishing new administrative centres and a few railway town and tea industry. Infact, the administrative, Industrial, and Commercial developments were geared up only after independence leading to significant rise in urban centres and urban population growth of urban population due to partition was also more in urban than in the rural areas which is evident from the data. Size class of towns in NE is given below :

Table : 6

States/UTs	Class I 100000	Class II 50000 - 1,00,000	Class III 20000 - 50,000	Class IV 10000- 20000	Class V 5000- 10000	Class VI less than 5000	Total
Assam	1	5	9	26	23	8	72
Meghalaya	1	-	-	1	1	3	6
Manipur	1	-	-	-	4	3	8
Nagaland	-	-	-	1	2	-	3
Tripura	4	-	-	4	1	-	9
Arunachal Pradesh	-	-	-	-	1	3	4
Mizoram	-	-	1	-	1	-	2
<b>Total</b>	<b>4</b>	<b>5</b>	<b>10</b>	<b>32</b>	<b>33</b>	<b>17</b>	<b>101</b>

( Source : Census of India )

9. The four class I towns are Gauhati, Shillong, Imphal and Aqartala according to 1971 Census. During 1971-81 decade, at least one or two towns in Assam are expected to acquire class-I status. However, in absence of 1981 Census for Assam, this gap however remains to be filled. The growth of the above four towns are given below :

Towns	1961	1971	1981
Gauhati UA	1,07,203	2,00,377	N.A.
Shillong UA(III)	1,02,398	1,22,752	1,75,180
Imphal UA(II)	67,717	1,32,286	1,54,421
Agartala UA		1,00,204	1,31,513

(Source : Census of India)

The largest number of towns fall in the size-class, Class IV & i.e. population with 10,000 - 20,000.

Labour Force and Migration:

10. Of the three component of growth of urban population viz. natural growth, net migration to urban centres and growth of new township and expansion of existing urban centres, it is difficult to isolate the growth due to individual factor separately. Natural growth of the urban population is expected to be marginal within the total growth of urban centres. Growth due to migration is being dealt in this chapter.

11. The migration data are very much susceptible to changes in State and District boundaries. Varying concepts and definitions and coverage in collection and tabulation of data also effects comparability of data over time. Declassification of a rural area into urban and vice-versa also affect magnitude of different types of movement. In Indian Census, these limitations could not yet be fully taken care of. Further, the census tables are based on sample data such limitations have to be borne in mind when used. With these limitations an attempt has been made to analyse only 1961 and 1971 migration data mainly of Assam, Meghalaya & Tripura.

12. Assam, Meghalaya and Tripura are the three most vulnerable- States in regard to migration in the region. Migration due to partition had been spectacular in these three States, particularly in Assam and Tripura.

13. The following table gives the interstate migration of Assam in percent in 1961 by four types :



Table No. 8

Assam State	1961 Census	
	In-Migrants	Out-migrants
Rural to Rural	73.2	50.0
Urban to Rural	2.3	10.0
Rural to Urban	18.3	18.5
Urban to Urban	6.2	20.9

14. The following table gives the 1971 census data for all the States and UTs of the region based on one percent sample :

Table No. 9

Volume (in hundred) of inter-state in and out migrants classified by types of movement

State/UT	In-Migrants								Out-Migrants							
	Rural to Rural		Rural to Urban		Urban to Rural		Urban to Urban		Rural to Rural		Rural to Urban		Urban to Rural		Urban to Urban	
	P.	%F	P.	%F	P.	%F	P.	%F	P.	%F	P.	%F	P.	%F	P.	%F
	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Assam	3253	34	1037	23	325	39	437	42	656	45	315	39	240	50	416	50
Nagaland	125	18	168	12	38	34	52	23	51	61	11	64	20	60	17	47
Manipur	134	36	25	32	30	34	18	28	48	40	21	33	19	42	29	48
Arunachal Pradesh	131	26	42	17	45	38	16	38	20	50	10	20	5	75	2	50
Tripura	136	32	9	56	41	51	24	50	180	48	67	34	24	29	57	54
Meghalaya	189	41	138	27	62	37	151	44	123	44	13	46	47	49	61	62

P : Persons.

F : Females

(Source : Census of India)

15. In Assam, the inter-state migration shows pre-eminence of rural to rural in-migration as well as of out-migration (in 1971 census) over other type of movement, resulting in net balance of 259700 in-migrants in the state. Inter-state rural to rural in-migration of so high volume is an unexpected phenomenon. The most acceptable reason envisioned is the influx of tea-garden labourers and labours for construction work and other projects. Rural to Urban migration flow in the state is 103700, out-migration being 31500. The net loss in rural population by inter state migration was thus 72200 persons in the state. Rural to urban migration flow is not necessarily due to the pull of urban centres but could be due to economic stress rather than real demand for urban development, resulting in low productive activities. Balance of urban to rural inter-state migration in the state was negligible as compared to total population of the state, Urban to urban in and out-migration was approximately of the same order, net balance being 2100 persons in the state. Urban to urban migration could be mainly due to change in the working place, transfer of jobs and for such other reasons.

16. Assam migration data includes Mizoram also. But migration is negligible in Mizoram and contribution to Migration data due to Mizoram may be negligible. 1971 census data do not reveal the extent of Migration from Bangladesh.

17. In Meghalaya, rural to rural in-migration and out-migration are recorded to the extent of 18900 persons and 12500 persons respectively with a net loss in the rural population in the state as 6700 persons. Migration inflow of rural to urban was 13,800 persons and out-flow was 1300 persons. Migration of rural to urban flow was likely from bordering states to meet the demand of labour requirement of the state as the female component of the in-migration is only 27%. Urban to rural migration in flow in the state was 6200 persons and outflow was 4700 persons and urban to urban in migration was 15100, out-migration being 6100. Female components of urban to urban in and out-migration being 44% and 62% respectively,

the migration, appears to be due to shifting from one urban place to another and like this.

18. Tripura, however, shows an exceptional trend of migration. In rural to rural, rural to urban and from urban to urban movements, the out-migration has taken over in-migration showing a positive loss in population of the state. Only for urban to rural migration the in-migration is recorded over out migration. However, the absolute data being of the order of hundreds only, the net effect due to migration in urban and rural population is negligible.

19. In other states, like Nagaland, Manipur, Arunachal Pradesh, all the four types of movement were negligible.

20. The migration in these Hill states are mainly inter state and restricted to rural type of movement. This is probably explained by the migration of jhumias within a short distance till 1961-71. As regards urbanisation, rural to urban migration is the most important component of migration and contributes to higher growth of urban population. As such the rural movement do not effect urban growth in the hill States/UTs of region.

21. A large number of road workers, brick kiln workers and some semi-skilled workers are brought in the region mainly in urban growth centres every year by contractors. These migrants are in fact, labourers who cannot find any employment at all in their respective States. They could rightly be termed as "distress migrants" as indicated by some authors.

22. In our country and more specially in NE Region, there is no systematic control on migration, it is actually determined by the interaction of the labour demand-supply factors. It is generally the private enterprise which controls the migration and migrants are left to the mercy of such contractors.

23. Further, the rural educated youth have an inherent tendency to migrate to urban areas for better economic opportunities, higher education and other factors. Migration due to this factor is also quite sizable.

24. This chapter has sought to present the status of urbanisation in the North East. The information provided by the censuses is, however, of an omnibus character and it can be used for a broad type of analysis only. More detailed information (Statewise) is necessary for getting further insights into the processes and pattern of urbanisation. The phenomenon has, however, caused severe problem for third world countries and within third world countries in comparatively backward areas, as unlike developed countries where surplus income of cities can counter immediate problems caused by urbanisation, the urban economy is not able to absorb the additional demands put on it and urbanisation in such developing countries and less backward areas within them, has been often characterized by transfer of rural poverty to already existing urban poverty. It is, therefore, important to keep the socio-economic perspective of migration in mind at the time of developing strategies and measures for tackling the problem of urbanisation which not only consists of migration from rural areas to urban areas but also growth of population in the urban areas themselves. It also follows that availability of gainful employment to all urban dwellers will be a major objective in any urban development plan, other welfare measures like housing, drinking water, medicare, etc. being secondary although non-the-less important objectives.

25. A systematic analysis by an expert team consisting of demographer, sociologist, town planner, anthropologist and economist would be necessary. Based on the findings, it will be necessary to prescribe policy measures and suggest programmes. However, broad strategy can be suggested as follows :

There is no denying the fact that rapid urbanisation due to increasing rural - urban migration leads not only to serious employment, housing and social problems in the cities but also causes ecological and environmental problems. It is all the more serious if the already existing urban poverty is further deepened on account of such migration. As this is the case in our country, policy measures have to be taken to control/

restrict rural - urban migration. Some of the suggested measures, particularly in the context of North East, are:

- a) Tribal life dependent on jhum is gradually becoming more and more difficult to sustain. Diminishing returns from Jhum Cultivation is forcing many jhumias to first work as agricultural labourers in comparatively better off valley land and then forcing some others to migrate to towns as labourers. It is vital that jhumias are given an alternative income base within the rural areas, if not in their own village to stop this process. Settled agriculture in valley lands supplemented by animal husbandry, horticulture and fisheries activities is an alternative. Raising of large scale fruit orchards or plantations of rubber, coffee, tea etc. can also be thought of if labour scarcity is not prevalent.
- (b) A massive programme of afforestation is necessary not only for providing dependable wage employment and development of village forests but also for preservation of environment and maintenance of ecological balance.
- c) Rapid modernization of agriculture and its commercialization in the valley lands will lead to absorption a much larger number of people in agricultural activity and stop the need to migrate to urban areas.
- d) Development of agro & forest based industries in medium and small towns as also in the rural areas on the fringes of forests and in areas where a particular fruit/commercial crop is grown in a concentrated manner.
- e) Establishment of mini-growth centres as a matter of deliberate policy by providing all the infra-structural facilities to achieve (d) above. A programme for local entrepreneurship will also be part of the such a strategy. Such mini-growth centre, can be linked to bigger growth centres and certain

Industries like fruit processing, cement plants etc. can be so developed that first stage processing is done in mini-growth centres whereas final processing is done in bigger growth centres on a large scale.

26. The measures suggested above will essentially provide better economic living in the rural areas but still some people, mainly educated youth, will migrate to urban areas. In an area like NE where market economy is still in its infancy and gaining ground rapidly, the urban areas are bound to increase in number and undergo a continuous expansion. While development of growth centres will cater to employment needs of new migrants, the welfare facilities like drinking water, housing, medicare etc. will have to be expanded in the urban areas. Safe drinking water will have to be provided on a very high priority basis. Major towns and cities should have active Housing Cooperatives which should provide housing for all classes of urban dwellers. The Societies should be able to develop models based on local resources so that houses are suited for local conditions are also within easy reach of all classes of people living in urban areas. It is also necessary that the urban areas have adequate facilities for providing vocationing and technical training so that skills of existing urban population as well as new migrants could be upgraded. Lastly, but not the least important, is removal of the physical and psychological feeling of isolation of the region with rest of the country so that migration depends on economic necessities rather than on any other factors.

27. In the preceding paragraphs, we have largely dealt with the problems of urbanisation and migration from rural to urban areas and the various forces which govern such migrations. As is well known, migration of large communities creates special problems of assimilation and often are responsible not only for tensions, but even a process of breaking up of tribal communities. Whether the extent of assimilation that is possible can be statistically determined or not, there is no doubt that there is

a threshold for such assimilation. In the tribal communities of the North-East, where the populations are sparse and agricultural and forestry practices involve rotational use of resources giving the impression visually that large tracts of land are uninhabited and, therefore, calling for utilisation by surplus labour which could be inducted safely, the facts that such tracts of land are under occupation and use if not on a day-to-day or even year to year, but on decade-to-decade basis and also that such tracts are specifically earmarked for use of different families under well known and well practiced traditions, are likely to be missed. Besides much of the tribal modes, traditions have developed for the purpose of preserving internal homogeneity in the context of surrounding atmosphere of confrontation and even hostility of other tribes and communities. All these factors give rise to strong limitations imposed on the extent of assimilation of "outsider" communities. The danger of small tribal communities breaking up by contact with outside forces is real and not fancied. The process of modernisation in any case generates internal tensions which threaten the continuation of traditional communities, but this has to be borne and lived with by the tribal communities. The forced contact with outside communities gives a tangible cause for focusing tensions, hatred and hostility and create conflicts which are often violent. The decennial census gives not only an inadequate idea of the extent of migration in the tribal areas, but the time gap is too long for initiating policies and programmes to deepen and widen the scope of assimilation and also to take corrective measures. Between the years when census is undertaken, apprehensions are fanned into suspicions and lack of upto-date information helps in this process. It is, therefore, necessary that like the environment, forest, water and other resources being scanned, almost continuously by remote sensing, the population structures, the flows of emigration and immigration, the changing nature of occupation, utilisation of soil and water resources and the ethnical composition of communities should also be



similarly surveyed and monitored on a more frequent and regular basis than has been provided by the system of the decennial census. The Working Group, therefore, recommends that the system of having a census every year in specified areas of the North-East should be adopted as an urgent and priority measure. The Working Group further recommends that the format of the census should be devised with a view to bring out all the relevant data regarding social, economic and cultural aspects of the changing profile of the communities and tribes residing in such specified areas. Such steps would go a long way not only in allaying unfounded apprehensions, but will provide a strong basis for planning economic and sociological policies for safeguarding the entity of the tribes and also for devising programmes for integrated development without endangering such tribal communities.

28. The North East has 55 major tribes and numerous clans and sub-tribes. As most of the dialects associated with individual clans have not been reduced to writing, the full extent of the cultural diversity in the North East has never been adequately assessed. We see in the North-East cultures ranging from neolithic age to the modern age. While anthropologists, explorers and scholars have over a period of time built up considerable documentation of various facets of different tribes. Much of the documentation is in the narrative form and does not bring out the rhythm, movement, colour and the festive aspect and observance of rituals of various types. Many of these cultural forms were associated with specific economic and religious events like sowing, harvesting, birth, death, natural calamities, hunting, etc. With the introduction of agriculture and in many areas water harvesting and irrigation, the economic lifestyle of the tribal population is undergoing change very fast. Some of the religious and other aspects also are undergoing changes under the impact of new lifestyles and the ceremonial rituals associated with festivities on specific occasion or event are also losing its authenticity.

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There is a great danger of permanent loss and extinction of a rich and irreplaceable store-house of culture. This would diminish, in an important sense, the totality of the heritage of India. The least that can be done is to press into service modern technologies for recording as authentically as possible by means of audio-visual documentation this rich tribal cultural life. This programme would require not only inter-disciplinary participation among the Anthropologists, Social Scientists, Linguists, Photographers, film producing experts, but also interaction among political scientists and economists. The sooner, therefore, such a programme is developed imaginatively and adequately, the better it would be. Obviously, such a programme can be designed only under the auspices of the Ministry of Culture.

CHAPTER IV : 16

E D U C A T I O N

1. As an instrument of socio-cultural advancement education has been receiving considerable attention in the planning process in the NE Region. The per capita plan outlay on education in States/UTs of the region is approximately Rs. 178.48 during the Sixth Plan which is much higher than the all-India average. The average literacy levels in North-Eastern States with the exception of Assam and Arunachal Pradesh is higher than the national average. Considering that literacy in Mizoram is 59.5%, Manipur 41.9%, Tripura 41.5 and Nagaland 41.9% all above the national average, one may tend to think that the programme for removal of illiteracy in the age-group 15-35 may not appear to be of higher priority or relevance to the North-Eastern States. Such a view, however, would stem from assumptions which may appear to be too facile.

2. The region, however, suffers from qualitative backwardness in the field of Education as will be evident from the following table ;

Table - I

States/UT	Wastage in class I-V	Percentage of untrained teachers 1980-81			Average no. of students per schools (1980-81)			Enrolment in tech. school as % of enrolment in cl. IX-XII
		Figures in percentage	Prim-ary sch-ool	Midd-le school	High sch-ool	Prim-ary sch-ool	Midd- school	
Arunachal Pradesh	82.4	55.1	55.4	46.2	49	132	214	3.3
Assam	70.7	46.1	66.7	72.2	76	136	261	2.3
Manipur	77.6	44.0	71.0	73.0	58	110	231	2.3
Meghalaya	83.4	54.0	75.0	70.0	52	95	239	2.1
Mizoram	68.3	42.1	65.8	75.0	102	96	134	1.7
Nagaland	71.2	59.0	80.0	69.0	98	124	355	5.8
Tripura	70.4	34.1	37.5	39.7	105	269	294	1.5
<u>All India</u>	<u>63.5</u>	<u>12.6</u>	<u>10.6</u>	<u>5.0</u>	<u>119</u>	<u>236</u>	<u>461</u>	<u>4.8</u>

Source : Draft Report of the Working Group to study the selection and implementation of development programmes with particular reference to community participation for the NE Region.

3. So far as spread of Elementary Education in the age-group 6-14 is concerned, although many of the North Eastern States may have achieved the Sixth Plan objective of 95% enrolment in respect of Classes I-V~~II~~ and 50% enrolment in respect of Classes VI-VIII, considering the wastage rates particularly in Classes I-VI, in Meghalaya (83.4%), Arunachal Pradesh (82.4%), Mizoram (68.3%) and all the other States which have drop-out ratios above 70% against the All-India average of 63.5% an area which would require utmost emphasis is not to adjudge the quality of the programme by the criteria of enrolment alone. It would, be necessary in this context to attach the highest emphasis on retention at school, the quality of learning imparted and its relevance to the socio-cultural milieu. The drive for school enrolment should receive special emphasis particularly in Assam and Arunachal Pradesh where efforts should also be stepped up to achieve the objective of universalisation of elementary education by starting more NFIE Centres. This may be given priority.

4. In addition to considerably high drop out and wastage percentage, large number of untrained teachers etc, as shown in Table-I there are some other drawbacks such as inappropriate curriculum and dull teaching methods, poor standard of text books and dearth of necessary equipments and teaching aids which have toned down the quality of education. Roughly over 30 percent of students enrolled in class I fail to reach class V after 4 years. Both in the Nodal Group and the Sub-Group on Social Services it was felt that the problem of dropout and stagnation can be tackled by changing the economic condition, adjusting teaching system to local condition and by including in the course some gainful economic activities (i.e. plantation under social forestry, collection of seeds etc) with cash incentives for them.

5. The School infrastructure in most of the North Eastern States is found to be largely inadequate. Many of the schools do not have proper buildings or a second teacher. While the States have made their efforts to represent their cases to the Finance Commission, allocation of funds in this respect for improvement

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of school infrastructure (appointment of additional teachers and construction of school buildings) has been inadequate. In this context a more selective approach to school improvement on the pattern of inter-village schools of Arunachal may be more appropriate as a strategy of development of the educational infrastructure.

