

REPORT OF THE HIGH POWER COMMITTEE

FOR

MOBILISATION OF ADDITIONAL RESOURCES

FOR TECHNICAL EDUCATION

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**ALL INDIA COUNCIL FOR TECHNICAL EDUCATION
NEW DELHI**

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PREFACE

Soon after independence the country had its own well set objectives, goals and aspirations. We wanted to build a strong, dynamic, modern and self reliant India. In fulfilling these objectives, we have created broad based infrastructure in higher and technical education, national research laboratories and industries covering a wide range of disciplines and capabilities. No doubt there has been a spectacular expansion in technical education system, but quality and relevance suffered. Now the time has come that the Government alone cannot bear the total burden of financing the technical education and for that matter even higher general education. Additional resources are to be mobilized to share the cost. This is not peculiar to India and it is the case with many other countries too.

The Programme of Action (POA) (1992) for the National Policy of Education (1986) in respect of resource generation lays down that:

"All institutions will be encouraged to achieve maximum self-reliance by generating resources through measures like enhancement of fees coupled with provisions of soft loans to the needy students; consultancy; testing; sponsored projects; community contributions; institutional chairs; raising donations for infrastructural development with a provision for tax exemption; establishment of industrial foundation; charging fees for specific facilities such as laboratories, library, games, magazines, etc. The grant-in-aid institutions will be allowed to utilise the additional income generated for infrastructural and other developmental activities without linking it with the Government grants. As with Higher education, a High Powered Committee would be set up to consider steps for mobilisation of additional resources for Technical education, to bring about a better balance in the funding of institutions for technical and management education and research, and to improve the cost efficiency of the technical education system. Efforts will also be made to streamline the scheme of educational loans with a view to making it more customer friendly".

In pursuance of the above provision in the POA, the Department of Education vide its letter D.O. No. F.8-75/92-TD.1 dated September 24, 1992 requested the AICTE to set up a High Power Committee to make recommendations. Accordingly, the Union Minister for Human Resource Development, in his capacity as the Chairman of the AICTE, constituted a High Power Committee to make recommendations to the Central Government regarding these matters. The composition of the Committee and its terms of reference are given in Annexures I and II.

The Committee held three meetings on 17.6.1993, 12.10.1993 and 30.12.1993. Besides the information and views obtained during the deliberations, the Committee also had the benefit of some of the material already available on the subject. Having made an objective assessment of the situation arising out of the stipulations made in the NPE (1986) and POA (1992), the new economic reforms, and the needed imperative

Dr. S.A.A. Alvi, Member-Secretary of the Committee ably organised the meetings, and he alongwith Dr. S. Unnikrishna Pillai, Principal, R.E.C., Calicut, assisted in preparing the initial draft report of the Committee. In the preparation of the final draft the contributions of Prof. Ananda Krishnan, Prof. C.S. Jha and Dr. Venkateswaran were valuable. I am extremely thankful to all of them. I am also thankful to Shri. V.N. Dutta, Officer on Special Duty, AICTE who assisted the Committee during its final stages.



Dr. D. Swaminathan
Chairman
High Power Committee

EXECUTIVE SUMMARY

This report is presented by the High Power Committee constituted by the Chairman of AICTE after prolonged deliberations and a review of the recommendations of the task force set up in 1991 under the chairmanship of Dr. C.S. Jha. The present report has evolved policies and made recommendations thereon for financing technical education under the constraints introduced by the emerging industrial and financial scenario in the country.

This report examines the three tier technical education system in India consisting of Certificate, Diploma and Degree levels and also the Masters and Research Programmes; analyses the R & D expenditure by government and industrial sectors for the past decade; and shows that such expenditure is far less in proportion than those in developed economies.

There is urgent need for institutions and Governments to make long term resource planning for the development of technical education. Plan outlays for the technical education sector have to be related to outlays in the industrial sector. To ensure a steady availability of funds for development of technical education, the Central Government should set up an Educational Development Bank of India (EDBI). Nevertheless, it is necessary to reconcile to the inevitability of diminishing governmental support. Hence the need to improve self reliance is underscored.

The three major imperatives to improve self reliance are economy in expenditure, increasing cost-effectiveness of institutions and mobilising resources. Economy in expenditure could be achieved by "trimming the extra fat" wherever possible, by resorting to modern technology in management, sharing of facilities and the like. Improving cost effectiveness involves optimisation of student intakes, rationalisation of staff structure and utilising the services of PG students for instructional work. Resources can be generated by rationalisation of fee structures, attracting foreign students, enhancing consultancy work and sponsored research and offering revenue generating courses for the industry. A Corpus Fund is to be established in every institution and built up to act as a steady internal source of revenue as return on investments. Necessary tax concessions to the donors would provide some encouragement in building up such a fund.

Increase in the cost of technical education consequent on enhancement of fees raises the fundamental question of social equity. To ensure that the new system does not make technical education inaccessible to the financially weak, a National Loan Scholarship Scheme is to be established under the aegis of EDBI and soft loans disbursed to needy students, without bureaucratic delays and hassles. This effort is to be supplemented by State Educational Funds (SEF) at the State level.

Detailed recommendations on specific actions to be implemented by Government of India, State Government, AICTE, industries and the institutions are separately listed at the end of the report.

CHAPTER - I

INTRODUCTION

Changing Economic Scene: Momentous changes have taken place on the international scene. The end of the cold war, the transformations in Eastern Europe, the disintegration of the Soviet Union and the imminent emergence of a common market in western Europe are events of truly historic significance. These changes have made a profound impact on both international relations and the world economy. Simultaneously, most developing countries have embarked on bold measures of reform in restructuring their economies and opening up to forces of competition, both domestic and foreign. All these changes will certainly have an impact on the Indian economy.

India is passing through a historic moment on the economic front. The Eighth Five Year Plan has been launched in the backdrop of certain strengths in the economy as well as certain concerns which have surfaced over the recent years. The Government have taken new initiatives and bold decisions to reorient and restructure the economy to meet the challenges of the present economic crisis in the country.

The above scenario necessitates identifying certain imperatives in the approach to planning. These include providing for more decentralization and liberalisation of controls; enlisting people's cooperation and participation in national programmes and schemes; striving to achieve targets with less financial outlays through improved efficiency and productivity; optimizing the utilization of resources and encouraging greater involvement of private sector and progressively decreasing government subsidies.

The changed scenario could be viewed in terms of : (i) economic reforms with massive dose of liberalisation, (ii) globalisation of Indian economy, and (iii) Indian industry getting exposed to global competition. The responses needed to meet the impact of changed situation effectively are : (a) optimal utilisation of resources, (b) resources mobilisation, (c) collaboration, networking and sharing of facilities, (d) excellence and relevance in the R & D effort, (e) improved productivity, increased efficiency and quality, (f) modernisation, (g) competent and relevant manpower development and (h) international interaction and collaboration.

In the process of increasing efficiency and productivity in a situation of resource limitations, sharing and optimizing the use of available resources assume importance. It applies to all sectors and there should be greater cooperation and interaction. Interaction and interdependence are well recognised concepts in the present-day world. This assumes particular significance in the roles of universities, technical institutions, industries and R&D organisations.

Role of Technical Education: Technical Education is one of the most crucial components of Human Resource Development. It is a basic and essential input for national development and for strengthening our industry, economy and the quality of life of our people. Naturally, technical education has to be treated as a priority sector. The beneficiaries of technical education are not only the students, but also the industry, the Government and the society at large. Hence financial inputs to the technical education system are to be viewed as a long term investment in the national economy. More significantly, the cost of such education has to be shared by all the beneficiaries and in particular by the Governments, the industry and other sectors of the economy and the students.

