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Planning Education for the Future - Developments, Issues, and Choices

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CHAPTER 1

DEVELOPMENT AND EDUCATION* - AN EVOLVING RELATIONSHIP

In this Chapter an attempt has been made to outline the historical relations between development and education.[1] The chapter begins by making some observations about the evolution of industrial development during the last three centuries and by pin-pointing the role of education in contributing towards the contemporary socio-economic characteristics of the world. On the basis of such a description an attempt is made to project the likely future and the likely course of events to come. By way of conclusions we derive some implications for the educational sector.

It may be noted that a number of approaches can be followed to examine such a broad theme. A single or multiple facet(s) of the problem can be emphasised depending upon the goal. To start we have chosen to focus on the prominent facet of our times i.e., market propelled economic growth. This is a highly complex phenomenon, particularly when viewed in the global context. It has been continuously fuelled by a series of technological innovations. We endorse the view that it is the process of technological innovations as regulated by the institution of market forces which forms the basis of social developments during the modern period[2] (Marcuse 1969).

Any scenario of future relevant for the present world has to particularly take into account the received pattern of socio-economic growth. Inter alia, it needs to be done because the past pattern of growth serves as the foundation for our future deliberations. It determines our choice set and reveals our options. It contains within itself the seeds of future growth. The obtained techno-economic system creates conditions and means for its own perpetuation. It is in this sense that the growth path may be said to have a built-in determinism. It is, therefore, important to understand the 'present' as best as one can and it is on such an understanding that our predictions about the future are based.

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Growth Manifestations

Technology is the capacity to create and utilize science and knowledge for organised production of goods and services.[3] It is this ability to harness knowledge and information which has been the basis of the industrial revolution and its sustenance during the last three centuries. With each successive application of technology the process of accumulation and reproduction has become more refined and has become ingrained into the social order.[4] Needless to say, such refinements have had to go through a dialectical process. The high point of this process being that the hardware of technology as well as social aspects thereof have been interacting closely and undergoing reciprocal mutations. Each successive layer of hardware technology has sought suitable social institutions for its survival and each social order has sought to advance its technological frontiers. This process has been the key-note of the industrial revolution. The obliteration of guilds, mercantilism, the evolution of the factory system, the need for factory labour in massive numbers, withdrawal of people from rural areas, education for enabling them to work in standardized factory situations, welfare services to create dependable sources of human, physical and mental energy, the consequent urbanization with all its infrastructure may all be viewed as different phases/aspects of the growth process. It can be seen that both, extensive growth (over space) and the intensive growth (qualitative changes within), have been functioning like two legs of the developmental process.

But the process did not confine only to the societies wherein it originated. It went far beyond their frontiers and in its wake created as well as destroyed the necessary social institutions elsewhere. Had it not been possible to develop colonies throughout the world, the growth process would have emerged into a different scenario. It may have even run into a dead-end. But, the emergence of colonies considerably facilitated the process of industrial revolution at an extremely critical stage of its development and helped the industrialized nations to achieve higher levels of growth than would have been otherwise possible.[5] With an assured market, the developed countries not only achieved a high growth rate but could maintain it for a long time to be able to develop widespread infrastructure of physical facilities and societal wherewithal. It is in this context that the establishment of crown corporations, dominions, and the imperial empires can be seen as necessary social <u>arte facts</u> which contributed to the growth process.[6]

A stage arrived in the industrial development when the market economy of the industrialized countries reached a level of maturity where it was no longer necessary for the pioneer countries to 'own' the far situated countries as their colonies. By now, accumulated technology, financial capital, and information (by way of patents) had become the principal source for the reproduction of wealth. The developed countries could live off it. They could continue to sustain the tempo of growth by playing a more lucrative role of investors, managers and producers of R & D vis-a-vis their ex-colonies.[7] Some of these innovations were also necessitated as the labour costs and wages were increasing sharply in the developed countries. The technological developments in the twentieth century made it possible to locate the smoke bellowing, labour intensive, pollution-ridden factories and chemical plants in distant remote parts of the Third World. But the developed countries could continue to exercise the managerial control with the help of finanial and technical levers.[8] Moreover, the post-independence development needs of erstwhile colonies provided the developed countries with the necessary wherewithal to continue on their growth path. Thus, the phases of colonization as well as decolonization essentially may be viewed as successive phases of the growth process marking a point of maturity in world economic relations.

Another facet of the market economy has been that the industrial revolution lead to the formation of an elite class in the colonial countries. Later on, these elites played a significant role in hastening the process of decolonization, as well as in launching the development programmes after independence was granted. Such groups helped in unleashing a process with which began a new round of mutation of the developed and the developing regions together. And with it, the industrial civilization and the market structure reached newer heights of power and affluence. It created hitherto unknown levels of inter-dependence.[9]

Present Trail-blazers

The foregoing discussion brings us to the present era which is quite often labelled as the post-industrial society.[10] It is marked by micro-chip electronic technology and automated robots. Computers are the cerebral tools of the present day order as much as hand tools were useful instruments of artisans. In industrial management physical activities were long ago converted into repetitive motions under the guise of standardisation, rationalization and specialization. Now even decision making processes are getting

congealed into computer based algorithms and super-chips. The growing intensity of this process is the hall mark of our present day progress, and as it becomes more intense the pace of technological innovations is also becoming much faster. For example, within the last twenty years there have been more innovations than there were during the preceding period of the twentieth century.