6. In the North East there is a traditional apathy of local students towards Science and Mathematics. Three expert bodies viz. Working Group constituted by the NEC in 1982, North Eastern Hill University entrusted to prepare a Project Report in 1983 and a Study Team constituted by the Ministry of Education and Culture in 1983<sup>1981</sup> have gone into the question of Science and Mathematics teaching in this region and their recommendations have been forwarded by the NEC to the concerned States/UTs for implementation under the State Plans. Moreover, the problem of vocationalisation of education is also being tackled by trying various methods such as opening of Crafts Training Centres, ITIs, polytechnics, training centres for ANMs etc as well as sponsoring students to various technical institutions. Vocational education for women also needs to be given due emphasis, as the scope of self-employment for women is at present, very limited. A list of educational institutions in the region is given in Annexure-II (including also the existing technical/vocational institutions).

7. All the constituent States/UTs have already made some arrangements for adult education under the relevant plan scheme. The existence of 344 adult education centres in Assam, 176 centres in Arunachal Pradesh, 300 centres in Manipur, 110 in Meghalaya, 140 centres in Tripura in 1978-79 may be cited to substantiate the statement. In fact, these centres should also function as adequate forum of extension in which the uneducated people might be given the basic knowledge about improved farming, health care and sanitation, gainful economic activities etc. Considering that the basic emphasis in adult education/programmes is to increase

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the levels of awareness and functional relevance of education, it would be essential that adult education should form a component of every development scheme through which the participation of beneficiaries under the appropriate scheme could be promoted, their awareness sharpened and delivery of basic services through these scheme ensured. Priority in the adult education programmes should therefore, focus adequately on the nexus between removal of illiteracy and eradication of poverty. The new strategy should adequately emphasis Adult Education as a component of related development programmes.

8. Community participation is essential to the success particularly of the two priority programmes of universal elementary education and adult education. The role played by the community through village Councils of Nagaland or the UNICEF assisted projects, in Meghalaya where also links have been developed between primary education and the primary health Sector could be models for promotion of community participation on a wider scale.

9. Strengthening the existing arrangement for teacher training for the educational institutions in the region is another sphere which cases for greater attention. A branch of the NCERT should be set up in the region for strengthening arrangements for Teacher Training and to develop facilities for the purpose of preparing training courses to meet specific need of the region.

STRATEGY FOR THE SEVENTH PLAN

For qualitative as well as quantitative improvement in the field of education in the North Eastern Region, the following strategy is suggested for the seventh plan :-

- (i) One out of every 20 primary schools should be developed as a model school with special emphasis on teaching of Science and Mathematics. In each model school there should be a library and a book bank;
- (ii) One middle level school should be set up in each block;
- (iii) Enrolment coverage at the primary school level should be raised to 100 percent in case of Arunachal Pradesh, Assam and Tripura while this coverage at the middle school level should be raised to 60 per cent in respect of all the States/UTs except Mizoram, where the existing coverage of 86.7% should be enhanced to 100 per cent. In Arunachal Pradesh where density of population is very low all efforts should be made to increase the enrolment percentage substantially in case it is impossible to achieve the above targets;
- (iv) Wastage percentage should be reduced by at least 10%. The percentage of trained teachers (at primary, middle and high school levels ) should be raised by at least 50% by the end of the Seventh Plan. Mid-day Meals Programme may be implemented as a means to check the tendency towards drop-out;
- (v) The enrolment in the technical schools as percentage of enrolment in classes IX-XII in all State/UTs should be raised by about 25% from the existing level;

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(vi) The teachers' training institutes in the States should be strengthened. The administrative apparatus for monitoring and supervising teaching system needs to be strengthened so as to reduce absenteeism among teachers serving and provide housing accommodation to teachers serving in the interior areas;

(vii) Existing arrangements for vocational and technical training should be strengthened and more students should be sponsored for training in those fields which are specifically required in this region. Besides, more women should be given vocational education enabling them to undertake gainful economic activities.

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Number of Educational Institutions 1979-80

Institutions	Arunachal Pradesh	Assam	Manipur	Meghalaya.	Mizoram	Nagaland	Tripura
1	2	3	4	5	6	7	8
University	-	3	1	1	*	*	*
Board of Secondary Education	-	1	1	1	1	1	-
Arts/Science/ Commerce Colleges	1	128	21	12	5	7	5
Engineering Colleges	-	3	-	-	-	-	1
Medical College	-	3	1	-	-	-	-
Agriculture Colleges	-	1	1	-	-	1	-
Veterinary College	-	1	-	-	-	-	-
Teachers's Training Colleges	-	3	3	1	1	1	4
Junior Colleges (+2 stage)	-	9	-	-	-	-	-
Higher Secondary Schools (10+2 pattern)	11	112	-	-	-	-	52
Higher Secondary School (old Pattern)	-	-	13	-	-	-	-
High Schools	30	1694	241	168	116	108	141
Middle Schools	112	3656	391	335	259	289	300
Primary Schools	821	21615	3449	3600	518	1120	1600
Pre-Primary Schools	36	262	1	380	-	-	1775
Teacher's Training Schools	-	32	4	9	3	3	-
Polytechnics	-	6	1	1	-	1	1
Technical & Industrial Schools	3	25	22	3	1	1	2

\*\* Figures relate to 1978-79

\* Campus of Calcutta University at Tripura and NEHU at Nagaland and Mizoram, College at Arunachal Pradesh attached to the Punjab University.

Source : Basic Statistics of North Eastern Region 1982, NEC.

CHAPTER IV. 17

CIVIL SUPPLIES

The peculiar geographical condition of the North East with 70% hilly area, the deficiency of the region in respect of almost all essential items, the fragile and inadequate transportation network and the underdeveloped supply system at the retail level, particularly in the remote areas, underscore the urgent and imperative need for developing and strengthening the civil supply system in the region. The very low density of population, and the high growth rate of population (3.73 percent annually as against the all India rate of 2.47 ), the large concentration of the people in rural areas (about 90% of the total population live in the villages) without adequate communication link, have made the problem still more complicated. Supply of essential commodities has been uncertain and inadequate and high transportation charges make these commodities in remote areas very costly.

2. The Public Distribution system in the region has not fully developed and coverage of area under the system has been low. Unlike in most other States, no Corporation for Civil supplies has so far been set up in any of the constituent units. In Assam, where the system is relatively more developed, it operates through a network of 18387 F.P.S. and about 70 co-operatives. The population served by one FPS comes to about 1172. Arunachal Pradesh has been continuing its own system of supply of essential commodities known as CPO system, managed departmentally. Primarily it caters to the need of Govt. employees in the remote areas. So far 308 FPS have been opened under the PDS each shop serving a population of about 2201. The U.T. Govt. has initiated steps to expand and strengthen the PDS in the territory. In Manipur 1192 FPS are functioning under the PDS. Each shop covers a population of about 1269. Many of the difficult areas in the hills have not yet been covered under the system where the problem is.

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sought to be tackled by opening mobile FPS. In Meghalaya there are about 1937 FPS, each catering to the requirement of about 716 persons. The FPS are reportedly functioning satisfactorily. In Mizoram 383 FPS under the PDS cover the entire population of 5.41 lakhs. The Govt. Supply & Transport Deptt. procures and also arranges distribution of all essential items either directly or through agents. However, the existing departmental set up appears to be too inadequate to manage the system efficiently. Nagaland has 163 FPS and each shop is expected to serve a population of about 5288. The system needs strengthening and expansion. In Tripura there are 913 FPS, one third of which are co-operatives. The State Govt. have decided to replace gradually the private FPS with co-operative.

3. The important lacunae in the PDS in the region that need to be removed are (a) the low FPS population ration which makes the system less effective and (b) the weak structure of the public distribution system. For adequate servicing of the beneficiaries one FPS's population coverage has to be limited to about 1500 persons (or about 300 card holders taking the average size of a card holder's family at 5). Except for Meghalaya, the position in this regard in all the other units has to be improved. The civil supply system in the States/UTs of the region is generally managed by the Govt. departments although the co-operative institution in some States have been playing a significant role. The PDS has not penetrated into the remote areas. The private traders, therefore, take advantage of the situation at the cost of the poorer section of the society. The Co-operative structure is weak both in terms of management and finance. With high rate of overdues most of the co-operative societies can not expect to get institutional finance. The Govt. of India's advice to set up Civil Supply Corporations in all the States/UTs would not provide an answer. The time involved in the operation and the limited scope of operation in these small units will make these Corporation non-viable. The best solution will be

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to cooperativise the system and to strengthen the co-operative structure by providing managerial and financial assistance and increasing the number of co-operative outlets.

4. The position in regard to availability of essential commodities in the region has also been unsatisfactory, the gap between allotment and receipt being quite big. For instance, the per capita receipt of foodgrains during 1983-84 was 38.20 Kg. During that year as against total allotment of 11.42 lakhs MT foodgrains to all the States/UTs, only 10.99 lakhs MT were actually received by the units. The FCI has worked out the region's monthly requirement of foodgrains to be 1.05 lakh MT per month. And as against this, during 1983-84 the average monthly supply was only a little over 91500 MT. The FCI will have to take steps to narrow this wide gap. Besides, as a result of flood, which is a recurring phenomenon, communications in the valleys get disrupted and consequently movement of foodgrains is greatly hampered and the adjoining areas feel the pinch. Therefore, FCI and the States/UT Govt.s have to plan jointly to build up summer buffer stock of foodgrains providing for atleast additional three months' requirement. Some of the measures required to be taken to improve the situation in regard to availability and distribution of foodgrains are :

- a) Procurement, storage and distribution of foodgrains should be done by a central agency in each State/UT and there should be a central pool;
- b) Adequate buffer stocks of essential commodities should be maintained at each district headquarters for release during scarcity period;
- c) Regular monitoring of the market rates of the essential commodities should be ensured at District as well as State headquarters;

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d) Machinery for enforcement of the regulatory measures in regard to distribution of essential commodities should be set up. Proper enforcement of the regulations would require staff at district and block headquarters. Arrangement for training of the staff has to be made. Small laboratories for sample testing of commodities by the enforcement staff should be set up at district headquarters ;

5. The position in regard to some of the other essential commodities is indicated in the following paragraphs.

**SALT** : The annual requirement of salt, according to an estimate made by NEC, is about 2.24 lakh tonnes. The entire quantity is being brought from outside. The main problem in regard to Salt is its irregular supply and lack of storage facilities. The problem of storage should be tackled by the State Governments by constructing necessary storage facilities. The alternative arrangement of appointing National Consumer Cooperative Federation as the agent for the States for procurement and storage of Salt in this region may also be considered. A special requirement of this region is in regard to Iodised Salt. It is suggested that at least 5 Salt Iodisation Plant should be set up in this region in the public sector to meet the requirement of Iodised Salt. NEC should offer necessary assistance in this regard.

**EDIBLE OIL** : The problem in regard to edible oil is not of availability but of a suitable distribution system. The State Trading Corporation has opened a depot of 3000 tonnes capacity for edible oil at Guwahati and another depot of 180 tonnes capacity at Dimapur. It is suggested that for efficient distribution 3 more depot at Silchar, Tinsukia

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and Imphal may be considered. Further, to reduce the cost of transportation and give relief to the ultimate consumers STC should deliver edible oils at nominated distribution centres, which should be opened selectively, or reimburse the transportation cost from STC depots to these centres.

**KEROSENE :** Irregular movement and inadequate storage capacity are the main constraints in regard to distribution of Kerosene in this region. In addition to the existing storage facilities in Assam, Manipur and Tripura, the IOC proposes to set up additional storage facilities in Mizoram, Nagaland and Meghalaya. These should come up expeditiously. Besides, it is suggested that storage facilities for Kerosene should also be created at one additional point in each of the constituent units.

**CEMENT :** According to an assessment made by NEC, the anticipated requirement of Cement by 1985 will be 15.40 lakh tonnes as against the likely demand of 13.36 lakh tonnes during 1984-85. At present, only about 30% of the total requirement of Cement is produced in this region. The levy quota of Cement from the 2 factories in this region is only 60,000 tonnes. Taking the region's requirement of levy quota of Cement at 2 lakhs tonnes, about 1.5 lakh tonnes of levy Cement come from outside. Some of the problems experienced by the States/UTs in regard to procurement of Cement are- (a) the quarterly allocation made by the Cement Controller falls far short of the actual need and there is a wide gap between allocation and actual supply; (b) the procedure in respect of levy Cement is extremely cumbersome and complicated. It also gives scope to the suppliers to deny the allottees

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- ∟ the full allotted .
- ∟ quote of Cement; (c) Transport subsidy for Cement is not reimbursed regularly and expeditiously; (d) transportation of Cement from factories located outside creates problem besides being highly expensive. The following suggestions may be considered for improving the situation :-
- a) Quarterly allocation of Cement should be made on the basis of realistic requirement of the States/ UTs and supply of Cement as per the allocation should be ensured;
  - b) the procedure in respect of supply of levy Cement should be liberalised and the suppliers should be made legally bound to supply the allotted quantity fully;
  - c) In addition to the Cement Dump at Jogigopha, the CCI should open additional dumps at Guwahati, Dimapur and Silchar from where the State Govts. can lift their allotted quote every month;
  - d) As regards transport subsidy, the procedure should be changed to allow the factories to adjust the transport subsidy at the time of receipt of payment for Cement supplied to the allottees and the Government of India should reimburse the subsidy to the factories.
  - e) Satisfactory functioning of the Cement dumps should be ensured. The dump charges in respect of the allottees in NE Region may be waived;
  - f) In view of the high cost of Cement, mainly due to heavy transportation charges, the entire requirement of Cement of this region may be met from the levy quota. The 3 lakh tonnes of Cement produced by the 2 factories in this region may be allowed to be distributed within the region and for this purpose, the Cement factories may be given necessary production subsidy;

g) The long term solution will lie in augmenting the production of Cement within the region. The perspective plan for cement prepared by NEC envisaging production of 7.5 lakh tonnes by 1985 and 31.5 lakhs tonnes by 1990 may be implemented.

STEEL : The region's requirement of steel of various categories is estimated roughly at 2 lakh M.T. per annum. Lack of adequate stock-yard and movement of heavier sections of steel are the main constraints. The present stock-yard at New Bongaigaon covering about 10-15 acres is inadequate. SAIL may open enlarged stock-yard at Guwahati which can facilitate unloading of 30-40 wagons of steel material at a time. Besides, smaller stock-yards should be opened at Dharmanagar, Silchar, Dimapur and Tinsukia.

6. The following strategy for strengthening and improving the Public Distribution System in the North Eastern Region is suggested :-

1) The number of commodities to be covered by the Public Distribution System should be increased in relation to the North Eastern Region. The list of selected commodities should include- (1) Rice, (2) Wheat, (3) Sugar, (4) Edible Oil, (5) Salt, (6) Kerosene, (7) Match Box, (8) Washing Soap, (9) Common Cloth, (10) Exercise books for students, (11) Tea leaves, (12) Pulses, (13) Vanaspati, (14) Mustard Oil, (15) Cotton and Woollen Yarn;

ii) In view of the absence of railways in many parts of the North Eastern Region, the Out Agency system as recommended by the Working Group set up by the Railway Reform Committee should be made operative. As suggested by the Working Group the Out Agencies with telescopic rates should be opened at the following 20 places :-

<u>Arunachal Pradesh</u>		<u>Manipur</u>
1. Itanagar	5. Tezu	8. Imphal
2. Tawang	6. Pasighat	9. Churachandpur.
3. Bomdila	7. Along	
4. Zorai		



<u>Meghalaya</u>	<u>Mizoram</u>	<u>Tripura</u>
10. Shillong	14. Aizawl	18. Agartala
11. Nongstoin	15. Lunglei	19. Ambasa
12. Jowai	<u>Nagaland</u>	20. Udaipur.
13. Tura	16. Kohima	
	17. Mokokchung	

- iii) The public distribution system should be uniformly a three-tier one- apex body at the State level, whole-sale organisation at the District level and the retail outlets. The entire structure should function in an integrated manner as a single chain of distribution;
- iv) In very sparsely populated areas arrangements should be made to make available essential commodities at weekly Hats/Bazars;
- v) In the remote tribal areas, the PDS should not only arrange supply of essential consumer goods but also all other requirements of the local people like inputs and also try to provide marketing support for the local products.
- vi) The fair price shops in the interior areas of the region have to maintain stocks of essential commodities for comparatively longer duration. This results in blocking of capital for longer period. Besides, in view of the of the sparseness of population the number of card holders for each FPS being low the fair price shops are not viable. Therefore, the fair price shops in these areas should be given financial support by way of interest subsidy managerial subsidy etc.
- vii) To reduce the cost of essential commodities at the points of retail distribution, it may be considered whether transportation cost from the district headquarters/ allocation points upto the godowns of FPS can be allowed. In case of rice and wheat the Govil Committees' recommendation that the excess of the transportation cost over

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Rs. 15 per quintal in respect of all areas the State/ UT Govt.s may be accepted. This may be reviewed after every three years and the rate of reimbursement may be increased if there is further hike in cost of transportation.

viii) Since lack of adequate storage facilities poses major hurdle in the proper functioning of the public distribution system, storage capacity inside the region should be augmented. The total storage capacity of 3.79 lakhs available with the FCI in this region is inadequate in so far as this capacity is sufficient enough for storage for 4 months only while in view of the transportation problem during the rainy season, storage capacity has to be built for 6 months. There is proposal for creating additional storage facilities of 1.55 lakh MT by FCI and Central Ware Housing Corporation in this region. The Working Group to study the system of satisfactorily organising supplies, services and work in the NE Region considering the existing facilities in the region and other factors like plans for creating additional storage facilities, out agencies, distribution of population, road network recommended that an addition 156000 (Mts) storage capacities may be created in this region. The places at which these capacities may be created are shown in Annexure I. This programme may also be taken up and completed urgently.

ix) Storage facilities in the rural areas should be sufficiently improved which will not only ensure availability of essential commodities but would also reduce loss during storage. The percentage of post-harvest loss of foodgrains during storage was estimated by the Panse Committee at 6.58% and in the North Eastern Region the loss is believed to be higher than the national average. The State/UT Governments should take fullest advantage of the Central scheme

for setting up of National Grid of rural godowns introduced in 1979. The Workshop on Agricultural Marketing and Rural Godowns held in Shillong on 15th & 17th October 1984 recommended that the present rate of subsidy under the scheme should be raised to 75% in relation to the NE Region. The three-tier storage system - at National level, State level, District/Village level, as suggested by the Rural Credit Survey Committee appointed by Govt. of India in 1954, should be implemented in this region for which, Central Government should offer 50% financial assistance. A Committee of Experts may be constituted to assess the total requirement of godowns at State, District and Rural levels and work out the financial dimension. Common complaint of the States/UTs that allotted steel material are not supplied in full and that these are not available in required specifications should be looked into and remedial measures taken.