It should be recognised that the academic world, industries and the R & D laboratories together hold the key to technology development in many sectors of the economy of the country. Survival of industry depends largely on improved, innovative and new technologies, and for this purpose it needs the support of academic institutions. The R & D activities in the higher professional institutions are therefore important to the industries and crucial to the economy of the country. This activity therefore needs to be supported and promoted.

Restructuring our economy would require higher level, broadly educated work force of larger proportions of scientists, engineers, managers and technicians. Accordingly, development of technically qualified human resources becomes crucial to the success of implementing economic restructuring and for deriving sustained economic development. In view of the required gestation period for developing these human resources, it is important that greater effort and investment in technical education should begin right away. The decrease in the levels of government subsidy and greater reliance on market forces, would also apply to the technical education sector as the Government is under financial constraints and has to make difficult choices about where its investments should go. While it is true that the 8th Plan Document specially recognizes human resource development as the core of all developmental effort and correspondingly attaches priority to the sectors of primary education, literacy and basic needs, the overall scenario which the technical education system would face is of a reduced budgetary support from the Government.

Financial Support for Technical Education: It is expensive to maintain technical education at a high level of excellence. With the high rate of obsolescence in technology and phenomenal growth of new technology, continual updating and initiating new programmes in emerging areas are essential for maintaining a state-of-art technical education system. Faced with resource constraints at the national level and the consequent inadequate financial support from Government sources, the technical education sector needs new initiatives to mobilise the required fiscal support. Institutions have to be encouraged to achieve maximum self-reliance by generating resources through various measures.

Given the new initiatives taken by the Central Government in restructuring the Indian economy, which may ultimately lead to integration into global economy, the time is ripe now for the higher and technical education institutions to move towards less dependence on government funding and become self-reliant to the extent possible. The self-reliance should be understood in terms of building up of the capability to bridge the gap between the fund requirement and the fund availability through suitable measures for fund generation, without affecting their primary task of teaching and research. Such capability would ensure fulfilling the objectives and goals of the institution without undue interference from funding agencies, thus developing a degree of financial autonomy essential for proper academic functioning. Over-dependence on Government support has already led to both inadequacy and rigidity in resource allocation to various sectors of academic activity. It is essential that institutions should reduce this dependence through raising internal and external resources like contributions from industry, alumni, charitable trusts etc., elimination of wastage and improvement of financial management practices. There is much to be gained through interaction among institutions, laboratories and industries by way of equipment sharing, collaborative R & D, joint academic programmes, sharing and exchange of faculty and sponsored research. The professional institutions will also have to demonstrate capabilities which would enhance the confidence of the investors and accountability to the society.

CHAPTER - II

TECHNICAL EDUCATION AND RESEARCH & DEVELOPMENT SYSTEMS IN INDIA

Technical manpower in India is developed through a system of public and privately financed training and educational institutions, informal sector apprenticeship-type training arrangements, and the in-plant training programmes conducted by public and private sector enterprises. The formal system of technical education operates at five levels—certificate, diploma, degree, post-graduate and research degree programmes.

Certificate level programmes produce skilled workers and are operated at about 1,900 Industrial Training Institutes (ITIs) run by the Directorate General of Employment and Training (DGET) in the Union Ministry of Labour. Nearly 3,25,000 students are trained annually in about 140 trade areas. The entry requirement to these programmes is 10 years of basic education. Vocational education certificate level courses are offered in agriculture, business, commerce, health and paramedical, home science and humanities areas, in addition to engineering trades. Another 1,500 vocational schools offer these courses, admitting about 72,000 students annually. The National Council for Vocational Training, and the Directorates of Vocational Training in the States look after the planning and operation of these programmes at the national and state levels respectively.

Diploma programmes producing middle-level supervisory staff are offered in about 950 polytechnics. Admission to this programme requires 10 years of basic education. The courses are of three years' duration in the engineering discipline. About 20% of the polytechnics offer programmes in other fields also. In all, programmes are offered in about 90 engineering and non-engineering disciplines admitting about 1,26,000 students annually. A few institutions conduct post-diploma and advanced-diploma programmes in selected areas.

Degree level programmes in engineering are conducted at the 5 Indian Institutes of Technology (IITs), the IISc and four technical universities, 17 Regional Engineering Colleges (RECs), a few 'deemed university' institutions and University departments and about 350 State-level Engineering Colleges (SECs). The 5 IITs, IISc and technical universities also offer postgraduate and research degree programmes with a bias to technology development and admit about 1,300 students for research and graduate programmes each year. These are national institutions and are fully funded by the Government of India. Of the 17 RECs 14 offer postgraduate and research degree programmes. They have an annual intake of about 5,000 for Bachelor Degree and 1,400 for postgraduate courses. There are about 350 State-level Engineering Colleges which mainly offer undergraduate programmes with an annual intake of about 68,000 students. About 90 of these institutions also offer post-graduate programmes with an annual intake of about 8,500 students. In addition, there are nearly 9 institutions,

including the 4 Indian Institutes of Management providing management education to over 4,000 students annually.

There are considerable imbalances and variations amongst these various types of institutions in the average annual recurring cost per student and in the quality of the graduates they produce. For example, for the degree programmes, the annual recurring cost per student ranges between Rs. 15,000 and Rs. 60,000 in the well established institutions of different types. However, in some institutions with inadequate facilities and faculty the unit cost is much less. The AICTE has worked out the annual recurring cost per student for engineering colleges as Rs. 11,916 at the 1988 price levels. These are based on somewhat liberal norms. If an annual increase of 5 to 10 percent is allowed for, this figure works out to Rs. 15,200 to 19,200 in 1993. These figures are bound to escalate at a much faster rate due to several reasons such as rapid obsolescence of laboratory equipment; emergence of expensive high-tech instrumentation, machinery and equipment; and the phenomenal increase in cost of books, journals and annual maintenance of sophisticated and proprietary equipments and components.

Research and Development

One year after independence, India spent only a meagre Rs. 11 million on R & D activity in the Central Government sector. Four decades later, the figure grew to more than Rs. 30,000 million. In the year 1991-92, Rs. 38,272.3 million were spent on R & D by the Central Government. The approximate corresponding figures for the states sector and the private sector are Rs. 3,719.4 million and Rs. 6,314.7 million bringing the total expenditure on R & D in 1991-92 to Rs. 48,306.4 million. Table - 1 indicates the rate of growth of Central Government expenditure on R & D activity in the last decade. Table - 2 provides the percentage share of Central Government R & D expenditure for various activities for the year 1990-91.

Another significant factor is the multiplicity of R & D agencies in the country, leading to a particular agency specialising in a particular type of activity. Table - 3 shows various scientific agencies involved in R & D activity and their percentage shares of the total Central Government R & D expenditure. There is a preponderance of Central Government expenditure on R & D in almost all spheres of activity. The percentage share of Central Government in national R & D expenditure by objectives for 1990-91 is presented in Table - 4. It can be seen that Central Government accounted for about 80% of the total national R & D inputs in 1990-91, of which the major shares went into applied research and experimental development.