ANNEXURE-I

LOCATION AND STORAGE CAPACITY RECOMMENDED BY  
WORKING ON SUPPLY, SERVICES & WORKS IN NORTH  
EASTERN REGION.

Place	Capacity (MTs)	Place	Capacity (MTs)
1	2	3	4
<b>I. Arunachal Pradesh</b>		<b>IV. Nagaland</b>	
Itanagar	10,000	Kohima	5,000
Bomdila	2,000	Mokokchung	5,000
Zero	2,000	Dimapur	5,000
Teza	2,000	Mon	2,000
Balakpung	5,000	Phek	2,000
Pasighat	5,000		
Along	2,000		
Tawang	1,000		
	<u>29,000</u>		<u>19,000</u>
<b>II. Manipur</b>		<b>V. Mizoram</b>	
Imphal	10,000	Aizawl	5,000
Ukhrul	2,000	Lunglei	5,000
Chura Chandpur	5,000	Saitre	2,000
Jiribam	5,000	Champhai	2,000
Tamenglong	2,000	Bhairabi/ Kolobib	5,000
	<u>24,000</u>		<u>19,000</u>
<b>III. Meghalaya</b>		<b>VI. Tripura</b>	
Shillong	10,000	Kumarghat	10,000
Jawai	5,000	Dharmanagar	10,000
Tura	5,000	Udaipur	5,000
Nongstoin	2,000	Ambasa	5,000
Williamnagar	2,000	Khowai	2,000
	<u>24,000</u>		<u>32,000</u>
		<b>VII. Assam</b>	
		Hamram	2,000
		Murkong Sellek	2,000
		Dhemaji	5,000
			<u>9,000</u>
<b>Grand Total :- 156,000 MT.</b>			

SCIENCE & TECHNOLOGY

It is well known that the infrastructural inadequacies are the major handicaps towards development of N.E. Region. The geographical and topographical peculiarities prevalent in different States/UTs of this region require a long of interdependance and thus necessitating an integrated approach for developmental programmes. A substantial portion of schemes in the region are essentially promotional in nature towards building necessary infrastructure which may serve as a catalyst for all round development. Therefore, various schemes incorporate a multidisciplinary and multilevel technological inputs with appropriate technology for attaining the maximum efficiency. This necessitates an inherent approach for application of Science & Technology in the scheme proposals.

2. The paper entitled the approach to the Seventh Five Year Plan 1985-1990 issued by the Planning Commission indicates that in the Seventh Five Year Plan "Attempt will be to give-up the practice of considering Science & Technology as a sector in its own right and to ensure that the bulk of Science & Technology efforts is an integral part of all Economic strategic sector". In this connection, the guidelines for various Working Groups issued by the Planning Commission for formulating their recommendations are given in Annexure. The Science and Technology component in various sectoral programmes have been incorporated in their respective chapter. Thus the present chapter brings out only additional points which have not been considered in earlier chapters relating to North-Eastern Regional Committee for Science & Technology, Science Musium/Centres and matters relating to Earthquake Risk Evaluation.

3. In accordance with the policy of the Govt. of India in the 6th Five Year Plan, to have Science and Technology as essential associate of development plans, the North Eastern Regional Committee for Science and Technology (NERCST) was constituted under the North Eastern Council Secretariat. This Committee is expected to work as a focal point in the North Eastern Region for development of R&D facilities in the constituent units of North Eastern Region and to ensure means of science inputs in the remote and backward areas. A federative system has been envisaged in the NERCST to monitor the activities of the State Councils in the Constituent States/UTs.

4. It is envisaged that the NERCST would become an essential associate of planning measures for the over-all developmental programme in the North Eastern Region. Nine Working Groups would be set-up as suggested in the second meeting of the State Councils at Bangalore to systematically analysis the wealth of natural resources and their expectation potential.

5. As per the directive for the Seventh Plan, Science and Technology would be integrated into the main stream of developmental planning and it would form part of the major programme of transport and communication, energy, resources, industrial development, utilisation of natural resources, agriculture and allied sector, health management etc. It would be incumbent for any development scheme to ensure the utilisation of the appropriate technology to increase productivity and efficiency, reduce capital outlay, generate employment opportunities, and create awareness in the area regarding the importance of Science and Technology as a tool for development.

Strategy and approach :

(i) The NERCST may establish close linkages with the various research laboratories and scientific institutions in north-eastern region and function as the focal point for generating Science and Technology manpower required for the over-all developmental need of the region as a whole.

(ii) Efforts may be made to ensure the education of science and technology to solve the basic problem of the rural population in particular in the region by extension activities and transfer of technologies from the laboratories to the grass-root level with the aim of improving the quality of life of the people. Model experiments/demonstration projects/pilot plans would be set-up in important areas such as new energy sources, integrated environmental protection methods, disease control programmes, creation of germ plasma banks and gene sanctuaries etc. This will involve a close coordination with specialised government departments such as DST, DNES, DOE, ICAR, ICMR & SCIR etc. The Council for advancement of rural technology under the Ministry of Rural Development may be utilised for their expertise & infrastructure to accelerate the development activities in the region.

(iii) Though the North Eastern Region is not having a serious threat to the environmental pollution from the industries, but a serious threat is being felt because of the jhuming cultivation. Efforts might be made to create the atmosphere where the practice of jhuming cultivation could be replaced among the tribal people by other avocations. Preservation of ecology and tribal culture would make a primary objective on any developmental scheme.

(iv) To assess the wealth and potential of natural resources of the north-eastern region, the NEC Secretariat may establish a Consortium of Survey Organisations in the north-eastern region which might act as the focal point for undertaking surveys of natural resources,

preparation of inventories etc. The remote sensing facilities would be utilised for rapid resource evaluation. This might be coordinated under the scheme of Regional Centre for Resource Evaluation, Documentation and Information System, being proposed in the 7th Plan.

(v) As the Science and Technology has to become the essential associate of planning for development, it is proposed to create a Science and Technology Cell in the North Eastern Council Secretariat. This Cell would be headed by a Sr. Scientist assisted by a group of Scientific Officer. As the North Eastern Council Sectt. is looking after the development schemes and already a good number of experts in various fields of technologies are available, these experts may be involved in the ensuring the various science and technology inputs for developmental programme under each sector. A scheme for creating of S&T Cell at N.E.C. has been under consideration with the Department of Science & Technology. This cell would also assist the NERCST.

(vi) To develop a basic culture among the educated people about modern science and technology developments and familiarisation at all levels with the basic scientific thoughts through audio-visual methods and direct observation of working methods. It has been stressed to have Science Museum/Centres in each constituent unit in North Eastern Region. The National Council of Science Museum (NCSM) is the model organisation to have experience in this field. NEC may assist NCSM and other States to create such Science Centres/Museums in each constituent unit. Planning Commission and Science & Technology need to be convinced about the nature of the Science Centres which the States in N.E. Region should have, depending on the specific need of the region. In this connection, it would be appropriate to have a meeting of representatives from Planning Commission, Deptt. of Science and Technology, NCSM each State/UTs and NEC to workout a suitable programme. Lack of communication and understanding of the views of these organisations are coming in the way of formulating a workable programme in this regard.



(vii) It is necessary to have the participation of the people at different levels in formulating the Science and Technology plan of the States. In this connection, it is desirable to have non-official bodies such as State Science Society etc. These societies would have the primary task of participation of people at different levels including the academician in giving the views regarding science and technology priority in the region. NEC may assist each state unit in having such Science Societies and by way of funding etc.

Necessary help would be provided to the various constituents of the NE Region in establishing and functioning of S&T Councils in each State/UTs.

(viii) The International Workshop on Strong Motion Instrumentation held in Honolulu in May, 1978 has identified that North Eastern India as one of the most six earthquake prone areas of the world and that there remain high degree of probability of occurrence of earthquake in the area. Many studies based on statistical analysis indicate a possibility of occurrence of a large earthquake in the region in near future. To facilitate development of regional cadres in seismological operations, courses on seismology should be organised by the Physics/Geophysics Departments of the regional universities. The University representatives and the NEC were urged to initiate action in this regard. Wherever possible, courses of seismology could become an integral part of the existing syllabi. This recommendation was made in view of the difficulties being experienced by different agencies in getting operational personnel for seismometric stations.

(ix) In the 6th meeting of the Earthquake Risk Evaluation Council held in Shillong on 6-2-84, the future role of Earthquake Risk Evaluation Council and Earthquake Risk Evaluation Centre created by North Eastern Council was discussed. The Earthquake Risk Evaluation Council recommended that all the activities under the Council and the Centre are Multidisciplinary in nature involving the participation of Organisations such as Indian Meteorological Department, Geological Survey of India, CSIR, Survey of India etc. Keeping in view the nature of activities it might be considered to have an Autonomous Department created in the North Eastern Council for the Earthquake Risk Evaluation to expedite completion of these programmes.

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Science & Technology development in the  
Seventh Plan - Guidelines for Working Groups  
on some issues at the formulation stage.

Science and technology have a critical role to play in the development process, especially in the endeavour for achieving self-reliance as well as acceleration of the pace of development. Over the years, a reasonably good infrastructure has been built, for undertaking S&T tasks in a number of areas and sectors. The efforts to harness the potential of the S & T development in the country and utilising it for achieving the socio-economic goals have, however, continued to remain well below expectations. The traditional approach to plans and programmes in the S & T sector have to be changed.

2. The rationale for investments in S&T development can no longer continue to be confined only to building up open ended capability, or competence achievement in S&T. The practice of choosing S & T schemes as separate, disjointed and fragmented segments under different sectors or departments tends to compartmentalise these and quite often results in ineffective programmes of small dimension compared to the demands of larger goals and investments of the socio-economic sectors as well as their physical targets. For utilising the full potential of S & T at the conceptual as well as the implementation levels, multi-disciplinary and multi-institutional programmes would have to be organised for solving the larger technological demands of major sectors in the Plan.

3. There is an urgent need for a clear definition and setting of major national goals and the contribution to be made by and through S & T to achieve these. Such S & T goals would be derived from the basic objectives set out in the short-term Five Year Plan as well as the perspective (15 years) plan for different sectoral targets, the appropriate working groups constituted to formulate the Five Year Plan would have an important role to play

in this regard. As a consequence, some of the members of the Working Groups for the Sectoral plan together with representatives of S & T institutions and agencies and other high-level scientists and technologists (at the national level) could be specifically associated with this endeavour to evolve the scope and content of the national S & T tasks on a multi-agencies, multi-institutional and multi-disciplinary pattern. The thrust of such national tasks should be based on clearly defined set time targets and resource allocation, with technology delivery/transfer for application as the aim. Science Advisory Committee to the Cabinet has recommended that "all large investments in the Seventh Plan in the S & T area, should essentially come through efforts relating to such national goals. Funds for undertaking such national S & T tasks will come from allocations to the concerned sectors and appropriate lead agencies and project management structures have to be set up".

4. The current concept of plan and non-plan funding has no relevance in the area of S & T; there has to be a total approach to deployment of the resources (Materials, equipments, manpower, facilities as well as financial) towards the S & T objectives and programmes. The concept of zero-based budgeting recommended by the Science Advisory Committee to the Cabinet has to be accepted and accordingly appropriate procedure evolved by concerned departments for implementation prior to the start of the Seventh Plan.

5. There is already a certain infrastructure existing for S & T in the country e.g. in various scientific institutions, agencies, various departments, universities etc. It is necessary to consolidate and modernise such capabilities to the extent necessary and relevant to the future. In that context, it is incumbent on the S & T institutions/agencies etc. to discard activities and investments which are unproductive or likely to be so in the future and to ensure that resources are diverted to programmes identified in the Plan. Modernisation would include replacement of old equipment and investment etc. by contemporary items as well as providing the necessary facilities for S & T personnel which are lacking and which have an important

bearing on the productive output of the scientist and technologists.

6. There is a need to grow competence and skill in emerging areas of science and technology, as a result of fast changing developments in the world : such areas include micro-electronics, bio-technology, oceanography etc. The manner of funding such area, their location, extent of funds etc. would be decided on a national basis and not through internal decisions of individual organisations, however, the charter capabilities and interests of organisations/institutions would be taken into consideration in arriving at national level decisions by the Planning Commission, Government and others.

7. Several recommendations have been made on a variety of items of relevance to S & T development by the SACC and are under consideration of the Government for implementation. These include important items like -

- i) Appropriate linkages between S & T institutions/agencies, educational institutions as well as the industry;
- ii) Institutional mechanism and structures as well as procedures to be developed for S & T development at least in the major economic Ministries/Departments of the Central Government (wherever these do not exist at present).
- iii) Evolving and setting up reviewing and monitoring mechanism for assessment of the progress in the Plan and the necessary project management structures for major tasks;
- iv) Zero-based budgeting, integration of the Plan and Non-Plan funds and resources; and involvement of financial institutions in the major areas of the outlay and
- v) The Technology Policy Statement; the TPS would be intrinsic to and basic to the S & T

Planning exercise and its implementation  
towards national objectives.

Many of these recommendations have to be implemented before the start of the next plan, and would thus constitute the base on which the S & T Plan would have to be structured in future.

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CHAPTER - V

IMPLEMENTATION OF PLAN AND PROGRAMMES

Before discussing the question of effective coordination and implementation of plan and programmes it will be appropriate to consider three important aspects of development planning process, namely, plan formulation, monitoring and evaluation. These aspects have a direct bearing on implementation and coordination,

2. Plan formulation relates to the study of economic feasibility and desirability of large, concentrated investment projects on one hand recognising the needs of local situation on the other hand. Monitoring is an instrument in the hands of administration to ensure that the objectives of a programme in specific areas are being achieved. The central purpose of monitoring is to provide timely, regular and dependable information on the execution and progress of programmes that are administered. It can also be defined as an exercise of keeping constant watch on the execution and progress of a programme at different levels in relation to its target with a view to taking timely corrective measures as and when required to ensure the successful implementation of programmes. Evaluation starts where progress reporting and investment surveys end. While progress reporting is neutral to the objectives of a programme in view, evaluation is vitally interested in that. It, thus, involves the establishment of a relationship with policy and methods on the one hand, and results of the other. It is a post-natal assessment of a programme based on field results and not a postmortem or mere making up value judgement on its working. It is a forward looking, action oriented exercise essentially directed towards identification of areas of success or failure, appraisal of efficient method adopted and possible fresh approaches for attaining the desired objectives. The three exercises of effective implementation of plan and programmes are inter related. It is necessary to derive guidance for one based on the achievement in the other.

3. In formulating and implementing plan and programmes Development Commissioner plays following roles :

- a) Define overall plan priority and strategies.
- b) Make regional adoption of national policy to suit the specific conditions of the State within the broad framework of the national plan.
- c) Inter departmental and inter agency coordination.
- d) Overall provisions of technical expertise to district planning centres and to organise training of the staff and
- e) Undertaking development programme for the development of weaker sections/backward areas.

4. With well defined financial constraint and sectoral allocations pattern on the one hand and with the given shelf of schemes and projects on the other, Planning under district level is the exercise in programming and choice of location. This involves five steps (a) analysis of existing situation (b) translating objectives into specific targets. (c) arrangement of priorities, (d) identification of constraints operating from within and/or outside the system and (e) suggestion for removal of constraints.

5. A look at the present status in regard to these three aspects as obtained in the N.E. Region will be relevant. The first question that calls for an answer is : whether in this region the planning set up at the State/District/Block level has the required data base. Unless programmes are drawn up keeping in view the current status and problems of the project area successful implementation of the programme cannot be expected. Thus analysis of the existing situation is the foundation that has to be carefully and skillfully laid in order to build programme planning target. Data in the NE Region are either not available or not accessible, or not collected at the required level or die-aggregation, or not collected regularly or collected with a considerable time lag. In such a situation, therefore, the first and foremost

requirement for successful implementation of plan schemes is to set up a cell which can provide the required data. For the purpose two different types of set-up are required : (a) machinery for collection of socio-economic and technical data and (b) for results of evaluation studies which have been taken up in the State/areas. For (a) above the base level (district) planning units may be entrusted with the following task :-

- a) Assessment of local necessities and requirements;
- b) Assessment of resource for preparation of resources inventory including local manpower resources.
- c) Formulation of village and panchayat plan.
- d) Special planning for Socio-economic infrastructure.
- e) Involving local population in planning, implementation and evaluation of development projects.

6. The objectives of evaluation units may be (a) Keeping all concerned apprised currently of the progress being made towards accomplishing the programme objectives. (2) pointing out those extension methods which are proving effective and those which are not, (3) helping explain why some recommended practices are adopted while other are rejected, (4) furnishing insight in the impact of the National extension programme. Keeping in view that the present data collection machinery is very weak in region, the Working Group recommends;

- (a) the existing set up of National Sample Survey may be strengthened in the region so that the socio-economic data required for plan formulation can be collected on a systematic and regular manner and made available to the States/UTs on time.
- (b) the existing Planning and Evaluation set-up in the States/UTs may be strengthened to enable it to take on the task expected of it more efficiently.
- (c) a well-thought out programme of training the personnel involved in such task on a permanent basis may be evolved and implemented at the regional level for which NEC may take the initiative.



The Working Group, while emphasising the imperative need of close co-ordination and supervision of effective implementation of the plan schemes at various levels, has to record the fact that, presently there does not exist adequate co-ordination among different implementing agencies and a lot is to be expected in regard to effective supervision of programme implementation in the field. The Working Group would like to make the following suggestions in this regard :-

- i) For co-ordination at various levels as also for monitoring of actual implementation of all Central Sector and Centrally sponsored schemes in this region, the regional office of PED (Planning Commission) should have a separate cell in which besides, representatives of concerned Ministries of Government of India, the Director (E&M), NEC should also be associated. Whatever direction/comments that are required to be communicated to the implementing agencies of these programmes should be sent by the Planning Commission directly with endorsement to the Council Secretariat. Besides, a periodical review - may be quarterly or half-yearly of these programmes should be undertaken in which besides, Planning Commission and the concerned Central Ministries, representatives of the State Governments and of the NEC Secretariat may be associated. These review meetings should be held in the Constituent Units of North Eastern Region by rotation;
- ii) In regard to the NEL Plan schemes, there should be Regional level Review Committee, constituted with representatives of the State Governments/ UT Administrations, headed by the Planning Adviser, NEC. The local heads of concerned Central Government organisations like ICAR, CSIR, All India Institute of Medical Sciences, Central Silk Board, CWC etc. should also be associated with the proposed Committee;
- iii) What is most important in the matter of co-ordination and effective implementation is that, the States/UTs have to have a machinery at different levels - at the State/UT level, District level and Block level. The composition of these bodies would largely be a matter for the State Governments/UT Administrations to decide.

8. The problem of regional development in the North-East requires not only the development of various component States and Union Territories as units by themselves, but

also involves the development of specific under-developed areas or communities ~~do~~ tribes within each of such units. The Constitution has provided for the creation of district or Regional Councils where special attention is required to be given for safeguarding the interests of tribes which have a distinct entity and which need specific safeguards. Besides such tribes which are given such special safeguards, however, there are a large number of areas and communities and tribes which feel that their development required special attention and sometimes have apprehension that their problems will not be adequately considered otherwise. To some extent the provision of tribal sub-plans or integrated plans for special areas provided for in the State Plans has met this need. Such sub-plans or integrated plans aim at development of under-developed areas or communities or tribes and provide for separate and, to an extent, autonomous, machineries for formulating, implementing, controlling and supervising the plan schemes. In spite of these arrangements, it is clear that not all under-developed areas or communities or tribes have been adequately taken care of and, from time to time, representations are being received for special measures in regard to such areas, communities or tribes. There is no doubt that the primary responsibility for the development of such areas, communities or tribes has to rest on the governments and administration of the component States and Union Territories of the North-East. There is no reason, however, for some recognition of their special requirements to be denied to them without in any way reducing the responsibility of the respective State or Union Territory government. It may not be possible for special sub-plans or integrated plans to be devised for all of the tribes. It is also not desirable that controversies regarding equitable distribution of funds or adequate flow of funds to go to the under-developed areas or tribes should be allowed to bog down the process of fraternal relationship among the tribes and smooth administration of the component units of the North-East. Consistently, however, with these objectives the Planning Commission might like to devise some machinery to ensure adequate development of all the regions

and communities and tribes. The Working Group, therefore, recommends that a Special Report may be prepared on the status of development of such under-developed areas or communities or tribes from time to time.

9. For effective implementation of plans and programmes there are important components viz. Government Administrative Machinery, Legal System existent in the economy, participation of community for which plans are drawn and availability of raw material, food, services and conditions under which different work programmes are executed, which should work simultaneously. The Planning Commission, keeping this frame work in view, constituted the four Working Groups to deal with each of the component separately and while setting up the Working Group for Development of N.E. Region during the 7th Five Year Plan suggested that the Group should take into account the recommendations of these Groups also. Reports of these Working Groups were made available to the Group and Sectoral recommendations made by these Group were taken into account while drafting the relevant chapters, points relevant to implementation of plans and programmes are given below :-

Working Group to study changes in Personnel Policy for the North Eastern Region.

10. The Working Group was set up under the Chairmanship of Shri K.V. Seshadri, Additional Secretary Administrative Reforms to study the existing personnel policies in relation to administrative, scientific and technological services and to suggest modifications and measures which may attract and retain higher level personnel in the north-east. While some of the recommendation made by a separate committee set up by the Department of Personnel and A.R. under the Chairmanship of the Secretary Department of Personnel and A.R. for the Central Government Employees working in the region have been accepted, the Group would like to mention that (i) the recommendations accepted are not sufficient to attract higher level personnel from various corners of the country (ii) Service conditions of scientific and technical personnel who may not have all India transfer

liability needs immediate attentions and (iii) The service conditions of tribal people who go outside the region may have to be reviewed to enable better interaction and mobility. While the Working Group on Personal Policy has considered the first two aspects and the area which need immediate attentions are listed in Annexure-I, the third point has been missed being outside the purview of the Working Group. At present, the tribals serving in their respective States/UTs are exempted from payment of income tax under the guarantees given to them and embodied in the relevant provisions of the Constitution and the Acts. When such tribals serve outside the areas in which such exemption applies they are liable to pay such a tax. Not only does this act as a strong disincentive for tribals to go to non tribal areas but for tribals <sup>to</sup> go to other tribal areas. For example a Khasi serving in Mizoram has to pay income tax and both the Mizos and Khasis have to pay when they serve in Delhi. The policy should be to induce tribals to serve outside their own areas. The discrimination regarding income tax should be dealt with appropriately. Some of the specific recommendation which deserves priority attention are, however, given below :

- i) The next posting should, as a principle be at a place of his choice. If for any administrative reason this is not possible, he should be given the place of his second preference without fail and retained there for at least 3 years.
- ii) The experience that an All-India Service officer has in the State is taken into consideration in deciding his posting in the Ministries at the Centre. The officers belonging to cadres in the North-East have for good and well known reasons rather limited experience in industries, commerce, foreign trade, steel, mines and minerals, energy etc. As a consequence, they seldom get postings in these Ministries and are more often fitted into purely "uneconomic" Ministries, specially Home. It cannot be gainsaid that experience in "economic" Ministries for these officers is a sine qua non for their contributing to the accelerated development of this vast Region on their return to the State cadres and while they are on deputation at the Centre, their knowledge of the local is a valuable and essential input to

these very Ministries, in their concern for the same objective. It is, therefore reasonable rather very necessary, in public interest that officers of the North-Eastern Region A.L.S. cadres should be fairly and adequately distributed for the economic" as the other Ministries - a deliberate policy decision of Government approved by the Appointments Committee of the Cabinet.

- iii) As a fallout of the present situation those posted at the Centre continue to get matters relating to that Region only and do not get an integrated perspective of development from the national angle. This is also a matter requiring urgent correction, in the interest of national integration in the administrative field.
- iv) On completion of their term in the Region, officers find great difficulty and face a long delay in getting deputation postings at the Centre. In the process, their families suffer immeasurably, creating a sense of utter dissatisfaction and at times disenchantment too. To the already on deputation are recalled to the Region too, interrupting their tenure with the Central Government but on completing such special assignments they do not find placement back again in the Centre. Hence, if there is delay for a period exceeding six months from the day an officer is on offer, for placement at the Centre from the region, or in case an interrupted deputation on return from special assignment gets no placement for 2 months, his case should be brought to the personal attention of the Cabinet Secretary by the Establishment Officer.
- v) In the case of officers going to the Region with or without family, where no accommodation is had within a month or two at the most, the Government may lease on its own accommodation-hostel type accommodation in case of single officers and standard accommodation for officers going with families - and charge 10% of the price from them. This is particularly in view of the fact that the HRA available at quite a few places there is quite low and for senior officers coming from outside, accommodation at the present rate/scale is not available.
- vi) NEC may be allotted a separate quota in the Engineering Colleges under the control of the Central Government for the children of such Central Government employees who have been working in the Region for a period of at least 10 years and provided they are also studying in the schools there for seeking admission in such institutions of higher education.

- vii) In cases where officers leave their families behind or put their children in hostels, Government may reimburse them in respect of tuition fee and hostel expenses (including boarding) at the rate of Rs.100/- per child - but limited to two children as per the family planning objectives of the Govt. of India; otherwise the officer would in any case be held eligible to the normal Children Education Allowance and Hostel Subsidy as per the normal rules for his children.
- viii) Those completing their education as per (6) above, may be exempted from registration in the Employment Exchanges of the Region in Seeking employment under the Central Government or Central Public Undertakings anywhere in India.
- ix) The housing problem is particularly acute in Shillong. The large Defence presence there has put a severe strain on the extent of private housing going generally and it has also made the terms applicable to Defence Services Officers becoming the standard for all others. In the circumstances, all officers posted to the NEC Secretariat should be allowed the same benefit, i.e. Government should itself lease out the residential accommodation so eligible to them and charge the occupants only 10% of the basic pay.
- x) The limit of Rs.250 per month set for the deputation allowance may be raised to the generally operative limit of Rs.300 in the Central Government.
- xi) The terms offered to the "Consultants" engaged by the NEC need to be liberalised. The existing limit of Rs.3,000 per month may be raised to Rs.5,000/- other conditions being the same. This will be a consolidated amount and no other benefit or facility will be admissible to them.

Working Group to Study the Legal System and Impact of New Laws on Traditional Societies in the North East:

11. The Working Group under the Chair person of Smt. P.P. Trivedi, Chief Secretary, Govt. of Meghalaya to ascertain what powers have been conferred on the existing tribal authorities at the village level and what powers they have actually been exercising; whether the exercise of such powers is generally accepted by the people and in what way the tribal village authorities could be strengthened and revitalised.. This Working Group would like to reemphasise that the completion, codification and reform of customary laws dealing with

economic matters like cultivation, land system and covering the entire area by a cadastral survey may be given utmost priority by making proper institutional arrangements.

Working Group to Study the Selection & Implementation of Development Programmes with particular Reference to Community Participation for the North Eastern Region :

12. The Working Group on Community Participation was set up under the Chairmanship of Shri R.N. Haldipur to examine the present development structure and systems of development, to identify specific areas of danger to ecology, if more active intervention and involvement of selected Central Ministries and agencies is necessary, modification of Central and Centrally sponsored schemes, measures to attract institutional credit, development of employment potential etc. The recommendations which require immediate attention for implementations of development programmes are given in Annexure-II. Some of the specific recommendation which deserves priority attention are, however, given below : -

- i) Just as the Constitution has Central, State and Concurrent lists, there should be statutory lists of areas of decision making at the Village, District and State levels. The emphasis should be on enlarging the subjects at the village level as much as is possible. The other two lists should basically be concerned with programmes outside the catchment area of the villages community and be concerned with functions such as coordination, liaison with other organisations, planning, technologies etc. There should be not a flowing down but a flowing up of the exercise of functions.
- ii) At present, village works are executed through contractors or departmentally. The works should be in the hands of the villages and the funds should be spent by the village community through traditional village organisations like the Village Development Board of Nagaland. This identification of community works with the community would restore a sense of decision making and participation.
- iii) The availability of fodder is of great importance because of the live-stock farming practised in the region. It would be necessary to lay stress on mixed/forages as a source of total nutritional

requirement. Silvi-pastoral systems can be widely practised while growing fodder. Grasses and legumes in the terrace rises in the hilly areas needs to be popularised. However, to prevent indiscriminate grazing, social fencing will have to be adopted.

- iv) Agro-horticultural systems of land-use with subsidiary source of income through live-stock rearing and fish-culture provide the most favourable mixed land-use system. It would be worthwhile to have model pilot projects for specific areas in each unit of the region to demonstrate the feasibility of the systems. However, the involvement of the people is essential to stimulate new thinking and practices. Village Councils could serve as animators for innovation thereby expanding these methods from the Pilot Project to common practice. In view of the nature of the terrain, such measures will have to be conceived and planned by the community and adopted with community sanction. All this will however be possible only after the State/UT Governments, the North Eastern Council, the ICAR Research Complex and the Agricultural University help to initiate the process by performing their respective roles.
- v) The symbiosis between the forest dweller and the forest should not be ignored. The forest provides fruits, bils, medicines, fuel, fodder and timber to the dweller. It is, therefore, necessary that the village community have control over the utilisation of forests and also the responsibility for plantation, ensuring that there is no deforestation. Social forestry schemes should be introduced through the Village Councils to meet this requirement. Also, the systems of village safety reserve and village supply reserve, as now existing in Mizoram could be encouraged.
- vi) Forests are the repository of plants from which about 60% of the world's medicines are derived. Their value far exceeds that of commercial timber, and yet forestry practices mainly emphasise the forests as a source of timber. Considerable research is needed in order to develop the other uses into commercial products.
- vii) The institutional agencies through which rural development programmes are to be implemented have not been properly delineated for the North East. Village Councils could be recognised as the planning and implementation agencies for most of the rural development programmes, provided the



council is given a corporate form by statute and adequate arrangements are made for instituting financial discipline.

- viii) Since land in tribal areas is generally owned by a clan or tribe, a system of group guarantees should be introduced to enable communities to borrow on the security of their collectively owned lands.
- ix) For the use of gravitation sources of water bamboo or polythene pipelines could be used for carrying the water from the source to the consumption point. The community should be responsible both for protecting forests in the catchment areas and for maintaining the entire distance of the pipeline. As the sources, there should be sedimentation tanks. Such tanks could be built using simple and cheap methods and materials such as fibre-board, anodised aluminium and steel.
- x) The establishment of curative facilities will have to take into account the low population density of the area. The norms for establishment of Primary Health Centres (PHCs) which have been relaxed upto population of 20,000 will need further relaxation in the North East. There should also be improvement in the facilities available at the referral hospital level.
- xi) With the given topography of the region, medical personnel will need greater mobility. The Chittaranjan Mobile Health Unit model in operation in Jammu and Kashmir can be adopted for the hill areas of the North East with great advantage. Also, individual personnel will have to be provided facilities to make them mobile. Another method is to organise camps for the treatment of various ailments.

Working Group to Study the System of Satisfactorily Organising Supplies, Services and Works in the North Eastern Region:

13. The Working Group set up under the Chairmanship of Shri Gian Chand the then Secretary N.E.C. was to review the existing system and constraints on organising supplies, services and works and the contract system, extent to which the Central Agencies/Departments may assist State Governments to overcome the constraints and bringing up gap in requirements and availability of Civil Supplies. Shri P.H. Trivedi after becoming Secretary, N.E.C. finalised the report. Recommendations on Civil Supplies which is life line for any area

have been included in the chapter iv.17 at the suggestions of various members of the Group. The chapter also includes details of storage and market facilities required in the region.

WORKING GROUP TO STUDY CHANGES IN PERSONNEL POLICY FOR  
THE NORTH EASTERN REGION

SUMMARY OF MAJOR RECOMMENDATIONS

1. The next posting should, as a principle be at a place of his choice. If for any administrative reason this is not possible, he should be given the place of his second preference without fail and retained there for atleast 3 years.
2. The experience that an All-India Service officer has in the State is taken into consideration in deciding his posting in the Ministries at the Centre. The officers belonging to cadres in the North-East have for good and well known reasons rather limited experience in industries, commerce, foreign trade, steel, mines and minerals, energy, etc. As a consequence, they seldom get postings in these Ministries and are more often fitted into purely "uneconomic" Ministries, specially Home. It cannot be gainsaid that experience in "economic" Ministries for these officers is a sine qua non for their contributing to the accelerated development of this vast Region on their return to the State cadres and while they are on deputation at the Centre, their knowledge of the local is a valuable and essential input to these very Ministries, in their concern for the same objective. It is, therefore reasonable, rather very necessary, in public interest that officers of the North-Eastern Region A.I.S. cadres should be fairly and adequately distributed over, the "economic" as the other Ministries - by a deliberate policy decision of Government approved by the Appointments Committee of the Cabinet.
3. As a fallout of the present situation as above, those posted at the Centre continue to deal with matters relating to that Region only and fail to

get an integrated perspective of development from the national angle. This is also a matter requiring urgent correction in the interests of national integration in the administrative field.

4. On completion of their term in the Region, cadre officers find great difficulty and face vexatious delay in getting deputation postings at the Centre. In the process, their families suffer immeasurably, creating a sense of utter dissatisfaction and at times disenchantment too. Due to the disturbed conditions in the area, some already on deputation are recalled to the Region too, interrupting their tenure with the Central Government but on completing such special assignments they do not find placement back again in the Centre. Hence, if there is delay for a period exceeding six months from the day an officer is on offer, for placement at the Centre from the region, or in case an interrupted deputation on return from special assignment gets no placement for 2 months, his case should be brought to the personal attention of the Cabinet Secretary by the Establishment Officer.
5. If, during the period of posting in the Region, an officer becomes due for promotion and is likely to be posted elsewhere, promotion should be given to him on a personal basis and retained in the region itself, so as to enable him to complete the period of two years set down above.
6. Preference should be given to all such officers who have put in at least 2 years of service in the Region as above as well as all the A.I.S. Cadre officers allotted to the States/UTs there in the matter of foreign assignments; likewise, a quota of 10% of the total training assignments should be reserved for such officers in overseas training programmes.

7. In order to provide an incentive and to minimise the burden caused by such transfer, the Committee recommends that a lump sum amount of Rs.1,000 may be granted to the officers posted in the North Eastern Region as "Settlement Allowance."
8. In the case of officers going to the Region with or without family, where no accommodation can be had within a month or two at the most, Government may lease on its own accommodation-hostel type accommodation in case of single officers and standard accommodation for officers going there with families - and charge 10% of the pay as rent from them. This is particularly in view of the fact that the HRA available at quite a few places there is quite low and for senior officers going from outside, accommodation at the prescribed rate/scale is not available.
9. NEC may be allotted a separate quota in Medical/Engineering colleges under the control of the Central Government for the children of such Central Government employees who have been serving in the Region for a period of at least two years and provided they are also studying in the schools there for seeking admission in such institutions of higher education.
10. In cases where officers leave their families behind or put their children in hostels, Government may reimburse them in respect of tuition fee and hostel expenses (including boarding) at the rate of Rs.100/- per child - but limited to two children as per the family planning objectives of the Govt. of India; otherwise the officer would in any case be held eligible to the normal Children Education Allowance and Hostel Subsidy as per the normal rules for his children.
11. Those completing their education as per (8)

above, may be exempted from registration in the Employment Exchanges of the Region in seeking employment under the Central Government or Central Public Undertakings anywhere in India.

12. The housing problem is particularly acute in Shillong. The large Defence presence there has put a severe strain on the extent of private housing going generally and it has also made the terms applicable to Defence Services Officers becoming the standard for all others. In the circumstances, all officers posted to the NEC Secretariat should be allowed the same benefit, i.e. Government should itself lease out the residential accommodation so eligible to them and charge the occupants only 10% of the basic pay.
13. The limit of Rs.250 per month set for the deputation allowance may be raised to the generally operative limit of Rs.300 in the Central Government.
14. The terms offered to the "Consultants" engaged by the NEC need to be liberalised. The existing limit of Rs.3,000 per month may be raised to Rs.5,000/- other conditions being the same. This will be a consolidated amount and no other benefit or facility will be admissible to them.
15. Scientist & Technologists serving in the region may be given the facility of attending at the Government expense recognised conferences and seminars - over and above the usual provisions going in this regard - held in the country, twice in a year as under:
  - (a) once, whether or not a paper is presented by them individually for inclusion in the agenda;
  - (b) a second time if such a paper is admitted for oral presentation.

16. It is appreciated that any rules framed for Central Government officers do not ipso facto apply to AIS officers but is felt that the Central Government should find ways and means of extending all the compensatory benefits set out in the report to officers of AIS cadres serving in the North East.