It is worth examining the growth of R & D in industry. Table - 5 indicates that R & D activity in industries in India is a recent phenomenon. The Government has taken several measures to promote research in industry. By the end of 1990-91, there were 1,164 in-house R & D units, in both the public and private sectors, and it is likely to grow to around 1,500 by the year 1995. The growth of

R & D in industry remains, however, unimpressive. Details of R & D expenditure in the industrial sector in the recent years are given in the Table - 6. However, when adjusted to constant prices, the growth of R & D expenditure in industrial sector has a negative trend, as can be seen from Table - 7. In-house R & D activity is bound to receive a set-back at times of severe resource shortages. Advertising expenditure and expenditure required for purchase of plant and machinery etc. compete with R & D expenditure and, in a profit-oriented environment, take precedence for achieving short-term goals.

R & D expenditure by industry, as a percentage of total R & D expenditure, is only 21% in India, compared to 61% in U.K., 63% in Japan and 72% in U.S.A. The time has come for the Indian industry to increase its contribution to R & D through in-house R & D units and / or through supporting research in universities and technical education institutions. This is essential for survival against global competition.

Industry Outlays and Manpower Development

The State and Central Governments have invested heavily in the industrial sector during the various five year plans. A substantial share of these investments is in areas requiring technical man power support. However, Government investment for development of technical education has been inadequate. The lack of correlation between the outlays in the industrial sector and technical education sector has adversely affected the latter.

Table - 1

Year to Year Growth in Central Sector R & D Expenditure

Year	Rate of Growth in Percentage	
	At current prices	At constant prices (Base 1980-81)
1981-82	24.4	12.8
1982-83	26.3	16.9
1983-84	15.5	6.5
1984-85	35.0	25.7
1985-86	16.3	8.1
1986-87	19.7	11.8
1987-88	19.2	9.5
1988-89	13.3	4.8
1989-90	9.7	2.2
1990-91	13.4	1.9

Source : Research and Development Statistics, 1990-91, Department of Science & Technology, Government of India.

Table - 2**Percentage Share of Central Government R & D Expenditure by Objectives, 1990-91**

Objective	Percentage
Defence	24.0
Development of Agriculture, Forestry and Fishing	14.0
General Advancement of Knowledge	13.9
Promotion of Industrial Development	13.0
Space	11.7
Protection of Environment	5.5
Development of Transport and Communication	4.4
Production, Conservation and Distribution of Energy	4.1
Development of Health Services	3.3
Other Aims	6.1
Total	100.0

Source : Department of Science & Technology, Government of India.

Table - 3**Percentage Share of R & D Expenditure by Major Scientific Agencies, 1990-91**

Agency	Percentage
Defence Research and Development Organisation	27.5
Department of Space	15.5
Indian Council of Agricultural Research	13.1
Department of Atomic Energy	11.3
Council of Scientific and Industrial Research	10.0
Department of Environment	8.1
Department of Science & Technology	7.3
Others	7.2
Total	100.0

Source : Department of Science & Technology, Government of India.

Table - 4**Percentage Share of Central Government out of National R & D Expenditure by Objectives, 1990-91**

Objectives	Percentage
Space	100.0
Defence	100.0
Protection of Environment	99.8
General Advancement of Knowledge	99.8
Development of Educational Services	99.1
Social Development and others Socio-Economic Services	97.7
Exploration and Assessment of Earth, Seas and Atmosphere	88.2
Production, Conservation and Distribution of Energy	70.8
Promotion of Industrial Development	63.1
Development of Transport & Communication	62.0
Development of Health Services	58.8
Development of Agriculture, Forestry & Fishing	57.5
Other Aims	51.3
Percentage share in National R & D Expenditure	79.76

Source : Department of Science & Technology, Government of India.

Table - 5**Growth of R & D Units in Industry during Different Plan Periods**

Sl. No.	Plan period	Number of R&D units
1.	Before 1950	27
2.	First Five Year Plan 1951-52 to 1955-56	12
3.	Second Five Year Plan 1956-57 to 1960-61	23
4.	Third Five Year Plan 1961-62 to 1965-66	55
5.	Annual Plans 1966-67 to 1968-69	45
6.	Fourth Five Year Plan 1969-70 to 1973-74	170
7.	Fifth Five Year Plan 1974-75 to 1978-79	238
8.	Annual Plan 1979-80	58
9.	Sixth Five Year Plan 1980-81 to 1984-85	290
10.	Seventh Five Year Plan 1985-86 to 1989-90	296
11.	Annual Plan 1990-91 upto Aug.1991	6
Total		1120

Source : Department of Science & Technology, Government of India

Table - 6**Expenditure on R&D by Public, Private and Industrial Sector**

Sector	No. of R&D units	R&D expenditure (Rs. Crores)		
		1988-89	1989-90	1990-91
Public Sector	155	342.42	412.90	444.07
Private Sector	1009*	417.33	490.59	526.22
Industrial Sector Total	1164	759.74	903.49	970.29

* Includes 26 private sector in house R&D units for which data have been projected.

Source: Department of Science & Technology, Government of India.

Table - 7**Growth of Industrial Expenditure on R&D at Constant Prices**

Year	R&D Expenditure at constant prices (Rs. crores) (Base 1980-81 = 100)	% annual growth rate over the previous year
1982-83	268.21	-
1983-84	286.12	6.7
1984-85	291.46	1.9
1985-86	301.74	3.5
1986-87	329.98	9.4
1987-88	344.28	4.3
1988-89	403.79	17.3
1989-90	447.60	10.8
1990-91	431.66	(-3.6)

Source: Research and Development in Industry, 1990-91, Department of Science & Technology, Government of India.

CHAPTER - III

ISSUES AND POSSIBLE SOLUTIONS

Technical institutions and university departments offering technical courses are presently faced with the challenge of meeting the steadily escalating cost of salaries, materials and services, maintenance, library books and journals, replacement of instruments and equipment, modernisation of institution and development of laboratories, workshops and other teaching facilities without loss of quality of education. The resource constraints have not affected the private unaided institutions to the same degree as they are able to meet their recurring, non-recurring, and development expenditures mainly through the fees charged from students, the fees being fixed at a fairly high level and revised from time to time.

The recent constraints in resource availability for public funding of technical education have compelled the concerned authorities in the Governments and institutions to examine ways and means of keeping the institution running without loss of quality and slackening of efforts towards modernisation and development. The terms of reference of the Committee given in Appendix - II are aimed at evolving measures of achieving this end. Although five specific items have been referred to the Committee, many of the associated issues are interrelated. Hence the basic issues are considered here, although they are not compartmentalised in the sequence given in the terms of reference.

1. PLANNING OF EXPENDITURE AND GRANTS

As the Government assistance to meet the requirements of the institutions have until recently been taken for granted, the institutions have not been making any effort towards long term resource planning. A good number of the Government-funded and aided institutions have expanded in size and academic programmes without any consideration of cost effectiveness. As a result, the members of the technical and non-technical supporting staff and infrastructure in these have become large and disproportionate to the strength of students. Several institutions have been established in recent years with uneconomical levels of student intake, both overall and branchwise.

While there is need for long term resource planning by each institution for managing the system in a very cost effective manner, the Governments both at Centre and State levels should have a clear-cut policy on consolidation and expansion of technical institutions with emphasis on economy of scale.

With the recent Government directives towards freezing of non-plan grants and also reduction in developmental grants despite regular increases in pay and allowances, the institutions have been taken by surprise and are accordingly finding it difficult to bring about the desired economy in expenditure in a short time. It is felt that

both the institutions and the Government should undertake realistic planning for the present and the future. Through long term policy guidelines the institutions may be told of their obligations to enable them to prepare plans for running and developing the institutions without loss of quality and without the need for crisis management.

Substantial investments are being made nationally, both in public and private sectors, in engineering industries as well as in service sectors such as energy, petrochemicals, mining, fertilizers, processing, transport, telecommunications, housing, etc., all of which require significant technical manpower support. It is then but natural to expect that a portion of the investments earmarked for these activities is allocated to the development of the required technical manpower and such an approach built into the planning process. With such a philosophy, it is not at all difficult for the governments to mobilise adequate resources for development of technical education.

In a growing economy it is essential to increase the quantum and quality of technical education. In this context Government support for new programmes in existing institutions and for the establishment of new institutions is unavoidable. Therefore, at a national level there should be a reservoir of funds that guarantees unhindered development of technical education. With such funds earmarked for financing technical education and R & D activities, this sector does not have to compete with other sectors for government support. Such a reservoir of funds can be built up by the Government of India either by collecting educational cess from industries and other user organisations or by setting up an Educational Development Bank of India or both.

A cess on industry is likely to be looked upon as another form of tax; further, other sectors such as health care may also demand similar cess for their development. An educational cess on industry may also be difficult to operate. In contrast, establishment of an Educational Development Bank of India (EDBI) by the Central Government appears to be a simpler and speedier approach. In any case, if and when an educational cess is collected, the proceeds should be fed into the EDBI, augmenting the resource availability.

The EDBI may be set up with shares by each of the State Governments totalling about Rs. 1,000 crores, matching contributions by the Central Government and from International Financing institutions, totalling about Rs. 3,000 crores. Shares may also be given to industrial houses and national and international organisations, augmenting the capital. Funds from the EDBI may be given as soft loans to Government funded, Government-aided and unaided institutions for their establishment and development, including new programmes, replacement and modernisation of equipment and other infrastructure.

At the State level every state should also initiate setting up a State Educational Fund (SEF) to give assistance to needy students in the form of loan scholarships.

2. ENABLING SELF-RELIANCE OF INSTITUTIONS

The need for self-reliance has been well recognised by the Government-funded and aided institutions though it may not be ever possible to become so self-reliant as to be independent of Government grants like the private unaided institutions. One of the first steps that could be taken in enabling the institutions to become self-reliant is to help them establish a **corpus fund** by giving initially the seed money and then giving grants periodically to match the fund generated by the institutions for augmenting the **corpus fund**. To allow the corpus fund to grow at a reasonably fast rate, it is proposed that Government grants to institutions should have three components, viz. Plan, Non plan and Corpus contribution. The corpus contribution should be a significant part of the total annual grant and in no case less than matching with the contribution raised by the institution in the previous year through donations, savings, etc.

The institutions are expected to be able to attract donations and contributions for a variety of purposes both from individuals and industries in case the giving of donations and contributions is made attractive both through tax exemption and through suitable recognition of the donors by the institutions concerned.

In this context, it is pertinent to note that the Union Finance Minister in his budget speech for fiscal year 1993-94 mentioned :

"Hitherto, our institutions of higher learning have been almost entirely dependent on government funds. As government funds are limited, we must find ways of funding these institutions from industry. This will also bring them closer to industry and more responsive to its needs. I therefore, propose to raise the income tax deduction given to contributions to approved universities, institutes of technology, institutes of management and equivalent institutions from 50 per cent at present to 100 per cent....."

..... Indian industry needs to spend a lot more on research and development. In doing so, I would encourage industry to make use of the facilities offered by our national laboratories and research institutes. To that end, I propose to introduce a weighted deduction of 125 percent of the contribution out of income from business or profession for research programmes in approved national laboratories and institutions carrying out research and development in natural and applied science....."

It is understood that the proposed 100 percent deduction of contributions have not yet been implemented. It is also necessary to clarify that the term "equivalent institutions" includes RECs, deemed universities and similar institutions. Similarly,

in the matter of weighted deduction of 125 percent, the term "national laboratories and institutions" was explained in the Finance Bill 1993 only in a restricted sense leaving out "institutions". It is essential that this deduction is extended to educational institutions as well and appropriate orders issued accordingly.

There are several other measures that could be taken at the institutional level also to make donations and contributions attractive to the donors. Such measures include:

- (i) Preferential rates for consultancy and testing charges to industries which make substantial contributions.
- (ii) Giving concessional fee rates for continuing educational programmes for nominees of donor industries.
- (iii) Reduced placement fee for campus recruitment where such fees are charged.
- (iv) Nominating donors of substantial amounts to advisory bodies and consultative committees of the institution.
- (v) Naming the facility donated, after the donor.

Apart from financial, contributions could also include donation of shares, donation of equipment, construction of buildings, contributions of expertise, sponsoring of academic programmes, instituting chairs etc. as well.

The corpus fund is to be invested in high yielding instruments. The yield from such investments should naturally be exempted from income tax. The capital shall be allowed to grow, and only a part of the annual yield shall be used to meet a share of the recurring expenditure. The institutes should also be given the freedom to transfer revenue out of testing, consultancy and extension services and annual recurring budgetary savings, if any, into the corpus fund.

3. ECONOMY IN EXPENDITURE

Improvement of cost effectiveness in technical education has to be achieved through economy measures implemented at the institution level as well as through policy revisions implemented nationally. The large variation in the unit cost of technical education among different types of institutions show that there is ample room for reducing unit cost without sacrificing quality. The major expenditures in an institution are towards salaries, materials and supplies, services and maintenance, books and journals, replacement and modernisation of equipment and developmental activities such as provision of facilities and amenities, starting of new courses and R & D.

It is estimated that almost 80% of the recurring expenditure is on salaries of teaching and non-teaching staff and that both the teaching and non-teaching staff are not

always adequately occupied. There is scope for increasing and rationalising the workload of the teaching staff. Salary burden could also be reduced further in the case of new institutions by employing only about 60% of the teaching faculty on a regular basis and the remaining 40% on part-time and contract basis. The part-time and contract faculty should come preferably from industries and R&D organisations. This will also enhance the industry-institute interaction. This strategy could also be adopted in the existing institutions for posts which become vacant from time to time.

There is also scope for reducing technical supporting staff in the new institutions by assigning some of their work in the laboratories and field to lecturers and post-graduate students. Administrative staff can also be reduced by adoption of modern office equipment and practices. Some of the non-technical supporting staff specially for such services as security, peons, photocopying, campus maintenance etc. can be reduced and the related services obtained on contract basis. Other measures to improve economy in expenditure are reuse / recycling of materials; multiple use of available facilities; extended operating time; inhouse repair and maintenance of computers, instruments and equipments; minimising use of consumables, etc. By extending the working hours of the institution, with staggered timings for the staff, facilities can be used more extensively, and short-term, evening and part-time programmes also offered at no extra cost, bringing in revenue and thereby reducing unit cost.

It is noted that at times, mess, electricity, transportation, hostel rent and other charges, etc. for students are highly subsidised and such a subsidy needs to be gradually removed.

The Central and State level management structure for the technical education system can also be streamlined into leaner and more efficient ones with fewer personnel and hierarchical layers.