WORKING GROUP TO STUDY THE SELECTION AND  
IMPLEMENTATION OF DEVELOPMENT PROGRAMMES  
WITH PARTICULAR REFERENCE TO COMMUNITY  
PARTICIPATION FOR THE NORTH EASTERN REGION

SUMMARY OF MAJOR RECOMMENDATIONS

- 1) The strong community spirit of the people in this area has been largely responsible for their survival in these difficult and inhospitable geographical surroundings. Using the community organisations as a vehicle for development would strengthen the process of integration by recognising their value while giving them the opportunity to perform a modern function. Community organisations serve as a powerful cementing bond, not only by bringing the activity to the doorstep of the individual but also by providing it with the dynamism of community action. (Para 3.7)
2. Though the States/UTs of the North East have certain common features, each one has its own identity and particular characteristics. These should be considered in order to draw up specific projects and schemes rather than common programmes. ( Para 3.14(ii)).
3. Just as the Constitution has Central, State and Concurrent lists, there should be statutory lists of areas of decision making at the Village, District and State levels. The emphasis should be on enlarging the subjects at the village level as much as is possible. The other two lists should basically be concerned with programmes outside the catchment area of the village community and be concerned with functions such as coordination, liaison with other organisations, planning, technologies etc. There should be not a flowing down but a flowing up of the exercise of functions (Para 4.7 (a) and (b)).
4. At present, village works are executed through contractors or departmentally. The works should be in the hands of the villages and the funds should be spent by the village community through traditional village organisations like the Village Development Board of Nagaland. This identification of community works with the community would restore a sense of decision making and participation. (Para 4.7(d)).
5. In terms of the rest of the country, the North East is less developed particularly with reference to transport, communications, power, industry and other infrastructure. In order to overcome this lag, a particularly massive intervention is necessary.



Each of the Ministries concerned will have to make their contribution. For effective implementation of projects and proper coordination, it would, therefore, be necessary to have a Task Force with selected members from the concerned Ministries. While the NRC could perform the coordinating role, this Group could :-

- (a) evolve sectoral perspective plan for the region so that projects are not taken up in isolation but in the context of the long term development of the area ;
- (b) monitor the implementation of the projects on the basis of feasibility studies and devise means to overcome obstacles if any; and
- (c) facilitate quick decision making  
(Para 5.9 and 5.10)

6. The availability of fodder is of great importance because of the live-stock farming practised in the region. It would be necessary to lay stress on mixed forages as a source of total nutritional requirement. Silvi-pastoral systems can be widely practised while growing fodder. Grasses and legumes in the terrace rises in the hilly areas needs to be popularised. However, to prevent indiscriminate grazing, social fencing will have to be adopted. (Para 6.11 and 6.12).

7. Agro-horticultural systems of land-use with subsidiary source of income through live-stock rearing and fish-culture provide the most favourable mixed land-use system. It would be worthwhile to have model pilot projects for specific areas in each unit of the region to demonstrate the feasibility of the systems. However, the involvement of the people is essential to stimulate new thinking and practices. Village Councils could serve as animators for innovation thereby expanding these methods from the Pilot Project to common practice. In view of the nature of the terrain, such measure will have to be conceived and planned by the community and adopted with community sanction. All this will, however, be possible only after the State/UT Governments, the North Eastern Council, the ICAR Research Complex and the Agricultural University help to initiate the process by performing their respective roles. (Para 6.13).

8. The symbiosis between the forest dweller and the forest should not be ignored. The forest provides fruits, oils, medicines, fuel, fodder and timber to the dweller. It is, therefore, necessary that the village community have control over the utilisation of forests and also the responsibility for plantation, ensuring that there is no deforestation. Social forestry schemes should be introduced through the Village Councils to meet this requirements. (Para 7.23) Also, the systems of village safety reserve and village supply reserve, as now existing in Mizoram could be encouraged. (Para 7.18(b)).

9. Forests are the repository of plants from which about 60% of the world's medicines are derived. Their value far exceeds that of commercial timber, and yet forestry practices mainly emphasise the forests as a source of timber. Considerable research is needed in order to develop the other uses into commercial products. (Para 7.16).

10. The institutional agencies through which rural development programmes are to be implemented have not been properly delineated for the North East. Village Councils could be recognised as the planning and implementation agencies for most of the rural development programmes, provided the council is given a corporate form by statute and adequate arrangements are made for instituting financial discipline. (Para 9.4(iv)).

11. Since land in tribal areas is generally owned by a clan or tribe, a system of group guarantees should be introduced to enable communities to borrow on the security of their collectively owned lands. ( Para 9.4 (vii)).

12. The physical targets for providing direct assistance to individuals should be realistically assigned to each block. Given the low population density of the area, this will have to be below the usual target of 600 families per block. However, the infrastructure requirements of the region are so great that the balance of the allocation could be effectively utilised for strengthening the infrastructure. ( Para 9.4 (ix)).

13. For the use of gravitation sources of water bamboo or polythene pipelines could be used for carrying the water from the source to the consumption point. The community should be responsible both for protecting forests in the catchment areas and for maintaining the entire distance of the pipelining. At the sources, there should be sedimentation tanks. Such tanks could be built using simple and cheap methods and materials such as fibre-board, anodised aluminium and steel. (Para 10.10 (1) and 10.13 )

14. The community should be involved in the maintenance of the school so that school becomes the centre of the cultural life of the village. The educational process needs to get integrated with the wider education which begins in the child's home and continues touching all aspects of his life and society. ( Para 13.5.1 and 13.5.3 )

15. One of the major needs of the area is a system of non-formal educational for those whose entry age is higher than that of average students. In this form of education the family has to be treated as a unit and not a cluster of age groups. Education becomes a group activity in which different ages combined learn from each other. For this the "Sakharwadi" model for children of labour working on sugarcane fields is one which can be adapted with some modifications. The teaching methods use innovative concepts taken from objects and chores familiar to the child in his own environment. (Para 13.16).

16. The establishment of curative facilities will have to take into account the low population density of the area. The norms for establishment of Primary Health Centres (PHCs) which have been relaxed upto population of 20,000 will need further relaxation in the North east. There should be also improvement in the facilities available at the referral hospital level. (Paras 14.19 and 14.20).

17. With the given topography of the region, medical personnel will need greater mobility. The Chittaranjan Mobile Health Unit model in operation in Jammu and Kashmir can be adapted for the Hill areas of the North east with great advantage. Also, individual personnel will have to be provided facilities to make them mobile. Another method is to organise camps for the treatment of various ailments. (Para 14.20).

18. A multiplicity of agencies and administrative structure which is highly complex, directing villagers from one official to another, has proved confusing and ineffective. The erstwhile 'singleline' system adopted according to local conditions/should coordinate the activities of different departments at the State/UT level, the Deputy Commissioner at the district level and the Block Development Officer at the Block level. This would enable the community organisation to work hand in hand with the administrative system. (Para 16.10. and 16.17).

/ is more appropriate. The Development Commissioner

19. The institution of village, elders and interpreters, where it exists, must continue caution, however, should be exercised in their appointment and due inquiries should be made to ensure that the really influential people are appointed. The powers vested in these traditional functionaries and in the village Councils should not be diluted till suitable alternative forms of leadership emerge at the village level. (Para 16.20 ).

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Note :- Para Nos mentioned within bracket of above recommendations are related to the main report.

CHAPTER -VI-

SUMMARY OF RECOMMENDATIONS

1. Review of on-going schemes

1. One important cause of delay and faulty nature of schemes is in the location of schemes. In regard to selection of site for location of projects, greater consideration be given by the executing agencies to the flow of benefit to the target group rather than availability of facilities to the staff attached to the project. Proper guidelines for selection of locations of projects should be given to the executing agencies in time so that decisions taken are not ad hoc and cost and time over-run can be avoided.

(Page 21 ; para 2&3)

2. A precise analysis of manpower requirement in relation to each project should be made initially so that programme for advance requirement and training can be undertaken to meet such requirement.

( Page 21 ; Para 4 )

3. At the time of formulation of project, proper technical appreciation of the project should be made and a view of the totality of the situation taken so that frequent revision of project cost does not become necessary. A proper cost benefit analysis of individual project should be made to enable fuller appreciation of the benefits that would accrue from the project and of the cost involved in its implementation. Both physical and financial targets in respect of individual project should be determined on the basis of actual availability of various critical inputs, locational advantage or dis-advantage of the project demand for the end product, absorption capacity of the executing agency etc.

( Page 22 ; Para 5,6&7 )

4. It is essential to develop a mechanism by which various inputs can be supplied timely and adequately at the project sites. This will call for, among other things, an efficient and cheap transport system, application of modern system of management for planning of placement of orders

and delivery systems, and of monitoring of movement of material and evolving substitute arrangements in case of delay or failure.

( Page 22/23; Para 829 )

5. Internal resource mobilisation in the region being limited, availability of adequate institutional finance has to be ensured.

( Page 23 ; Para 10 )

6. The guidelines in respect of various national programmes do not take into account the peculiar situation prevailing in the NE and the realities in the field. Therefore, separate guidelines keeping in view the local condition in specific areas may be drawn up in relation to such programmes by the Planning Commission/concerned Central Ministries.

( Page 23 ; Para 11 )

7. Administration being an important input for effective implementation of plan schemes, needs orientation and motivation by arranging proper training of personnel.

( Page 24 ; Para 13 )

8. For adequate utilisation of the traditional spirit of community participation among the local population for implementation of development schemes, a suitable strategy should be evolved. (Page 24 ; Para 14 )

9. There is a special pattern of Central assistance for the plans of the North-Eastern States and Union Territories. There is, however, no the GADGIL formula, which provides for a special pattern of central assistance for the North Eastern States and UTs, requires a review to indicate definite criteria for determining deficiencies of the special category States/UTs, in order to fix a time frame for making up the backlog, to provide incentive to these States/UTs for developing additional resources and to create psychological confidence and sense of equality among these States. A perspective plan with the definite strategy of bringing the North East to a comparable stage of development with the rest of the country within certain time frame is necessary. It will give

direction and focus to the programme of economic development of the region. For this purpose, specific indices of development should be evolved. The national obligation to provide for more than proportionate resources to special category States in order to bring about their advancement rendering them comparable to other States should be accepted as a national planning objective and commitment. Without such a strategy the development process, while achieving worthwhile results in other ways, remains without direction focus or impact. It may not be possible to have the criterion of completing this process for all the special category states uniformly in a particular time frame. It is a matter of study to devise a single or more than time frame for different special category States.

(Page 25/26 ; Para 16(d)-(v))

10. A programme of development of railway, road and inland water transport within a specific time frame should be formulated to ensure that the North East does not continue to suffer from the special handicaps caused by the country's partition.

( Page 27 ; Para 19 )

11. The quality of administration makes material contribution to the development process, in the context of the North East, in a very special manner. It is necessary that the traditional local administration system is strengthening and allowed to play a bigger role. The decision making process should be decentralised. For proper implementation of programme, which is likely to make a difference in the quality of life in the North East, a committed administration with a strong tradition of public service, adequate familiarising with modern technology, a high degree of orientation for efficiency and considerable tradition of participation with villane community has to be built up. Fresh thought has to be given to the methods of recruitment, terms and conditions of service, proper training and orientation towards community life in the North East. For this purpose an expert study should be undertaken. For a considerable period of time

North East will need the services of experts and administrators from outside. It is necessary, therefore, to create conditions for such experts and administrators to willingly come to serve in the North East with a feeling that service in this region is necessary as a matter of national commitment for the development of this region.

(Page 51-55 ; Paras 38 -45 )

12. As 60 to 70 percent of the work load falls on the women folk in this region, particularly in the tribal areas, a programme for improvement in technology and health of women, which is simple in nature but important in effect, will be very relevant for the development strategy in the North East. The Department of Science and Technology and CART should be involved in such a programme.

(Page 56 ; Para 46 )

13. Due to relatively sparse population the region has experienced great disparities in the levels of development. A strategy for development of this region should therefore, be evolved which will reduce these disparities within a definite time frame. A detailed exercise may be made by an expert body to frame a detailed programme.

(Page 57 ; Para 47 )

14. The region has the potentiality for emerging as an important exporter of selected agricultural, horticultural and plantation produce. The setting up of the target of food self-sufficiency for the region as a whole is both practicable and desirable. From the point of view of utilising factor endowments, reducing the strain on transportation system and economising on the costs of transport and providing subsidy for bringing those from outside the region.

(Page 58 ; sub-para A )

15. Food self-sufficiency, primary education, rural health, development of human resources, development of linked roads, Water supply, restoration, rehabilitation and development of forest resources, development of railway linkage,



improvement and development of navigable waterways, improvement and development of postal and telephonic communications should be treated as priority sectors for development of the north east. The requirement of funds for taking up appropriate schemes on a sufficient scale for achieving the comparable equity of development with the rest of the country should be worked out by the assistance of specialised institutions. It is in the allocation of funds in various sectors - Central, State or N.E.C. - the required funds for such priority programmes should be earmarked, pre-empted and brought under some mechanism whereby the resources are not diverted to other schemes and the progress of schemes is systematically monitored to ensure effective results. An exercise made in this regard indicates the scale of investment of Rs.4564 crores for such priority programmes and this would appear to be within reasonable limits of the funds likely to be evolved for development in the various sectors.

(Page 58- 62 ; sub-para A- K and para 48 )

16. The regional planning model ( for NE Region) should be based on integration of decentralised systems. There should be greater decentralisation of powers to lower level of development administration with a view to incorporate local characteristics in the programme. This will make an immediate impact on the socio-economic life of the people.

(Page 64, Para 53 )

17. A package of measures involving considerably less finance and less advanced level of inputs supply, trading and technology for rehabilitation of Jhumia families than suggested by Task Force on Shifting cultivation in the initial phase may have better chances of success. Experts may devote themselves to evolving a package of measures which is of the order of Rs.8,000/- to Rs.10,000/- per family. More than the amount of resources to be committed to this programmes the nature of the packages of the measures would require local variation to be studied in detail and considerable refinement for adaptation and also for innovation.

( Page 93-94 ; Para 13-14 )

18. The highest priority should be given for conservation of natural resources such as land, water, biological resources etc. through appropriate measures.

( Page 94 ; Para 15 )

19. The programme for shifting cultivation should be preceded by careful and detailed planning. Micro watershed units or a group of hillocks may be taken as a unit for detailed project formulation. It would be preferable if ethnically homogeneous habitats are taken for this purpose since it will help in meaningful communication, easier decision making and effective implementation.

(Page 95 ; Para 16 )

#### AGRICULTURE AND ALLIED SECTOR:

##### Agriculture:

20. As maximum yield is obtained in case of winter crops, for which irrigation facilities would be required, an additional area of at least 2.0 lakhs hectre in Assam and 1.0 lakh ha. in other six units should be brought under irrigation in the region during the Seventh Plan. ,

( Page 96 ; Para 17 )

21. Considering the constraints in the development of irrigation greater thrust needs to be given to the following

- (a) Setting up of a separate organisation for development of irrigation in Arunachal Pradesh, Meghalaya, Nagaland and Mizoram and strengthening of Irrigation Departments in Manipur and Tripura;
- (b) In those States/Union Territories where small areas are likely to be benefited by minor surfaces/ground water schemes it would be advisable to formulate integrated development schemes by combining watershed management, power generation, animal husbandry, irrigation and agriculture;

(c) Higher priority needs to be given to surveys, investigations and planning and designs of new medium and minor irrigation schemes atleast in the first two to three years of the Seventh Plan;

(d) Schemes which benefit less than 2000 ha. all regarded as minor. Most schemes in N.E. are of this category due to terrain. They all therefore not eligible for assistance by Central Water Commission, although technically they are very challenging and are costly. They should be rendered eligible for C.W.C.'s assistance and retention;

(e) A special unit for coordinating and monitoring of irrigation projects may be erected at regional level and attached to NEC Secretariat;

(f) Assessment and development of ground water resources in the river valleys and foot hills should be given priority because the benefits from such schemes can be realised without time lag.

( Page 96-98 ; Para 17 )

22. The main thrust should be on increasing the level of production and the rate of productivity. The problem of raising the production level as well as the productivity rate is multifaceted and would, therefore, call for introduction of location specific technology, adequate package of input mix, improvement of the cropping pattern, effective extension services, availability of credit etc. In this connection application of input package and technology and agricultural tools and implements suitable for this region recommended by ICAR may be adopted with the introduction of short duration HYV.

(Page 105 ; Para 34 (i)

23. Technological innovation, to tackle the peculiar problem of providing irrigation to this small holdings, based on under-ground or buried pipe, distribution system connected with surface water conveyance system or pump . . . . .

operative head may be attempted in this region.

(Page 106 ; Para (iii) )

24. Arrangements should be made for providing HYV seeds suitable for different crops as recommended by ICAR/AAU.

(Page 107 ; Para (iv) )

25. A Regional Seed Certification Agency with the assistance of National Seeds Corporation should be created. Foundation Seed Production Farms and the State Seed Multiplication Farms may be further developed with efficient management system.

(Page 107 ; Para (iv) )

26. Major portion of the Central Sector Jhum control Scheme, recommended by the Task Force set up by Govt. of India, Ministry of Agriculture with an outlay of Rs.75 crores, should be made available to States and UTs in NE as the problem is most severe in the region.

(Page 107 ; Para (v) )

27. A regional land used/land cover map should be prepared for the region to ensure scientific management of land. Landsat data for this purpose should be collected through remote sensing methods. A regional centre of NRSA should be set up in the region during the Seventh Plan.

(Page 108 ; Para (vi) )

28. The rate of consumption of fertiliser may be stepped up to 15 kg/ha. from the present level of 5.52 kg/ha. A programme for integrated nutrient supply by complimentary use of mineral nitrogenous fertiliser along with bio-fertiliser should be undertaken.

(Page 108 ; Para (vii) )

29. The Regional Centre for Production of Bio-fertiliser at AAU, Jorhat should be adequately strengthened to meet the needs of the entire region.

(Page 108 ; Para (vii) )

30. Existing facilities for collection of weather data relating to soil temperature, wind velocity, sun-shine hours, length of day etc., may be reviewed and recommendations made by National Commission of Agriculture in this regard be implemented.

(Page 108 ; Para (viii) )

31. A regional centre for plant protection and quarantine for keeping the NER free of pests, diseased and weeds which may be introduced along with seeds/plants/grains, may be established.

(Pages 109 ; Para (viii) )

#### Horticulture:

32. The region with unique diversity of agro-climatic conditions, altitudinal variations and well distributed rainfall has vast potential for horticultural development. This potential needs to be exploited. Greater emphasis should be laid on cultivation of high value, non-perishable crops like cashewnut, coconut, black pepper, cardamom etc.

(Pages 109/110; Para (i) )

33. Two percent of jhum area may, at least, be brought under fruit crops every year, covering an area of 47,000 hac. during the Seventh Plan.

(Page 109/110; Para (i) )

34. Total requirement of planting material required for bringing additional area under horticulture will have to be carefully assessed by States/UTs.

(Page 110 ; Para (ii) )

35. Besides exotic fruits, a large number of indigenous fruits of the region also need attention. A Research Centre for Indigenous Fruits may be set up by ICAR in the Region.

(Page 110 ; Para (iii) )

36. The existing fruit processing units in the region should be strengthened to enable them to raise the production capacity by at least 40% during the Seventh Plan period. Greater stress may be laid on production of fruit juice concentrates.

(Page 110 ; Para (iv) )

37. The level of production of  $F_1$  and  $F_2$  seeds for potato should be raised to 4000 tonne per annum to meet the estimated requirement of the region by 1990.

( Page 112 ; Para (viii) )

Animal Husbandry :

38. Area specific programmes for development of Animal Husbandry should be taken up development of transport animal of local breed like yak, pony etc in higher reaches and milk and meat producing animals at lower reaches.

( Page 112 ; Para (i) )

39. Piggery development should be taken up on 3-tier system suggested by ICAR in a big way as pig rearing is very popular with tribal.

( Page 113 ; Para (iii) )

40. To improve the animal health care, as an immediate measure, Animal Health Centre with Senior Scientist and supporting Technical staff should be set up in each constituent unit. The Seventh Plan target should be to have one veterinary aid Centre for every 5000 livestock population in plains and for every 3500 livestock in the remote health area.

( Page 113 ; Para(iv) )

41. Improvement of the breed of cattle needs urgent attention for which a long term approach with multi-disciplinary specific projects is suggested.

(Page 114 ; Para(v) )

42. One modern large size meat processing plant may be established in the region.

(Page 114 ; Para(viii) )

Fisheries :

43. Survey of the fish fauna of the NI Region with special reference to their economic importance may be undertaken.

(Page 115 ; Para(vli) )

44. Development of beel reservoir and pond fisheries required immediate attention. Effective methods of weed

control should be devised. Paddy with fish culture also needs to be popularised.

(Page 114/115 ; Para (i) to (iii) )

45. Development of integrated fish farming projects with poultry/Duck-cum-fish and pig-cum-fish culture should be attempted.

( Page 115 ; Para (v) )

Agri-marketing & Storage :

46. The Directorate of Marketing & Inspection, Ministry of Agriculture may consider opening of a regional centre for the North East for formulating a market policy on continuing basis and for providing training etc.

(Page 116 ; Para (ii) )

47. Storage facilities recommended by the Working Group on supply, Services and Works in the NE Region may be created on priority basis for meeting the requirement of supply of essential commodities in the region.

( Page 116/117 Para (iv) )

48. The marketing cooperative structure as a whole may be strengthened in the region.

(Page 117 ; Para (vi) )

49. New methods of crop drying and preservation like irradiation, solar driers may be introduced on a large scale.

(Page 117 ; Para (viii) )

Environment Protection and Eco. Development:

50. Introduction and amendment of legislative measures for specific purposes like establishment of biosphere reserves need to be taken. More National parks and Wild life sanctuaries are required to be set up.

( Page 121 ; Para 5 )

51. Development of specific area-wise management programme for jhuming with the objective of providing an alternative economic avocation to jhumias.

(Page 123 ; Para 7(i) )

52. Sources of pollution in the major capital town/urban centres of Imphal, Aizawl, Agartala, Shillong, Kohima, Gauhati, Itanagar, Tinsukia, Duliajan, Namrup, Sibsagar and Bongaigaon may be surveyed for assessment of the extent of pollution of water and air on account of industrial growth. Adequate remedial measures may also be prescribed.

(Page 124 ; Para(v) )

53. A sub-centre of the Himalayan Institute for Protection and Management of Environment may be established in the region for providing technical guidance and evolving a suitable land use pattern.

(Page 125 ; Para(vi) )

54. For providing adequate legislative support to the required environmental management and control necessary arrangements should be made for enactment and modification of laws according to specific needs and condition in each State/UT.

(Page 125 ; Para (viii) )

55. State/UT Governments should regulate opening and capacity of saw mill.

(Page 125 ; Para (ix) )

56. Codes for environmental protection may be prepared for each constituent State/UT.

(Page 126 ; Para x )

#### Forest:

57. The total depletion in forest area of NE has been of the order of 2147 sq.km. per year. A detailed programme for afforestation may be initiated by State/UT Govt. for recovering this area.

( Page 132 ; Para **ii** )

58. An expert Committee may be set up by Ministry of Environment & Forest Deptt. of Forest, to study of the norms of forest cover in each State/UT of the region. The Committee may also indicate action programmes for increasing the cover.

( Page 133 ; Para **ii** )



59. In the ecological fragile areas, grazing of animals should be restricted, fire control should be done in a systematic manner and degraded forests may be offered to large industrial concerns on long term lease for taking up plantation programmes.

( Page 135 ; Para v )

60. While calculating the cost of major and medium projects, the likely damages to forestry and environment as well as their replenishment cost should also be taken into account. With adequate policies for licensing, royalty payment and regeneration costs it might be possible to compensate the damages likely to be done to forest and ecosystem.

( Page 135 ; Para vi )

61. In all areas likely to be submerged due to high dams or big hydel projects, survey of the important plant species should be made and measures for preservation/protection of the same initiated.

( Page 136 ; Para viii )

62. A regional centre of Forest Research Institute & Colleges may be started in this region for development of technologies suitable for conservation of natural resources and for training of forest staff.

( Page 136 ; Para x )

63. The non-conventional techniques like tissue-culture, clonal propagation etc may be taken up in the region with involvement of competent technical and extension agencies for evolving suitable methods and applying them to the field conditions.

( Page 136 ; Para xi )

64. "Gene Banks" and Biosphere Reserved may be maintained in hands off areas for conservation of flora and fauna for present and future use.

( Page 136 ; Para xii )

#### Fossil & Renewable Resources of Energy:

65. Theoretically a large number of alternative energy systems i.e. hydro, gas and coal based are available but

these systems are location specific and in order to choose one and devise the adaptation and application of their technologies to local situations, careful location based surveys are necessary. A strong organisation for the North East for undertaking such surveys and for deciding the selection of appropriate technologies is urgently needed.

( Page 151 ; Para 1 )

66. Micro, mini and small hydro (Upto 5 MW) potential has remained largely untapped. Such projects are important in the region due to difficult terrain for reaching electricity to the large number of interior tribal villages which, due to problems and costs of transmission lines, are not likely to see the electricity for a long time to come. Organisations like BHEL, IITs etc. should be encouraged to undertake research in the field. Each State/UT should identify the organisation which will undertake preparation and implementation of these projects.

(Page 152 ; Para iii )

67. Though there are substantial coal reserves in the NER, tapping of coal for power generation calls for a low priority and this fossil fuel could be preserved for a future date. However, such coal based thermal station may be considered which are tied up with other industrial projects.

( Page 153 ; Para iv )

68. The economic feasibility of large hydel projects and its corresponding match with thermal projects for balancing it would need to be studied alongwith the technical feasibility of impounding large quantities of water within the limitation of rock and soil characteristics of the region and its seismicity.

( Page 154 ; Para vii )

69. Power should be treated as industry in the region, and bulk transmission outside the region can become a substantial source of revenue for some of the State/UT of the region, which would otherwise have no income generation for sustaining growth. Further planning for the Power Sector will have to keep this possibility in view.

(Page 155 ; Para ix )

70. Transmission and distribution losses in the NER are quite higher. With the steeply increasing cost of power generation, it may possibly be more remunerative to invest more for transmission and distribution so as to reduce T&D losses.

( Page 157 ; Para xii )

71. Greater improvement of technological capabilities and R&D support for development of new design for equipment may be taken up in the 7th Plan. Power Engineers Training Society of India should establish a Regional Training Institute in the Region.

( Page 158 ; Para xiii )

72. The programme of Rural Electrification should primarily address itself to the task of lift-irrigation as enough surface-water resources are available in the valley for raising of multiple crops besides setting up of small industries with locally available raw materials.

( Page 158 ; Para xiv )

73. For the success of RRE programme, extensive data collection and documentation works, technical research and development, economic researches and socio-economic researches may be undertaken and manpower may be trained for implementation, operation and maintenance of RRE schemes.

( Pages 160 ; Para 16 )

74. Besides the livestock waste, the region abounds in agro-waste, forest-waste and plants like water hyacinth which provide raw material for bio-gas production. The technologies which are available from the school of Applied Research, Sangli, IIT and other institutions could provide an answer to many remote areas in the North-East.

( Page 161 ; Para 18 )

75. The present parameters of assistance for institutional funding for alternative (RRE) energy systems either from REC or the Department of Non-Conventional Energy may have to be reviewed and other mechanism for undertaking pilot projects may have to be evolved.

( Page 162 ; Para 20 )

76. State/UTs may consider setting up of a specific agency/corporation to take up RRE projects so that a big programme could be launched on commercial level and benefit of institutional finance availed.

( Page 163 ; Para 23 )

Flood Control.

77. Brahmaputra Board may develop working arrangements with a host of agencies including governments of the State/UTs in the region, which are directly or indirectly connected with either causes which leads to floods such as deforestation, jhuming etc. or work in connection with flood control.

(Page 151 ; Para 1 )

78. It should be carefully considered by concerned experts whether a series of storage reservoirs on all major tributaries of Brahmaputra can be built primarily for flood moderation, their use for electricity generation or irrigation being an accompanying benefits. The impliciting of such storage on the pronenes to earth quake and the Standards and even the concept of safety which under lie the design need a fresh review in such areas.

(Page 171 ; Para 3 )

79. New technologies will have to be evolved for taking up large scale afforestation programmes in very rugged terrain and in simation where labour is scarce. Prospects of aerial seeding need to be fully explored.

( Page 172 ; Para 6 )

80. Flood warning system may be further streamlined both for Brahmaputra and Barak basins.

( Page 172 Para 7 )

81. The organisation responsible for providing immediate relief should have Bailly Bridge Spans, boats, motor launches etc. for quick action instead of looking for such equipments at last moment and also identify strategic points both in flood chronic areas as well as marginal areas from where the flood fighting and relief measures could be launched.

( Page 173 ; Para 8 )

Minerals and Mining:

82. Limestone, coal and ceramic raw materials constitute the main mineral resources and perspective planning as well as medium-term planning of their development is necessary.

( Page 177 ; Para 8(i) )

83. A regional institutional framework should be developed to ensure detailed exploration and proving of resources of promising mineral deposits.

( Page 178 ; Para 3 )

84. State Directorates of Mining may be developed and strengthened to ensure early completion of mineral prospecting and framing and enforcement of regulation regarding minor minerals.

( Page 178 ; Para 6 )

85. A professional organisation or similar services under an existing regional body may be developed for advising the State/UTs in regard to formulation of area development plans which could integrate exploitation of minerals with other economic activities required in the area.

( Page 180 ; Para (f) )

Industries:

86. The focus of industrial development should be on upgradation of technology, better utilisation of assets, promotion of efficiency and removal of the infrastructural constraints effecting the growth of industry.

( Page 185 ; Para (ii) )

87. Industrial surveys and techno-economic feasibility studies for semi-mechanised bricks, cement, electronics, paper cement substitutes etc and study on special industrial cost in respect of these prospective industries should be undertaken.

( Page 186 ; Para (ix) )

88. Ten-year perspective plan for cement to raise the installed capacity to 3.2 million tonnes by 1990 should be taken.

( Page 186 ; Para (xi) )

89. Single window servicing of entrepreneurs is vital to growth of industries in an area like North East where entrepreneurs have to face special difficulties and handicaps. A consortium of all concerned organisations/agencies may be formed in each State/UT so that all the problems of entrepreneurs could be tackled at one forum.

(Page 187 (i) ; Para (xiv) )

70. A regional industries corporation may be established to take up such industries where raw materials are found in one State/UT but the use of the end product is essentially in another State/UT or in the entire region or even outside the region.

(Page 187 ; Para (xv) )

#### Small Scale Industries:

91. A comprehensive survey of resource potential of the region by adopting modern techniques like landsat imageries and actual field surveys has to be undertaken to prepare a dependable data base which is the first pre-requisite for formulation of any plan for development of SSI in the region. These surveys may be sponsored by the NCC.

( Page 205 ; Para (i) )

92. To increase the level of productivity, specially in case of rural and cottage industries, use of appropriate technologies may be made on Gujarat model.

( Page 206 ; Para (iii) )

93. Growth-centre based approach for development of SSI as suggested by National Committee on Development of Backward Areas should be adopted. For development of Infrastructural facilities, a promotional scheme for a selected growth centre in each of the non-industry district may be taken up.

( Page 206 ; Para (viii) )

94. For motivation and training of small entrepreneurs a regional institute more or less on the lines of the National Institute of Intrepreneurship & Small Business Development may be set up in collaboration with the existing organisations and the State Corporations. The managerial courses, instead of being oriented only towards skill formations, as at present,

should be made more relevant to marketing techniques and product and process oriented. The scheme should be funded jointly by IDBI, Nationalised Banks, NETCO and NEC.

(Page 207 ; Para (ix )

95. A consortium approach for procurement and distribution of critical raw material at the regional level may be considered. The NEC may consider constituting a regional body for this purpose and also sharing a part of the expenditure on the implementation of the scheme.

(Page 207 . Para ( <sup>ix</sup>xi )

96. To reduce financial strain on the SSI Units, a subsidy to the extent of 25 percent of the annual wage bill may be provided for the first five years.

(Page 203 ; Para (xv )

97. A Regional Testing Centre and a product and process development centre should be set up jointly by DC(SS1) and NFC.

( Page 209 ; Para (xx )

98. In addition to various programmes taken up by various agencies NFC has taken a programme of development of 1000 entrepreneurs every year. The entrepreneurs so trained would require post training assistance of trained hands at various stages like project formulation plant installation, management, marketing etc. At the rate of 4 persons per entrepreneur, it is estimated that another 20,000 personnel will be required.

(Page 210; Para 31 )

99. It is considered desirable as well as essential to motivate the artisans/craftsman trained under TRYSEM to develop skill and to improve trade of TRYSEM trainees. Therefore, short entrepreneurial development programme for the TRYSEM trainees should also be considered.

(Page 211, Para 32 )

#### Sericulture

100. Two large size silk weaving units each with 30-40 looms for production of silk material from the yarn produced locally should be set up. The location may be decided on the basis of local production and other economic considerations.

( Page 216 ; Para (iii )

101. An integrated Reeling and Twisting unit with modern reeling facilities capable of producing higher grade of silk with a capacity of using about 35,000 kgs of raw silk per annum should be set up. (Page 217, Para iv )
102. A regional seed cocoon market complex to cater to the need of all the constituent units should be set up at a Central location. ( Page 217 ; Para v )
103. One or two villages in all the silk producing areas of the region with local rearers should be adopted and all necessary facilities for producing of cocoons for seed be provided to selected rearers. (Page 217, para vi)
104. A comprehensive programme covering various aspects of sericulture from plantation to weaving and marketing at regional level has become essential in view of the fact that sericulture, as a profession, is mostly confined to the weaker sections of the society. The Central Silk Board should play a more positive role in the development of sericulture, especially muga-culture in this region. Alternatively NEC should set up a Regional Corporation to implement the programme. (Page 218 ; Para 10 )
105. Oak Tassar has prospects particularly in Arunachal Pradesh and Manipur. The rearing system should be stabilised. The Central Silk Board should take a scheme for research in important aspects of Oak tassar plantation, rearing, reeling etc. (Page 214 ; Para 2/3 )
106. A regional programme for organising training for the personnel engaged in this sector in different disciplines in states may be taken up so that proper leadership is created for future growth of the industry. ( Page 217 ; Para (vii) )

Transport:

107. The operation of road, rail, water transport, ropeways, helicopter and vayudoot services should be so planned that the timing of journey at the arrival/departure



points are so connected that a net work of transportation system is developed in which rail/road transport may provide the main net work and complementary facility are offered by other mode of transportation for the benefit of users.

(Page 220 ; Para 5 )

108. The requirement of roads in the NER is greater than rest of the country as the region has to depend on the roads net work for the movement of goods and passengers within the region. A master plan for the whole region may be prepared within the framework of which new schemes could be taken up for consideration and sanction depending on priority and the resources.

(Page 221 ; Para 8 )

109. The State PWDs in the NER are suffering from lack of road making equipment. Timely supply of such machinery may be ensured.

( Page 221 ; Para 9 )

110. To derive full benefits from the expenditure incurred on road construction, the maintenance of existing roads should be done efficiently. The minimum requirements of fund for maintenance in this region will be Rs.10,000/- per annum per km for single lane of surfaced roads and nearly Rs.12,000/- per annum per km for single lane of un-surfaced roads. These may be considered while formulating plan/budget.

(Page 221 ; Para 10 )

111. Due to difficult terrain of this region, construction, improvement and maintenance of the roads are quire difficult. Considering the present work load vis-a-vis the present set up of the organisations, it has been felt desirable to expand and strengthen the PWD organisations in States/UTs. and BRO.

( Page 222 ; Para 11 )

112. For maintaining the roads constructed/improved through NEC Plan it is necessary to earmark separate funds. It may be necessary to finance the maintenance of such roads out of the Central Road Fund through Ministry of Shipping and Transport as is being done in the case of the National Highways.

(Page 222 ; Para 12 )

113. The Lumding-Badarpur (Hill) section may be converted into broad gauge immediately or work as an alternative route taken up immediately.

(Page 223 ; Para 15 )

114. The recommendations made by the Working Group set up by Railway Reform Committee may be implemented by drawing an action orientied plan.

( Page 223 ; Para 16 )

115. The study undertaken by Transport Research Division finds justifiable scope for a major thrust on Inland Water Transport development of the river Brahmaputra and have proposed an investment of Rs.291 crores. A small Expert Committee may be set up in region for development of IWT and frame actual schemes for implementation by CIWTC and Assam State IWT.

(Page 225 ; Para 18 )

116. Vayudoot should fulfill its role by extending its services to a larger number of district, commercial and administrative headquarters of remote and inaccessible areas.

(Page 225 ; Para 19 )

117. The State and UT Governments may consider introduction of helicopter services for transportation of government, medical and other personnel and also for passenger service.

(Page 225 ; Para 20 )

118. It is of most importance in some of the inaccessible and remote areas of NER that ropeways for carrying freight and even passengers should be developed.

(Page 226 ; Para 21 )

119. Appropriate guidelines may be evolved for avoiding over lapping and duplication in transportation of goods and passengers between road and rail services.

(Page 226 ; Para 22 )

Communication:

120. Postal services may be improved and strengthened in the region by suitable strengthening and reorganisation of the present set up.

( Page 253 ; Para 7 )

121. A postal training centre may be established in the NE Region. It could be a joint training facility for both postal and telegraph staff.

(Page 256 ; Para ( h )

122. The Seventh Plan programme for development of telecommunication in the region should aim at providing telephone connections practically on demand by 1987.

(Page 256 ; Para ( k )

123. Telegraph services in the region should be modernised by using stores and forward telegraph (SFT) System.

(Page 257 ; Para ( n )

124. Integrated digital net work should be provided in all States/UTs of the region by the end of Seventh Plan excepting Assam, which may be fully covered in the subsequent plan.

( Page 257 ; Para ( r )

125. For better long distance rural tele-communication all overhead links/trunk circuits on earlier channel should be progressively replaced by radio links.