4. INCREASING COST EFFECTIVENESS OF INSTITUTIONS

Institutions funded and / or aided by Government are not always cost effective. At a policy level, several decisions have to be taken and implemented nationally in order to improve cost effectiveness. Some of the steps that could be taken to increase their cost effectiveness are:

- (a) **Optimise intake and enrollment strengths.** Any new institution to be established should have a minimum intake of 180 with a minimum annual intake of 40 in any discipline. Starting of courses with less than 40 intake should not generally be permitted and starting of institutions with less than 3 disciplines and less than 180 intake should be discouraged. Preference should be given to an annual intake of 60 in each discipline. To take advantage of the economy of scale, institutions should be encouraged to have a total enrollment in the range of 1,500 - 2,000.

Establishment of new institutions should be permitted only after the above criteria have been satisfied by all the existing similar institutions.

- (b) The **work load of teaching staff, and the staff / students ratio** prescribed by AICTE and presently followed by most degree level institutions in the country are based on the "Madan Committee" norms. These norms are generally considered to be on the higher side in respect of teaching staff requirements. While these norms recommend an overall staff / student ratio of 1:10, a detailed calculation of staff requirements for an undergraduate programme, strictly on the basis of recommended workload norms, will yield only a staff/student ratio of 1:12 including a 10% allowance for leave and training reserve. The staff / student ratio followed even in most of the developed countries is far less than this. AICTE should revise the norms for work load patterns and staff / student ratios in technical institutions, keeping in mind the experience of the developed countries in this matter as well as the special needs of this country. One aspect that should be taken into account is the desirability of using the services of postgraduate students as teaching assistants in return to the scholarship / assistantship given to them in postgraduate institutions, as is being done in developed countries. In the meantime, it should be possible to reduce the staff-students ratio in degree institutions from 1:10 to 1:15 and in diploma institutions from 1:11 to 1:20.
- (c) It is widely acknowledged that the **strength of the non-teaching staff** in our public sector technical institutions of all types is unnecessarily and abnormally high. There is urgent need to reduce this, both for economy and efficiency. It should also be realised that this is a socio-economic problem which has its genesis in the climate and attitude favouring employment generation without regard to economy and efficiency that prevailed during the earlier part of our post-independence period.

The AICTE should review the requirements for academic and administrative supporting staff. It is to be noted that except for academic supporting staff, it is not possible to have uniform norms for the non-teaching staff support. Fully residential institutions such as IITs, RECs and some of the universities have to support the municipal services in the campus township. Academically autonomous institutions have to discharge university functions such as those of academic bodies (Boards of Studies, Academic Council, etc.) and the examination wing. In contrast, state level government institutions will have many of its administrative functions looked after by the Directorate of Technical Education, the Government Secretariate, the PSC, the PWD, Treasury, Health Service Department, etc. Thus the norms will have to vary between different types of institutions except in the case of teaching staff and academic supporting staff. What is needed is a limit on their numbers as well as their salary component in relation to those of the teaching staff. Detailed norms should be worked out for both academic supporting staff and non-academic

supporting staff for different types of institutions. Until this is done there should be a freeze on creating new non-teaching staff positions and every attempt should be made to reduce the existing positions over all.

- (d) **The current AICTE norms and standards** for the infrastructural requirements of technical institutions are also considered to be on the high side. For example, the norms and standards for degree institutions recommend a dispensary with a plinth area of 700 sq.m and a staff of eight including a doctor, two nurses and a pharmacist. Similarly, a 30 strong staff is recommended for maintenance work. Few engineering colleges of repute and long standing in the country have such facilities nor do they seem to be essential requirements in most cases. Similar is the case with the requirements for journals, particularly international journals, in respect of institutions without postgraduate programmes. Thus there is an urgent need to review and revise the AICTE norms and standards for technical institutions.

In respect of the requirements for certain facilities and amenities, flexibility should be provided in the Norms & Standards so that, where possible, economy may be effected by sharing facilities of neighbouring institutions or the facilities as available elsewhere in the vicinity of the institution. Where possible, sharing of library facilities among institutions and use of INFLIBNET should be resorted to.

- (e) **The recurring cost per student** per year is also to be worked out again by AICTE based on the revisions effected as per the steps at (a) to (d) above for degree and diploma programmes. The figures based on current norms and standards are high for the state level institutions.
- (f) **The distance mode of education** which is less expensive yet effective, if implemented with careful planning, can increase the opportunities available for technical education and in the process, generate substantial revenue to the institutions. In this context, it should be emphasised that, by distance education, what is meant is not the routine correspondence courses offered in certain disciplines. In technical education, the distance mode should include off-campus lecture programmes, video lectures, computer aided instruction, self learning programmes and expert systems, project executed at the place of work with local supervision, supplemented by contact programmes at the institutions, or at selected industrial centres. The emphasis in distance education programmes should be on advancing the skills and knowledge of employed personnel, rather than on awarding basic diplomas and degrees. These must generally be offered in functional and / or interdisciplinary areas, having high employment potential and not in basic conventional disciplines. It should be possible to offer these programmes on a modular, credit based pattern with the provision that on accumulation of adequate credits, a diploma or a degree can be awarded. This kind of programmes can be charged on a "cost-plus" basis, resulting in significant revenue earning to the institutions.

- (g) **Outdated and stereotyped programmes** especially at the postgraduate level should be wound up, and these may be replaced, where possible, with programmes in emerging areas. It should be noted that about 40% of seats created and funded at the post graduate level remain vacant. It may be necessary for the Ministry to monitor continuously the utilisation of seats in every area of specialisation, and persuade the institutions to wind up programmes that do not attract students. Outright winding up of programmes might cause service related problems to the faculty. Therefore, institutions should be permitted to frame new programmes in the place of obsolete ones, without many procedural hurdles. It is necessary to emphasize as a word of caution, that in the name of modernisation, fundamental theoretical subjects of lasting value, should not be sacrificed in favour of glamorous topics of ephemeral value.
- (h) **Post graduate education** is very expensive to the exchequer especially in view of the substantial monthly scholarship being paid to such students. Yet a significant number of these students drop out without completing the programme and there is no effective mechanism nor effort to recover the scholarship amounts already paid to such drop outs. There is also a feeling in some quarters that too many post-graduates and Ph.D.s are being produced. The high drop out rate and the lack of enthusiasm on the part of most industries to hire post-graduates in engineering appear to indicate that the large investment of the Government in postgraduate education may not be fully justified. In many instances P.G. programmes have become a half-way house between graduation and employment, the post graduate scholarship becoming a handy handout. It is necessary to make available a larger share of post-graduate seats for persons already employed and / or sponsored by industry.

The Government of India should forthwith convert the present grants for payments of scholarships for post graduate education into teaching / research assistantship grant to the institution offering postgraduate programmes. From these grants Post Graduate students may be given TA / RA as remuneration for teaching / research work done by them based on the quantum and quality of work done by them. It should be mandatory for all PG students to help in lectures, tutorial, laboratory work, assignment correction and research work. This would help in reducing the requirement of core faculty and technical supporting staff in institutions and thereby improve their cost effectiveness. Furthermore, it enhances the self respect and responsibility of these students and also gives them training to become teachers. This is a well tested system working excellently to the benefits of all concerned in all developed countries and even in some institutions in India.

- (i) **Educational reforms** such as progressive introduction of more and more internal evaluation; change over to a flexible modular credit based system; broadbasing the first degree programme with provision of electives thereby avoiding a multitude of marginally different programmes; centralising laboratory

facilities and avoiding duplication of functional areas, equipments and facilities; internalising maintenance and repair services; grant of academic autonomy / deemed university status; etc. can reduce expenses while improving quality, speed and efficiency. So also can the use of modern equipment and methods such as computers, wordprocessors and a more decentralised system management. In many institutions, there is also considerable scope for introducing austerity measures by cutting on avoidable activities / facilities without affecting academic quality.