(Page 257 ; Para ( s )

#### Manpower Development:

126. Development of manpower in the primary sector should be accelerated by introducing new courses in primary activities such as agriculture, animal husbandry, ecology and Jhum cultivation, mining etc. Present tempo of development of technical and health manpower should be accelerated.

( Page 280 ; Para ii )

127. It is necessary to establish/strengthen manpower cells in States/UTs so that the requirement of manpower can be estimated and projected for formulating manpower development plans and matching them with overall developmental strategies. Direct manpower planning and employment generation cells may be set up for achieving adequate coordination and operational efficiency.

(Page 280 ; Para iv )

128. More avenues for vocational training of women need to be opened up.

( Page 281 ; Para v )

129. Employment Exchanges may be expanded and modernised for the benefit of the weaker sections and physically handicapped persons and providing career guidance services.

(Pages 281 ; Para vi )

130. Employment Exchanges should be equipped with latest information on financial assistance from banks, availability of raw materials, work sites, machinery and equipment, marketing channels, training facilities for skill development etc. for rendering efficient career guidance and motivation services to the persons interested in self employment.

(Pages 275 ; Para 14 )

131. Education and training facilities in Electronics, Telecommunication Engineering, Computer Science, Food Technology etc. will have to be accorded priority at diploma level programmes of the polytechnics and degree level programmes of the Engineering Colleges. At the Craftsmen level, self-employment generating programmes like (a) Scooter and Motor Cycle Service Mechanic, (b) Auto Electricians (c) General Electrician (d) TV and Radio Service mechanic (e) Garment manufacturing and (f) retreading of tyres etc. may be accorded priority.

(Page 278 ; Para 17 )

Health :

132. States may devise ways and means in the form of incentives, provision of quarters and other amenities for posting doctors to rural areas.

(Page 286 ; Para 10 )

133. States and private enterprises may be encouraged for drug manufacturing.

( Page 287 ; Para 12 )

134. The present Food Laboratory of the Government of Assam may be upgraded by the augmentation of staff, equipments and space with facilities to impart teaching and practical training to the staff sent by other States/UTs.

(Page 289 ; Para 17 )

135. The region is very much in dearth of Post Graduate degree holders. This may be solved in two ways: (1) Establishment of Regional Medical Institute in the NER with facilities to undertake Post Graduate Teaching in Medical subjects (ii) By NFC sponsoring the candidates to the post Graduate Institutes within the country.

( Page 290 ; Para 18 )

136. In the North Eastern Region, primary health care should be accorded high priority in the programme for development of health and medical facilities during the Seventh Plan period. In a wider context, the programme of primary health care facilities should be co-ordinated with the Minimum Needs Programme so that there may be an integrated development of health and other facilities having bearing on general health like nutritional measures, water supply and sanitation, housing etc. It will call for proper inter-sectoral linkages. (Page 295 ; Para i )

137. For better medical coverage, the population health centre ratio be fixed at one centre for every 2000 persons in the hill areas as against the existing norms of one centre for 3000 population; in view of the difficult terrain and sparse population. (Page 295 ; Para ii )

138. In the plains areas one fully equipped PHC should be available at each Block headquarters which besides providing normal health coverage, should also supervise the work of a cluster of 7/8 Sub-Centres. (Page 295 ; Para iii )

139. All the District Hospitals/Dispensaries in the States/UTs of the region should have improved facilities including specialised units for dental care, mental care, diabetes and coronary heart diseases as well as rehabilitation centres for the physically handicapped. Each individual State/Union Territory should formulate specific schemes for developing these facilities under the Seventh Plan. (Page 295 ; Para iv )

140. A scheme of "Bare Foot Doctor" should be introduced in the far flung hilly areas and other inaccessible areas. The Chittaranjan Mobile Health Unit model which is

in operation in J&K should be considered for adoption with modifications, if necessary, to suit local conditions in this region. A similar scheme has been experimented in Arunachal Pradesh and its performance may be reviewed.

(Page 296 ; Para v )

141. In order to remove the shortage of doctors, nurses, ANMs and other para-medical staff, the existing training facilities should be augmented substantially. The indigenous Dai System needs to be strengthened by arranging training locally.

( Page 296 ; Para vi )

142. Special programmes should be launched for the control and eradication of communicable diseases as well as diseases which have high incidence in the Himalayan and Sub-Himalayan region such as Goitre and Gastro-intestinal diseases.

( Page 296 ; Para vii )

143. In view of this region's record of relatively high infant mortality rate and inadequate preventive services like immunisation and distribution of nutrition supplements etc., mass immunisation programmes covering BCG, DPT, Polio, Measles and Tetanus vaccines should be launched. At least 75% of the target group should be covered under the nutrition programmes as part of the ICDS by the end of the Seventh Plan.

(Page 293 ; Para 30 )

144. As envisaged by the National Health Policy, a regional scheme needs to be formulated for the establishment of a chain of sanitary-cum-epidemiological stations to identify, plan and provide preventive, promotive and mental health care services.

(Page 296 ; Para ix )

145. Since the NE Region is endowed with vast herbal resources and medicinal plants, a drug manufacturing unit in the public sector should be set up within the region. At the same time, a mechanism for supply/delivery of drugs in remote and inaccessible areas of the region should be developed.

(Page 297 ; Para x )

146. A Regional Drug Control Laboratory should be set up in the region with adequate facilities for food analysis.

( Page 297 ; para xi )

147. The growth rate of population in the NE Region is much above the all India growth rate, a fact that justifies taking up adequate fertility reduction measures. Motivation of the people should form the crucial part of the Family Welfare Programme and arrangements for free sterilisation backed by incentive measures should form the essential components of a massive drive. Greater use should be made of 'Anganwadi' workers for educating.

(Page 297 ; Para xii )

#### Banking Facilities:

148. Credit-deposit ratio is very low in the region. The Commercial Banks should step up their credit activities in the region and State/UT Governments should provide necessary infrastructural facilities to Banks and RRBs. One of the steps for increasing credit-deposit ratio is to operate departmental activities on commercial lines by floating various State-run Corporations in the region, which are still running it on departmental lines financed by budgetary grant.

( Page 302 ; Para 2 )

149. All the State/UT Governments should prepare developmental plans (like IRDP) for each block so that the lead banks can prepare banking plans.

(Page 305 ; Para 5 )

#### Urban Development & Migration :

150. Rapid modernisation of agriculture and its commercialisation in the valley lands will lead to absorption of a much larger number of people in agricultural activity and stop the need to migrate to urban area.

( Page 318 ; Para c )

151. The welfare facilities like drinking water, housing, medicare etc. will have to be expanded in rapidly growing

urban areas on a high priority basis.

( Page 319 ; Para 26 )

152. Major towns and cities should have active Housing cooperatives which should provide housing for all classes of Urban dwellers.

( Page 319 ; Para 26 )

153. The physical and psychological feeling of isolation of the region with the rest of the country should be removed so that migration depends on economic necessities rather than on any other factor.

( Page 319 ; Para 26 )

154. The danger of small tribal communities breaking up by contact with outside forces is real and not fancied. The Working Group, therefore, recommends that the system of having a census every year in specified areas of the North-East should be adopted as an urgent and priority measure. The Working Group further recommends that the format of the census should be devised with a view to bring out all the relevant data regarding social, economic and cultural aspects of the changing profile of the communities and tribes residing in such specified area.

(Page 321 ; para 27 )

155. The North East has 55 major tribes and numerous clans and sub-tribes. There is a great danger of permanent loss and extinction of a rich and irreplaceable store-house of culture. The least that can be done is to press into services modern technologies for recording as authentically as possible by means of audio-visual documentation of this rich tribal cultural life. (Page 321 ; Para 28 )

#### Education:

156. One out of every 20 primary schools should be developed as a model school with special emphasis on teaching of Science and Mathematics. In each model school there should be a library and a book bank;

(Page 328 ; Para 1 )



157. Wastage percentage should be reduced by at least 10%. The percentage of trained teachers (at primary, middle and high school levels) should be raised by at least 50% by the end of the Seventh Plan. Mid-day Meals Programme may be implemented as a means to check the tendency towards drop-out;

(Page 328 ; Para iv )

158. The teachers' training institute in the States should be strengthened. The administrative apparatus for monitoring and supervising teaching system needs to be strengthened so as to reduce absenteeism among teachers serving and provide housing accommodation to teachers serving in the interior areas.

( Page 329 ; Para vi )

159. Existing arrangements for vocational and technical training should be strengthened and more students should be sponsored for training in those fields which are specifically required in this region. Besides, more women should be given vocational education enabling them to undertake gainful economic activities.

( Page 329 ; Para vii )

#### Civil Supply:

160. In view of the absence of railways in many parts of the North Eastern Region, the Out Agency system as recommended by the Working Group set up by the Railway Reforms Committee should be made operative.

(Page 337 ; Para ii )

161. The public distribution system should be uniformly a three-tier one - apex body at the State level, wholesale organisation at the District level and the retail outlets. The entire structure should function in an integrated manner as a single chain of distribution.

( Page 338 ; Para iii )

162. In the remote tribal areas, the PDS should not only arrange supply of essential consumer goods but also all other requirements of the local people like inputs and

also try to provide marketing support for the local products.

( Page 338 ; Para v )

163. The fair price shops in the interior areas of the region have to maintain stocks of essential commodities for comparatively longer duration. This results in blocking of capital for longer period. Besides, in view of the sparseness of population the number of card holders for each FPS being low the fair price shops are not viable. Therefore, the fair price shops in these area should be given financial support by way of interest subsidy, managerial subsidy etc.

( Page 338 ; Para vi )

164. Since lack of adequate storage facilities poses major hurdle in the proper functioning of the public distribution system, storage capacity inside the region should be augmented.

( Page 339 ; Para viii )

165. Storage facilities in the rural areas should be sufficiently improved which will not only ensure availability of essential commodities but would also reduce loss during storage.

( Page 339 ; Para ix )

Science and Technology:

166. The NERCST may establish close linkage with the various research laboratories and academic institutions in NER and function as the focal point for generating Science and Technology manpower required for the over-all developmental need of the region as a whole.

( Page 344 ; Para i )

167. A close coordination with specialised government departments such as DST, DNES, DOE, ICAR, CSIR etc. may be evolved for setting up model experiments/demonstration projects in important areas.

( Page 344 ; Para ii )

168. To assess the wealth and potential of natural resources of the NER, the NEC Secretariat may establish a

consortium of survey organisations.

(Page 344 ; Para ( iv ) )

169. Sciences Museum/Centres may be established in each constituent unit to develop a basis culture among the educated people about modern science and technology. Development and familiarisation at all levels with the basic scientific thoughts through audio - visual methods and direct observation method.

(Page 345 ; Para ( vi ) )

Implementation of Plan and Programmes:

170. Keeping in view that the present data collection machinery is very weak in region, the Working Group recommends

- (a) the existing set up of National Sample Survey may be strengthened in the region so that the Socio-economic data required for plan formulation can be collected on a systematic and regular manner and made available to the States/UTs on time..
- (b) the existing Planning and Evaluation set-up in the States/UTs may be strengthened to enable it to take on the task expected of it more efficiently.
- (c) a well-thought out programme of training the personnel involved in such task on a permanent basis may be evolved and implemented at the regional level for which NEC may take the initiative.

( Page 353 ; Para 6 )

171. For co-ordination at various levels as also for monitoring of actual implementation of all Central Sector and Centrally sponsored schemes in this region, the regional office of PEO (Planning Commission) should have a separate cell in which besides, representatives of concerned Ministries of Government of India, the Director (E&M), NEC should also be associated. Whatever direction/comments that the required to be communicated to the implementing agencies of these programmes should be sent by the Planning Commission directly with endorsement to the Council Secretariat. Besides, a periodical review may be quarterly or half-yearly of these programmes should be undertaken in which besides, Planning Commission and the concerned Central Ministries, represen-

tatives of the State Governments and of the NEC Secretariat may be associated. These review meetings should be held in the Constituent Units of North Eastern Region by rotation.

( Page 354 ; Para f )

172. In regard to the NEC Plan schemes, there should be Regional level Review Committee, constituted with representatives of the State Governments/UT administrations, headed by the Planning Adviser, NEC. The local heads of concerned Central Government Organisations like ICAR, CSIR, All India Institute of Medical Sciences, Central Silk Board, CWC etc. should also be associated with the proposed Committee.

( Page 354 ; Para ii )

173. What is most important in the matter of coordination and effective implementation is that, the States/UTs have to have a machinery at different levels at the State/UT level, District level and Block level. The composition of these bodies would largely be a matter for the State Governments/UT Administrations.

(Page 354 ; Para iii )

174. The Planning Commission might like to devise some machinery to ensure adequate development of all the regions and communities and tribes. The Working Group, therefore, recommends that a Special Report may be prepared on the status of development of such under-developed areas or communities or tribes from time to time.

(Page 355 ; Para 8 )

175. Regarding personnel policies for the North Eastern region, the Group would like to mention that (i) the recommendations accepted are not sufficient to attract higher level personnel from various corners of the country (ii) Service conditions of Scientific and technical personnel who may not have all India transfer liability needs immediate attentions and (iii) The service conditions of tribal people who go outside the region may have to be reviewed to enable better interaction and mobility.

( Page 356 ; Para 10 )

NO.PC(P)1/7/1/NEC/83-MLP  
Planning Commission  
(MLP Division)

...

Yojana Bhavan, Sansad Marg,  
New Delhi-110001.

Dated the 11th October, '83

OFFICE MEMORANDUM

Sub: Working Group on the Development of North Eastern  
Region during the Seventh Five Year Plan, 1985-90.

It has been decided to set up a Working Group for formulation of approach, strategy and priorities for the development of the North Eastern Region during the Seventh Five Year Plan 1985-90. The composition of the Working Group will be as follows :-

- |     |   |          |
|-----|---|----------|
| (1) | Shri P.H.Trivedi,<br>Secretary,<br>North Eastern Council,<br>Shillong.  | Chairman |
| (2) | Smt.P.P.Trivedi,<br>Chief Secretary,<br>Govt.of Meghalaya,<br>Shillong.   | Member.  |
| (3) | Dr.Bhupender Singh<br>Adviser(SP)<br>Planning Commission,<br>New Delhi.   | "        |
| (4) | Dr.Virendra Kumar,<br>Consultant (Hill Areas)<br>Planning Commission,<br>New Delhi.                                 | "        |
| (5) | Dr.B.D.Sharma,<br>Vice Chancellor, NEHU<br>Shillong.  | "        |
| (6) | Dr.B.N.Tandon,<br>Head of the Department<br>All India Institute of<br>Medical Sciences, New Delhi,                  | "        |
| (7) | Shri D.B.Chosh,<br>Dy.Director General<br>Geological Survey of India,<br>North Eastern Region,<br>Shillong -793003. | "        |

(8) A representative of Ministry Of Agriculture	Member
(9) A representative of Min.of Civil Supplies	"
(10) A representative of Deptt. of Education.	"
(11) A representative of Min.of Shipping & Transport.	"
(12) A representative of Min.of Communication	"
(13) A representative of Min.of Industry	"
(14) A representative of Min.of Information & Broadcasting.	"
(15) A representative of Min.of Commerce	"
(16) A representative of Min.of Rural Development	"
(17) A representative of Deptt. of Power	"
(18) A representative of Deptt. of Irrigation.	"
(19) A representative of Min.of Works and Housing.	"
(20) A representative of Min.of Finance .	"
(21) A representative of Railway Board	"
(22) Chief Secretary, Assam	"
(23) Chief Secretary, Manipur	"
(24) Chief Secretary, Nagaland	"
(25) Chief Secretary, Tripura	"
(26) Chief Secretary, Arunachal Pradesh	"
(27) Chief Secretary, Mizoram	"
(28) Shri L.C. Jain Industrial Development Service I-1, Kanchanjanga 18, Barakhamba Road, New Delhi.	"

(29) Shri I.P.Gupta,  
Joint Secretary  
Ministry of Home Affairs,  
New Delhi.

Member Secretary

2. The Group may co-opt any official or non-official as additional member.
3. Terms of reference of the Group will be as follows:-
  - i) To review the on-going programmes of the Central Plan, NCC Plan and State/UT Plans and pinpoint the shortcomings, lacunae etc. in these programmes.
  - ii) To work out a strategy for the accelerated development of the region during the Seventh Five Year Plan period consistent with ecological, socio-cultural and other special conditions of the region.
  - iii) To suggest definite programmes in the identified sectors of development.
  - iv) To suggest coordinated and effective implementation of plans and programmes.
4. The Planning Commission had in January 1983 constituted the following four Working Groups on the North Eastern Region. The present Working Group should take into consideration the recommendations of these Working Groups while making their recommendations.
  - 1) Working Group on Personnel Policy.
  - 2) Working Group on Legal System.
  - 3) Working Group on Community Participation.
  - 4) Working Group on Supplies, Services and Works.
5. TA/DA of official members of the Group will be paid by their respective Ministries/Departments. TA/DA of non-official members who will be entitled to draw TA/DA at rates admissible to grade -I officers of the Central Government will be paid by the Planning Commission.

6. The group may finalise its report within six months.

Sd/-

( K.C. Agarwal )  
Director (Administration).

To

1. The Chairman of the Working Group.
2. All members of the Working Group.
3. Accounts-I Branch, Planning Commission.
4. Pay and Accounts Officer, Planning Commission.
5. I.F.A. Cell, Planning Commission.
6. P.C. Division, Planning Commission.

Copy forwarded for information to :-

1. Deputy Chairman
2. Members
3. Secretary

Sd/-

( K.C. Agarwal )  
Director (Administration)

.....



NO.PC(P)1/7/INEC/83-MLP  
Government of India  
Planning Commission

Yojana Bhavan, Sansad Marg,  
New Delhi, 110001.

Dated, the 13 July, 1984.

OFFICE MEMORANDUM

Subject : Working Group on the Development of North Eastern Region during Seventh Five Year Plan 1985-90.

In continuation of this Office O.M. of even number dated 11-10-1983 intimating the constitution of the above mentioned Working Group, it has been decided to nominate Shri K. Vasudevan, Joint Secretary (NE), Ministry of Home Affairs, New Delhi, as Member-Secretary of the Working Group in place of Shri I.P. Gupta, who has taken over charge as Chief Secretary, Government of Tripura w.e.f. 31.4.1984. Shri I.P. Gupta will continue to be the member of the Working Group.

Mr. Virendra Kumar who has since relinquished charge as Consultant (Hill Areas), Planning Commission will continue as non-official member of the Working Group.

Sd/- K.C. Agarwal  
Director (Administration)

To

1. The Chairman/Members of the Working Group.
2. Accounts I Branch, Planning Commission.
3. Pay & Accounts Officer, Planning Commission.
4. IPA Cell, Planning Commission.
5. P.C. Division, Planning Commission.