5. INDUSTRY - INSTITUTE - R & D LAB LINKAGES

The urgent need for industries, technical institutions and R & D Laboratories to work in a mutually supportive and complementary manner has been much talked about. There are several avenues here which, systematically pursued, will result in additional resources to the technical institutions as well as improvements in both their cost effectiveness and quality of outputs.

P.G. level programmes can be offered in collaboration with specific industries in several functional areas of their interest. Such programmes offered at the industry location can use industry facilities such as class room space, laboratories, computer etc., and experts from the industry for teaching and project guidance. Offered this way, the bulk of the operating expenses can be met from industry sources. Similarly continuing education / training programmes leading to degrees / diplomas can be offered for employed personnel who are sponsored by the industry. Such programmes can be offered on a net revenue earning basis. Industry problems given to students for their project work can bring in both financial support and personnel support in the form of project guidance and supervision from the industry. Other avenues which will bring in an economic input are consultancy, industrial testing and certification, sponsored research, commercial utilisation of R & D output, etc.. Similarly interaction with R & D Laboratories will enable the institution to share the expertise, equipments and other facilities available with them.

6. RESOURCE GENERATION

Though resource generation has been much talked about, the overall achievements have not been noticeable. All the funded and aided institutions should, in the face of diminishing resources, initiate a number of activities for generating resources. The target may be fixed as, a minimum of 15% in the next five years growing progressively to a minimum of 25% of the recurring expenditure in 10 years. It is realised that the achievement of the percentages will vary widely among the institutions. Some of the steps that could be taken in this context are detailed below:

- (a) **Increase of Fees and Rationalisation of the Fee Structure** - At present the tuition fee contributes only about 1% to 5% of the recurring expenditure

per student per year in Government funded and aided institutions. It has been reported that in 1950-51, fees contributed to 37% of the amount spent on higher education. The need to increase the fees to realistic levels has been well accepted. Thus the AICTE had appointed a task force under the chairmanship of Dr. C.S. Jha for framing regulations of fee structure and working out modalities for grant of loans.

The Jha Committee recommended a three tier fee structure for Government institutions, Government aided institutions and unaided institutions. Since then, some of the States have already increased the fees in Government funded/ aided colleges to a level of about Rs. 2,000/- to Rs. 4,000/- per year. While this could be an acceptable level of fees at present for the State level engineering colleges, the fees would need to be prescribed at a much higher level in the Regional Engineering Colleges, IITs, IIMs, technical universities, deemed universities and similar institutions where the unit cost of education is much higher than in State level colleges / institutions.

In tune with the recommendations of the task force, it is recommended that the tuition fee for Government funded and aided institutions be revised to at least 20% of the recurring expenditure per student per year. Fees so fixed, may be reviewed, and refixed once in every three years. Any increase in fees may be made applicable only to new entrants.

There is a general apprehension that such increases would make it difficult for the economically weaker students to undertake professional studies. For protecting the interest of such students, for undergraduate / diploma programmes, full and half freeships as recommended by the Jha Committee should be instituted with the provision that the amount so disbursed be refunded to the institutions by the Central and the State Governments. This includes (i) full freeship to 5% of the students solely on the basis of merit (ii) half freeship to the next 5% of students solely on the basis of merit and (iii) full freeship to 5% of the students on the basis of economic weakness. Such of the needy students as do not qualify for the freeships should be given softloans at concessional rates of interest. The question of loan scholarships is discussed in detail elsewhere in this report.

The above suggestions have the merits of enhancing recovery of expenditure, removing subsidy from those who are in a position to pay, enabling the financially weaker students to undertake professional studies and also increasing the motivation of the students in studies. Further, it will also change the perception about the value of education.

The established Government funded / aided colleges may be allowed to start new specialised programmes for specific target groups on self-financing / net revenue earning basis.

- (b) Self-financing Foreign and NRI students are in a position to pay much higher fees than Indian students. Such students should be charged fees at international rates. At the present level, a minimum annual fee equivalent to US \$ 3,000 appears appropriate. However, the fees would have to be much higher in IITs and IIMs, RECs, technical universities, deemed universities and similar institutions. Selected institutions should be permitted to admit such students charging the higher fees against specially created seats for both the under-graduate and the post-graduate level courses. In respect of foreign students admitted under cultural exchange programmes also, the same higher rate of fees should be paid by the sponsoring agency.

In this context it is worth noting that if we are to attract foreign students at higher fees, we have to remain at the forefront of technical education and maintain high quality. In the early part of the post-independence period, India had been a leader in technical education in the third world. This was possible because of the excellent facilities, infrastructure and faculty we had in our technical institutions. However, in recent times many of the developing countries have acquired the most modern equipment, facilities and other infrastructure for their institutions, far better than those available in most technical education institutions in India today. If we also do not provide state-of-the-art equipments and other needed facilities in our institutions, India is likely to lose this leadership and fall back in the quality of technical education in comparison with international standards. Hence it is essential to recognise the need for a national commitment to keep technical education at a high level of excellence and to ensure commensurate and continuing inputs to the system.

- (c) The fees recovered from the Indian students should not be offset against the Government grants and should be allowed to be retained by the institutions for meeting the recurring expenditures. The fees from the Foreign and NRI students should be deposited in the **corpus fund**.
- (d) All technical institutions, and especially those located in areas of industrial activity, should be able to earn revenue through consultancy and sponsored research. The overall achievement in this regard by technical institutions is not very encouraging barring a few exceptions.

Whereas Medical professionals, Architects and Management Experts are involved in giving professional services in a big way, this is very much lacking with the technical personnel in educational institutions. Two of the reasons perhaps are the lack of freedom and motivation. Whereas Medical professionals, Architects and Management personnel are almost always either free or encouraged to offer professional services both for pecuniary and intangible professional benefits, this does not seem to be so in most of the technical education institutions.

So long as professional services can be offered for enhancing professionalism, institutional and individual consultancies could be encouraged on profit-sharing

basis between the institution and the faculty, provided the main functions of the institutions do not suffer.

Similarly, teacher-student teams could also render services which are in line with the curricula. This would also give practical experience to both the students and the teachers. This could also be done on cost-sharing basis among the institutions, teachers and students. This would also be monetarily helpful to the needy students. It is understood that a scheme called "Earn While You Learn" is already being implemented in Andhra Pradesh. The services rendered could be in the form of job work, testing, standardisation etc. The income from consultancy should be shared with the teachers and students to keep them properly motivated.

- (e) As all institutions have adequate infrastructure, laboratory and workshop facilities, resources could also be generated through such activities as testing and certification, conducting continuing education and part-time courses, production of teaching aids, development of software etc. There are many low technology areas such as computer programming, wordprocessing, DTP, etc. in which short term courses can be offered generating substantial revenue. Similarly, short term programmes in specialised areas like energy management, CAD / CAM, etc. can be offered charging relatively high fees augmenting the revenue.
- (f) The higher professional institutions should promote confidence amongst the industries through various means for attracting sponsored research programmes. Such programmes would help finance contract teachers and research staff and will also help in modernisation of research facilities with the added benefit of increasing professionalism amongst the participants in the research programmes. Besides, with such increased industry-institute interaction, the industries will be able to play an effective roll to make the academic programmes more relevant to the needs of the industry; placement of graduates will be quicker; more number of mutually beneficial joint projects will emerge; and thus the function of social audit will be achieved.
- (g) Institutions should strive to raise dedicated funds for specified purposes such as buildings, library facilities, research facilities, scholarships, fellowships, awards etc.

7. LOANS, ASSISTANTSHIPS AND SCHOLARSHIPS

The principles of equity and social justice in a democratic set up require that merit is not sacrificed and access to technical education is not denied to the economically weaker sections of the society. This assumes added urgency in the context of increase in tuition fees. Hence the need to provide a system of scholarships, assistantships, loans and such other finanacial support to the meritorious, motivated but not-so-well-off students.

Today students are assisted in a variety of ways through outright grant scholarships, fellowships and through loans repayable in easy instalments. Further there are a number of schemes of scholarships for weaker sections of the society. These scholarship schemes shall, no doubt, continue. However, the existing loan schemes have several shortcomings which need rectification. These include:

- (i) The procedures for securing loans are bureaucratic, time consuming and not user-friendly.
- (ii) The present amount and number of loans may be inadequate in a situation where the fees are increased substantially.
- (iii) The banks find recovery difficult in many cases.
- (iv) There may be genuine difficulty in repayment of the loan for many students in a climate of high unemployment / underemployment.

The loan schemes have to be revised keeping in view the difficulties of the existing set up. Certain guiding principles for such a scheme should be:

- (i) Loans may carry only a soft interest rate for a period upto one year after completion of studies or leaving the institution.
- (ii) Repayments shall be responsive to earnings.
- (iii) Procedures shall be simple and user-friendly.

NLSS: For the administration of such loans, a **National Loan Scholarship Scheme** may be set up as a division of the EDBI. The scheme may be operated by EDBI through associate banks in all States / UTs. The disbursement and repayment of loans should be through the associate banks.

Eligibility: Loans should always be given on merit-cum-means basis. Depending on the socio-economic background of the student, the loan should preferably cover the cost of tuition and maintenance.

Recovery: The amount of recovery as also the period during which repayments would be made should be flexible, depending upon the paying capacity of the borrower. Where necessary, the terms of repayment may be made renegotiable on the request of the borrower.

Waivers: The loan should be a 'soft loan' for a period of upto one year after completion of studies or leaving the institution and its repayments should be waived in the case of certain categories of persons such as those who join the armed forces and those who die or become handicapped.

Based on the above guidelines, details for the setting up and operation of the NLSS may be worked out by the EDBI. It is recalled here that setting up in each state of a State Educational Fund for giving assistance to needy students has already been recommended in Section 1 earlier in this chapter.

It is emphasised that the society has a great stake in the production of highly qualified technical manpower. It has, therefore, to ensure that talent is adequately nurtured and the meritorious students are not denied opportunities of getting technical education for want of the requisite finances. Exclusive reliance on the loan programme, to the exclusion of grant schemes, would not be in the best interests of technical education. We should continue to provide financial assistance to students through a variety of schemes including through loan scholarships. The implementation of a loan scheme should be done with utmost sympathy and consideration rather than in a strictly bureaucratic manner.

8. A NOTE OF CAUTION

While encouraging technical institutions to generate internal revenue and become more and more self supporting, it should be emphasised that education and research should not suffer in quality. It is essential that incentives be given for resource generation by allowing the institutions to retain and utilise such income with no corresponding reduction in government grants. If the grants are correspondingly reduced, it works as a clear disincentive for mobilisation of resources. It is not logical to devise a system where the harder one works, the lesser one gets as grants. The institutions shall also be given adequate operational freedom for efficient functioning, especially in matters such as reallocation and redeployment of staff, periodic adjustment of staff positions to suit changes in programmes and in enforcing discipline and accountability.

In a fully developed state it is probably desirable, and even possible, for most educational institutions to be self sustaining, generating the required revenue to meet all expenses including staff salary. However, the conditions prevailing in the country, proximity (or lack of it) of the institutions to industries, the ability to mobilise resources, and the general philosophy of establishment of technical institutions hitherto, are not conducive for the implementation of this new concept of substantial self reliance. Thus just at present, it will be unrealistic to expect all institutions to raise adequate funds to meet any significant share of their expenses. Efforts initiated now will start yielding tangible results in about five years' time only. More important, when the resources that can be made available from the entire industrial sector are spread over all technical institutions in the country the result would be either a uniformly insignificant financial contribution or a grossly unequal distribution wherein most institutions get practically nothing. Hence it is essential to guarantee that inevitable expenses like salary, pension, etc. are met by the Government in time. Furthermore, this grant should automatically be enhanced to allow for cost escalation and inflation. It will seriously undermine some of the more primary objectives of education, if the institutions are forced to default payment. Resource mobilisation should, in the short run, be aimed at meeting the part of expenses other than the inevitable expenses such as salary.

The foregoing suggestions have formed the basis for drawing up the recommendations as listed in Chapter-IV.

CHAPTER IV

RECOMMENDATIONS

After due consideration of the subject of resource mobilisation for technical education with all aspects and extensive deliberations, and keeping in view the terms of reference, the Committee makes the following recommendations, which for convenience of reference have been grouped for each implementing agency.

A. GOVERNMENT OF INDIA

1. Considering the importance of technical education in all development activities and its major role in assuring better quality of life for all citizens, the Government should make a firm commitment to the cause of technical education both in the short term and long term, and its concern for maintaining the quality of education and research at the highest possible level consistent with their relevance to our national requirements.
2. Donations and contributions to all approved / recognised technical education institutions by individuals and industries for establishment, maintenance and development of institutions should be made deductible from income tax upto 1.5 times the amount so paid in any financial year.

This tax benefit should also be extended to donations and expenditures for institution of scholarships, fellowships, awards and chairs; adoption or establishment of institutions; establishment and conduct of special programmes of studies and research; sponsoring of teachers for higher studies and study tours abroad; and other faculty and institutional development programmes.

3. The Central Government should examine the feasibility of levying an educational cess on industries for funding technical education and R & D activities in technical institutions.
4. The Government of India may set up an Educational Development Bank of India, with a capital base of about Rs. 3,000 crores with participation by Central Government, State Governments, financial institutions and international organisations for financing soft loans for establishment of institutions and also to assist students to meet their fee and living requirements.
5. A National Loan Scholarship Scheme may be set up under EDBI and details of loan scheme worked out by the EDBI. Needy students should be provided soft loans through this scheme. Such loans may preferably be disbursed through bank branches linked to the institutions. The procedure for sanctioning, disbursement and recovery of loans should be made simple and user-friendly.

6. All Government of India grants to institutions presently given for the payment of post-graduate scholarships shall be given as a grant to the institutions for Teaching / Research assistantships. From these grants post-graduate students may be given remuneration for work done as a teaching assistant / research assistant.

B. THE CENTRAL AND THE STATE GOVERNMENTS

7. The Governments should give long term policy decisions regarding availability of funds to the funded and aided institutions with the provision of automatic compensations for cost escalation and inflation.

Financial restrictions, if any, may be imposed only with sufficient advance warning of atleast 12 months, and even then inevitable expenses such as salary and allowances, pension, etc. shall not be subjected to such restrictions.