Copy for information to :-

1. Shri K. Vasudevan, Joint Secretary (NE), Ministry of Home Affairs, New Delhi.
2. Shri I.P. Gupta, Chief Secretary, Government of Tripura, Agartala.

Sd/- (K.C. Agarwal)  
Director (Administration)

.....

NO. NFCEP/XII-2/83  
NORTH EASTERN COUNCIL SECRETARIAT  
SHILLONG

DT. 18th July, 1984.

OFFICE MEMORANDUM

In continuation of Planning Commission's O.M.No. PC(P)/7/1/NFC/83-MLP dt. 11.10.83 regarding constitution of Working Group on Development of N.E. Region during the 7th Plan, it has been decided by the Chairman to coopt following as members of this committee :

1. Dr. D.N. Borthakur, Member  
Director, ICAR Research  
Complex for NE Hill Region,  
Shillong.
2. Dr. P.C. Bora,  
Vice Chancellor,  
Assam Agriculture University,  
Jorhat.

In addition Dr. B.C. Podder, Deputy Director General GSI, Shillong also included as member in this Committee in place of Dr. B. Ghosh, Deputy Director General, GSI who has passed away in a road accident.

Sd/- P.H. Trivedi  
Secretary,  
North Eastern Council Sectt.,  
Shillong.

Copy to :-

1. The Chairman of the Working Group.
2. All Members of the Committee.
3. Accounts-I Branch, Planning Commission.
4. Pay & Accounts Officer, Planning Commission.
5. IFA Cell, Planning Commission.
6. PC Division, Planning Commission.

Sd/- (Pratap Narain)  
Director (E&M)  
North Eastern Council Sectt.,  
Shillong

NO. PC(P)1/7/1/NEC/B3-MLP  
Government of India  
Planning Commission

Yojana Bhawan  
Parliament Street  
New Delhi.

Dated the 25th January, 1985  
31

OFFICE MEMORANDUM

It has been decided to extend the term of the Working Group on the Development of North Eastern Region during the Seventh Five Year Plan, 1985-90, set up vide this Office O.M. of even number dated the 11th October, 1983 upto the end of February, 1985.

Sd/- (K.C. Agarwal)  
Director (Administration)

To 1) The Chairman of the Working Group  
11) All the Members of the Working Group.

Copy to :-

1. Chief Secretaries of the States/Union Territories of North Eastern Region.
2. Shri Rajamani, Joint Secretary, Prime Minister's Office, New Delhi.
3. Shri Prem Kumar, Additional Secretary, Cabinet Secretariat, New Delhi.
4. Special Secretary (NE), Ministry of Home Affairs, New Delhi.
5. SA to Deputy Chairman, Planning Commission, New Delhi.

6. P.Sg to all Members of the  
Planning Commission,  
New Delhi.
7. Secretary,  
Planning Commission,  
New Delhi.
8. Pay and Accounts Office,  
Planning Commission,  
New Delhi.
9. Accounts I Branch,  
Planning Commission,  
New Delhi.
10. Administration I Branch,  
Planning Commission,  
New Delhi.
11. P.C. Division,  
Planning Commission,  
New Delhi.

( K.C. Agarwal )  
Director (Administration)

NO. PC (P) 7/7/2/NEC/83-MLP  
Planning Commission  
(MLP Division)

Yojana Bhavan, Sansad Marg,  
New Delhi-110001.

Dated the November 28, 1983.

OFFICE MEMORANDUM

The Working Group on the Development of North Eastern Region during the Seventh Five Year Plan 1985-90 set up vide Planning Commission O.M. No. PC (P) 1/7/1/NEC/83-MLP, dated 11 October, 1983 under the Chairmanship of Shri P.H. Trivedi, Secretary, North Eastern Council, Shillong in its first meeting held on 19.11.1983 at New Delhi has constituted a sub-Group on "Land utilisation and Allied Activities in the North East". The Chairman of this Sub-Group would be Shri R.K. Ahuja, Chief Secretary, Arunachal Pradesh, Itanagar. The other members of the Sub-Group are :-

- (1) Shri I.P. Gupta, Joint Secretary (NE), Ministry of Home Affairs, New Delhi.
- (2) Shri Harbans Singh, Agriculture Commissioner, Deptt. of Agriculture & Cooperation, Ministry of Agriculture, New Delhi.
- (3) Shri K.S. Menon, Principal Secretary (Govt.), Govt. of Manipur, Imphal.
- (4) Dr. Virendra Kumar, Consultant (Hill Areas), Planning Commission, New Delhi.
- (5) Shri B.B. Ghosh, Dy. Director (General), Geological Survey of India, North Eastern Region, Shillong-793003.
- (6) Shri S.P. Vishnoi, Joint Secretary (IRI), Ministry of Rural Development, Krishi Bhavan, New Delhi.
- (7) Shri R. Ramaswamy, Member (I&R), CWC.
- (8) Representative of Commerce.
- (9) NEC Adviser (Agriculture)-Convenor.

2. The Sub-Group may co-opt any official or non-official as additional member.

3. The terms of reference to the Sub-Group will be as follows :-

- (i) To study the existing land utilisation pattern with special reference to community ownership of land, shifting cultivation and other aspects relevant to the development of agriculture and allied activities and ecology and environment keeping in view the Socio-economic and cultural characteristics of the population; and
- (ii) To suggest suitable strategies/action plans for development of agriculture, horticultural and economic plantations, forestry, social forestry, pasture land, animal husbandry, bee-keeping and other programmes for promoting human welfare and ecological restoration on an integrated Watershed management basis in the North-East.

4. TA/DA of official members of the Group will be paid by their respective Ministries/Departments. TA/DA of non-official members who will be entitled to draw TA/DA at rates admissible to Grade-I officers of the Central Government will be paid by the Planning Commission.

5. The Group may finalise its report within 4 months.

Sd/- (N.L. Meena)  
Deputy Adviser (NEC).

To

1. The Chairman and Members of the Sub-Group.
2. Accounts I Branch, Planning Commission.
3. Pay & Accounts Officer, Planning Commission.
4. I.F.A. Cell, Planning Commission.
5. P.C. Division, Planning Commission.

Copy to :-

1. The Chairman of the Working Group.
2. The members of the Working Group.

.....

NO.PC(P)1/7/1/NEC/83-MLP  
Planning Commission  
( MLP Division )

.....

Yojana Bhavan, Sansad Marg,  
New Delhi-110001.

Dated the November 28, 1983.

OFFICE MEMORANDUM

The Working Group on the Development of North Eastern Region during the Seventh Five Year Plan 1985-90 set up vide Planning Commission O.M.No.PC(P)1/7/1/NEC/83-MLP, dated 11 October, 1983 under the Chairmanship of Shri P.H. Trivedi, Secretary, North Eastern Council Shillong in its first meeting held on 19.11.1983 at New Delhi has constituted a Sub-Group on "Industry, Handloom and Sericulture in the North East". The Chairman of this Sub-Group would be Shri I. Longkumar Chief Secretary, Nagaland. The other members of the Sub-Group are :-

- (1) Shri L.C.Jain, Industrial Development Services, I-1, Kanchanjunga 18, Barakhamba, N.Delhi.
- (2) Shri I.L.Gupta, Joint Secretary (NE), Ministry of Home Affairs, New Delhi.
- (3) Shri S.K.Chakraborti, Director, Deptt. of Industry, Udyog Bhavan, New Delhi.
- (4) Shri A.K.Narayan, Dy. Secretary (IRD), Ministry of Rural Development, Krishi Bhavan, New Delhi.
- (5) Representative of Commerce.
- (6) Managing Director, NEHFC
- (7) Managing Director, NFITCO
- (8) Representative of Silk Board.
- (9) Shri J.I.Chaturvedi, Joint Adviser, Planning Commission, New Delhi.
- (10) Deputy Secretary, NEC \_\_\_\_\_ Convenor.

2. The Sub-Group may co-opt any official or non-official as additional member.

3. Terms of Reference :

- (i) To study the present status of the industry, handloom, handicraft and sericulture and identify the various constraints; and
- (ii) To suggest new strategy and programmes for development of these sectors in the region.

4. TA/DA of official members of the Group will be paid by their respective Ministries/Departments. TA/DA of non-official Members who will be entitled to draw TA/DA at rates admissible to Grade-I officers of the Central Government will be paid by the Planning Commission.

5. The Group may finalise its report within 4 months.

Sd/- N.L.Meena  
Deputy Adviser, (N.E.C.)

To

1. The Chairman and Members of the Sub-Group
2. Accounts-I Branch, Planning Commission.
3. Pay & Accounts Officer, Planning Commission.
4. ILFLA Cell, Planning Commission.
5. P.C. Division, Planning Commission.

Copy to :-

1. The Chairman of the Working Group
2. The members of the Working Group.

.....



NO.PC(P)1/7/1/NFC/83-MLP  
Planning Commission  
( MLP Division)

.....

Yojana Bhavan, Sansad Marg,  
New Delhi-110001.

Dated the November 28, 1983.

OFFICE MEMORANDUM

The Working Group, on the Development of North Eastern Region during the Seventh Five Year Plan 1985-90 set up vide Planning Commission O.M.NO.PC(P)1/7/1/NFC/83-MLP, dated 11 October 1983 under the Chairmanship of Shri P.H.Trivedi, Secretary, North Eastern Council, Shillong in its first meeting held on 19.11.1983 at New Delhi has constituted a Sub-Group on "Infrastructure in the North-East". The Chairman of this Sub-Group would be Shri Ramesh Chandra, Chief Secretary, Assam. The other members of the Sub-Group are as under :-

- (1) Shri I.P.Gupta, Joint Secretary (NF), Ministry of Home Affairs, New Delhi.
- (2) Mr. B. D. Sharma, Vice Chancellor, NEHU, Shillong.
- (3) Shri A.K.Biswas, Joint Director, Corporate Planning (CP), Railway Board, New Delhi.
- (4) Chief Secretary, Mizoram.
- (5) Representative, Ministry of Shipping and Transport, New Delhi.
- (6) Shri S.N.Sinha, Secretary, Posts & Telegraphs Board, Ministry of Communications, New Delhi.
- (7) Shri Ajay Prasad, Director, Ministry of Information & Broadcasting, Room No.552, Fifth Floor, Shastri Bhavan, New Delhi.
- (8) Shri T.G.Shandaran, Dy. Adviser, CPHEEO, Ministry of Works & Housing, Nirman Bhavan, New Delhi.
- (9) Shri H.C.Kachhwaha, Deptt. of Power, New Delhi.
- (10) Representative, Ministry of Civil Supply.
- (11) Representative, Deptt. of C.W.C.
- (12) Representative, Deptt. of N.C.C.F.
- (13) Shri C.Vaswani, NEC Adviser (T&C)- Convenor.

2. The Sub-Group may co-opt any official or non-official as additional member.

3. Terms of Reference :

(

(i) To study the existing bottlenecks in the development of Infrastructural facilities such as power, transport, communications, storage etc; and

(ii) To suggest strategy/action plans for infrastructure development for accelerating the pace of development in the north-eastern region.

4. TA/DA of official members of the Group will be paid by their respective Ministries/Departments. TA/LA of non-official members who will be entitled to draw TA/DA at rates admissible to Grade-I officers of the Central Governments will be paid by the Planning Commission.

5. The Group may finalise its report within 4 months .

Sd/-

(N.L.Moena)  
Deputy Adviser (NFC)

To

1. The Chairman and members of the Sub-Group.
2. Accounts-I Branch, Planning Commission.
3. Pay & Accounts officer, Planning Commission.
4. I .F.A Cell, Planning Commission.
5. P.C. Division, Planning Commission.

Copy to :-

1. The Chairman of the Working Group.
2. The Members of the Working Group.

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NO. PC(2)1/7/1/NEC/83-MLP  
Planning Commission  
( MLP Division )

.....  
Yolana Bhavan, Sansad Marg,  
New Delhi-110001.

Dated the November 28, 1983.

OFFICE MEMORANDUM

The Working Group on the Development of North Eastern Region during the Seventh Five Year Plan 1985-90 set up vide Planning Commission O.M.No.PC(1)1/7/1/NEC/83 MLP dated 11 October, 1983 under the Chairmanship of Shri P.H. Trivedi, Secretary, North Eastern Council, Shillong, in its first meeting held on 19.10.1983 at New Delhi has constituted a Sub-Group on "Social Services in the North East". The Chairman of the Sub-Group would be Shri S.R. Shankaran, Chief Secretary, Tripura. The other members are :-

- (1) Shri I.N. Gupta, Joint Secretary (P), Ministry of Home Affairs, New Delhi.
- (2) Mr. B.H. Sharma, Vice-Chancellor, NEHC Shillong.
- (3) Dr. B.N. Tandon, Head of the Department, All India Institute of Medical Sciences, New Delhi.
- (4) Shri B.N. Sinha, Secretary, Posts & Telegraphs Board, New Delhi.
- (5) Shri T.G. Shankaran, Dy. Adviser, CPEEO, Ministry of Works & Housing, Nilman Bhavan, New Delhi.
- (6) Shri Aiyagari V. Rao, Principal Scientific Officer, Deptt. of Science & Technology, Technology Bhavan, New Mahauli Road, New Delhi.
- (7) Shri S. Satyam, Joint Secretary (Plg), Min. of Education. Convenor.

2. The Sub-Group may co-opt any official or non-official as additional member.

3. Terms of Reference

- (i) To study the present status of social services viz., education, health, drinking water supply, maternity and child health care, family planning and other social infrastructure like manpower development etc.; and
- (ii) To suggest strategies/programmes suiting the local conditions for development or minimum level of social services in the North-East.

4. TA/DA of official members of the Group will be paid by their respective Ministries/Departments. TA/DA of non-official members who will be entitled to draw TA/DA at rates admissible to Grade-I officers of the Central Government will be paid by the Planning Commission.

5. The Group may finalise its report within 4 months.

Sd/- N.L.Meena,  
Deputy Adviser (NTEC).

To

1. The Chairman and Members of the Sub-Group.
2. Accounts-I Branch, Planning Commission.
3. Pay & Accounts Officer, Planning Commission.
4. I.F.A. Cell, Planning Commission.
5. P.C. Division, Planning Commission.

Copy to :-

1. The Chairman of the Working Group.
2. The members of the Working Group.

.....

NO.PC(P)1/7/1/NEC/83-MLP  
Government of India  
Planning Commission  
( MLP Unit )

.....

Yojana Bhavan, Parliament Street  
New Delhi-110001.

August 8, 1984.

Subject : Sub-Group on Development of Social Services  
in the North East.

In continuation of this Office Memorandum of even number dated 11th October, 1983 constituting the above Sub-Group, it has been decided that Shri I.P.Gupta, Chief Secretary, Tripura will replace Shri S.R.Shankaram as Chairman and Shri K.R.Debnath, Project Economist, North Eastern Council will replace Shri S.Satyan as convener of the Sub-Group.

Sd/- N.L.Meena  
Deputy Adviser(NEC).

To

1. Chairman and Members of the Sub-Group.
2. Accounts I Branch, Planning Commission.
3. Pay and Accounts Officer, Planning Commission.
4. I.F.A.Cell, Planning Commission.
5. Plan Coordination Division, Planning Commission.

Copy to :-

1. The Chairman of the Working Group.
2. The Member of the Working Group.

LIST OF BACKGROUND PAPER FOR WORKING GROUP  
ON STRATEGIES FOR DEVELOPMENT OF NORTH EASTERN  
REGION DURING THE SEVENTH FIVE YEAR PLAN.  
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C O N T E N T S

A. PAPERS BY N.E.C. OFFICERS

1.	Area Paper	... Shri N.P.Nawani
2.	Agriculture	... Mr. Ranbir Singh.
3.	Shifting Cultivation	... Shri S.Jagannathan
4.	Horticulture	... Shri S.Sen Choudhury.
5.	Animal Husbandry	... Dr. B.N.Kakoti.
6.	Fishery	... Dr. B.N.Kakoti.
7.	Forestry	... Shri Lalhanzama.
8.	Irrigation	... Shri K.B.Guha.
9.	Flood Control	... Shri K. B.Guha.
10.	Power	... Shri P.K.Deb.
11.	Small Scale Industries	... Shri T.P.Khound.
12.	Sericulture	... Shri T.K.Dewan.
13.	Industries & Mining	... Shri S.K.Ray Choudhury.
14.	Transport & Communication	... Shri C.Vaswani,
15.	Manpower Development	... Shri T. R.Jas
16.	Banking Facilities	... Shri S.N.Charkar.
17.	Health	... Mr. O. Lyngdoh.
18.	Environment	... Shri Lalhanzama.
19.	Urbanisation	... Shri N.P.Nawani.
20.	Renewable Resources of Energy.	... Shri A.Choshray.
21.	Science & Technology	... Shri Indra Mohan.
22.	Natural Hazard Reduction Programme	... Shri Indra Mohan.
23.	Agricultural Statistics for N.E.Region.	... Shri Pratap Nar

B. AREA PAPERS

1. Arunachal Pradesh.
2. Assam.
3. Manipur.

C. OTHERS

1. Forest & Tribals- The Chipka Approach-  
Shri Sunderlal Bahuguna.
2. Conservation of Timber in Building and  
Housing Construction for Preservation,  
Denudation of forests in Hilly region -  
National Building Organisation.
3. Integrated Tribal Development Strategy  
for the North Eastern Hill Region-  
Dr. P.S. Ramakrishna, N.E. H.U.,  
Shillong.
4. Agricultural Development in North Eastern  
Region of India - Dr. P.C. Bora, Vice Chancellor  
Assam Agricultural University.
5. Development of Drinking Water Supply in  
the N.E. Region - Shri A.K. Sen Gupta, Asstt.  
Adviser (PHE).  
Background Note on India's Foreign Trade-  
Shri M. Sampangi, Deputy Economic  
Adviser, Ministry of Commerce.  
Double Pot method for Drinking Water Chlorination -  
Dr. J.G. Phira, I.H.S.,  
Arunachal Pradesh.

C. OTHERS (Conclude)

8. Strategy for Development of Irrigation in NER during VII Plan - Background paper for discussion in the Working Group - Shri R.B. Shah, CE (P & I), CWC.
9. Development of Agriculture in NER - Dr. D.W. Borthakur, Director, ICAR Research Complex, Shillong.
10. Proposed objective for 7th Five Year Plan (1985-90) for Telecommunications relating to NER.
11. Background paper on IRDP, NREP, Rural Landless Empl. Guarantee Programme and Development of infrastructure facilities in NER - Shri A.K. Ahuja, Dy. Secy. (IRD).
12. Note on design of distribution system for a Block consisting of small land holdings - Shri R.B. Shah, C.E. (P & I), CWC.
13. Elementary Education in NER - Shri P.K. Patnaik, Jt. Secy., M/Ed & culture.