8. The plan allocation for technical education sector, both central and state, should be based and related to the plan outlays in the industrial and service sectors. As a matter of policy, plan allocation for sectors which require significant technical manpower support (such as Industry, Power, Railways, Transport, Communications, Housing, etc.) shall have an appropriate share earmarked for technical manpower development and this share shall be made available to MHRD to be used exclusively for the development of Technical Manpower.
9. Revenues generated through enhanced fee structure, consultancy and other activities should not be offset against the government grants and should be made available to the institution to meet its developmental and other legitimate needs.
10. For enabling institutions to become self-reliant, both the funded and aided institutions should be given seed money for **corpus fund**. Government grants to institutions should have three components, viz. plan, nonplan and corpus contribution. The corpus contribution should be a significant part of the total annual grant and in no case less than matching with the contribution raised by the institution in the previous year.

Savings, if any, in the annual recurring grants should be allowed to be credited to the **corpus fund**. The returns on the investments from **corpus fund** shall be exempted from income tax.

11. The tuition fees in all Government funded and aided institutions in all the States should be revised to a rational level of atleast 20% of the annual recurring cost per student, with the provision that for U.G / Diploma Programmes, full freeships are provided to 5% of the students on the basis of merit and 5% on the basis of economic conditions, and another 5% of students are given half freeships on the basis of merit, where such freeships / scholarships do not already exist. The Government may reimburse annually to each institution the amount of the freeships as disbursed.

12. The government funded and aided institutions may be permitted an increase in seats over and above the sanctioned strength for admitting self-financing foreign students and dependants of NRIs and such students should be charged higher fees in foreign currency. The amounts so earned should be credited to the **corpus fund**.
13. The Government may evolve a policy to institutionalise the participation of staff members of technical institutions in consultancy and other revenue generating activities and may permit payment of a certain percentage of the net revenue from consultancies to the associated staff as an incentive.
14. Wherever necessary, the State Government may also set up a State Education Fund, supplementing the NLSF scheme, to give assistance to needy students in the form of loan scholarships at nominal interest rates and easy repayment terms.
15. The Central and State Government shall implement forthwith measures to give academic and administrative freedom and flexibility (autonomy) to well established technical institutions in their respective jurisdictions.

C. THE ALL INDIA COUNCIL FOR TECHNICAL EDUCATION

16. The AICTE should establish liaison with the Ministry of Finance regarding the tax benefits to the donors as per recommendation (2) and the setting up of EDBI as per recommendation (5).
17. The Government funded and aided institutions may be given specific approval to increase intake by upto 20% in under-graduate courses and 20% in Management and Post-graduate courses in Engineering & Technology for accommodating self-financing foreign students and dependents of NRIs as per recommendation (12).
18. The AICTE may lay down guidelines for revision in tuition and other admissible fees for various categories of institutions from time to time.
19. The AICTE may evolve policy guidelines for the implementation of recommendation (13) in respect of consultancy and other revenue generating activities.
20. The AICTE may revise norms for teaching, academic supporting and non-academic supporting staff, and physical facilities for achieving cost efficiency in institutions. The teaching staff-student ratio may be revised to about 1:15 in degree level institutions and 1:20 in diploma level institutions. The strength of the administrative and other supporting staff may be optimised through usage of modern equipments and management practices.

21. Annual branch-wise and total institutional intakes may be rationalised to make optimum use of the facilities.
22. Norms for books and journals may be revised and rationalised and sharing of library facilities and use of INFLIBNET promoted.
23. AICTE may take steps for promoting and encouraging distance mode of technical education for advancing the skills and knowledge of employed persons and in functional and / or multidisciplinary areas of high employment potential, and for ensuring and maintaining high quality and standards in such programmes.
24. Guidelines may be worked out for staffing of part-time and co-op programmes, to be run on self financing (net revenue earning basis), and these programmes promoted in technical education.
25. The AICTE should evolve a detailed long term plan of action for development of technical education in the country as a whole and in individual states, taking into account currently available facilities and projected demands. Within this framework, private initiative in setting up of technical education institutions should be encouraged, especially in the states which are deficient in technical education facilities.
26. The AICTE should evolve a model of a cost effective, efficient and high academic performance institution based on some of the successful examples available in the country in order that these models may be adopted by the State and the Central Governments.

D. THE INDUSTRIES

27. The industries, being the main beneficiaries of the technical education system, may take steps to make donations and contributions for such purposes as establishment and development of institutions; establishment and development of **corpus funds**; institution of scholarships, fellowships, awards and chairs; conduct of special programmes of studies and research; sponsoring of teachers for higher studies and study tours abroad; etc.
28. The industries may consider adoption of one or more existing institutions so that these institutions can conduct sandwich programmes.
29. Linkages may be established with the technical institutions in various academic and R & D activities and, where possible, research activities / programmes may be sponsored.

E. THE INSTITUTIONS

30. The institutions should generate revenue through such activities as consultancy, sponsored research, testing & certification, revenue-generating continuing education and part-time courses, production of teaching aids, development of software, etc.
31. The institutions should promote consultancy activity involving all the staff by sharing the profits with the staff.
32. From 10% to 40% of the teaching staff positions may be filled up by visiting faculty and faculty on contract appointment, preferably from industry and R & D organisations. Eminent retired teachers may also be reemployed on contract basis.
33. Administrative cost may be reduced by reducing staff strength and using modern equipments and management practices.
34. Academic and non-academic supporting staff may also be reduced to optimal levels.
35. In order to reduce the operating cost and to improve efficiency, contract services may be used wherever possible.
36. At the level of national and other well established institutions and organisations, it is desirable to have networking and collaborative arrangements especially where expensive instruments and research facilities are concerned.
37. Institutions should interact with industries, alumni and other individuals for obtaining donations and contributions for such purposes as enhancement of **corpus fund**; addition / extension of buildings; improving library and research facilities; institution of scholarships, fellowships, awards and chairs; sponsorship of teachers for studies and tours abroad; etc.

All the donors and contributors must be given due recognition.

38. The National level institutions should establish industrial foundations and the other technical institutions should establish consultancy cells to interact with industries and attract consultancy work and sponsored research projects.
39. Attempts should be made to quantify the various types of subsidies currently being given to students and staff. These subsidies should be gradually reduced and ultimately eliminated.
40. Institutions should systematically introduce educational reforms which have the

twin objectives of improving quality, speed and efficiency and reducing expenditure. Such measures include internalisation of evaluation process; introduction of flexible modular credit based programmes; inhouse maintenance of equipment and extended hours of operation.

41. Each institution should establish a planning and monitoring cell to research constantly on systemic issues with a view to improving its own process and products, to analysing the cost-effectiveness of various programmes and activities of the institute and to drawing up ways and means to improve the same.

ANNEXURE - I

APPOINTMENT OF THE COMMITTEE

The Union Minister for Human Resource Development, Shri. Arjun Singh, in his capacity as the Chairman of the All India Council for Technical Education appointed the following High Powered Committee for recommending measures for Mobilisation of additional Resources for Technical Education:

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ANNEXURE - II

TERMS OF REFERENCE OF THE COMMITTEE

The Terms of Reference of the High Powered Committee are:

1. To study the recommendations made by the Task Force in 1991 having regard to the changed scenario of financial constraints and the need for reduction in grants.
2. To consider the present scheme for provision of loans to the needy students and to suggest measures for making the scheme user friendly.
3. To recommend measures for making contributions and donations to technical education institutions attractive for the donors.
4. To recommend measures for enabling institutions to increase internal revenue generation.
5. To recommend measures for improving the cost effectiveness of technical education at institutional, State and National levels.

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