But the trouble is that the developing countries are caught in a serious bind. Their present level of socio-economic progress is equivalent to what the developed countries had achieved much earlier. But instead of having colonies to help ease their burden of growth, these developing countries are inescapably tied with advanced countries. The growth models of the poor countries, as a genre, are fashioned after the vintage models of developed countries, whereas the new technology which keeps on coming wave after wave is of an ultra modern nature. The gap between the rich and the poor countries is tremendous and in some cases is increasing at a very fast pace.

In the case of developing countries this coexistence of institutions and structures of different vintages, of pre-industrial skills, expectations of a modern period, low level of productivity and abundant over-laying of high technology, etc., during the present times has created a different type of fusion than the one witnessed when the developed countries were growing. While it has made some parts of the development task much easier for the developing countries, at the same time it has rendered some other transformations much more difficult. On the whole the presence of so many diverse elements within the 'world' of the developing countries has created unprecedented pressures on them[12] and with growing interdependence around the globe there is also the presence of increasing juxtaposition within it. The development of transport and communication networks have brought the nations closer than ever before in terms of distance and time. It is no longer possible to contain the spill over effects of one's domestic policies within the country, nor is it possible to insulate oneself from the world. This fleeting look at the historical process of growth and modernisation provides the backdrop for viewing the scene in India.

Indian Interface

In the context of developing countries, India offers a unique example. She had been an imperial colony for over two centuries. Soon after independence a number of programmes were initiated to bring the country out of the colonial malaise. It is no doubt true that

there has been a severe crisis of expectations in terms of food, health, shelter and search for a 'life fit for the dignity of man'[13]. On the top of it all, whatever little has been achieved on this front gets dissipated as the net growth rate of population has increased tremendously. This has come about due to advances in curative and preventive medicine. Now a days most of the developing countries, including India, are saddled with a large growing population which is unskilled and has low levels of education. These millions of people are turned into non-resource as in this post-industrial phase the utilization of human skills is not a critical constraint in the process of growth[14]. In such situations additional human resources, especially unskilled workers, are not required for maintaining the growing levels of productivity. However, the contemporary situation within a country like India with pre-industrial constraints still operating and the inevitability of having to transact business with a post-industrial world, the increasing non-utilization of human resources does pose a serious challenge.

Due to this selective and low level of human utilization in the modern industrial systems, it becomes critical not only to have the right type of skills but also to keep updating it to be in step with the meteoric pace of technology. The sharing of gains in the process of development crucially hinges on this continuing education and bridging of the technological gap. Otherwise the vicious cycle of poverty perpetuates itself and in the process leaves behind only a few oases of wealth. With each round of technological innovation, its implementation and fruition, the socio-economic disparities continue to widen. The developed countries gradually consolidate the gains, while the developing countries are being left behind high and dry. This process, which to us appears the inherent feature of the prime social organization of the present civilization, the market system, is operative pervasively within and across the nations.

The fact that in spite of all our frantic efforts, much publicised plans and governmental interventions, India has only managed to have an extremely low rate of growth, renders the situation much worse. In this context, time is a doubly important factor. It not only prolongs the state of non-development, but also makes the task far more difficult to be accomplished in future, as the very process of industrialisation is undergoing rapid changes in the interim.

The last but certainly not the least important factor which needs to be added to the above description relates to the complexities of a

stratified society which we have inherited. This stratisfication is now getting re-modelled quite conveniently along the lines of economic disparities. As a consequence the age old social inequalities are now in danger of being further cemented and compounded, unless policies of positive discrimination are pursued actively. What is worse, there is no evidence to suggest that these differentiations are getting gradually obliterated. The contemporary Indian socio-economic system presents picture of a highly differentiated and fractured society. All kinds of factors, economic, social, cultural, linguistic and regional are contributing to this disjointed criss-crossed pattern.

The Role of Education

So far we have briefly described the process of growth as it took place in the West and its interface in relation to developing countries in general, and India in particular. Now we want to comment briefly on what has been the role of education in this process of transformation.[15] Education has undoubtedly played an important role in the growth process described above and may be viewed in two different ways. Firstly, by facilitating the R & D process, and secondly, by way of inculcating the requisite skills among the masses. To a large extent the evolution and emergence of mass education in the West in general and the United States of America in particular, can be attributed to the requirements of the factory systems prevailing in these countries during the later part of the nineteenth and the early twentieth century. But in the case of developing countries education played yet another role, viz., of transplanting the Western mode of development. It was catalytic in the development of bridgeheads in the developing countries which could act as receptacles for Western technology. It carried then and continues to do so even now a curricula with it, a blue print of development, and norms of social institutions to facilitate the process of growth. It helped in the absorption of Western knowledge into the developing countries by softening the parochial self-centered attitudes. It helped in diffusion of general awareness which unleashed its own process of social change and dynamics. Thus, in short, during the period of industrial revolution education has atleast performed three seminal functions, viz. of R & D, of skill-inculcation, and of facilitating social change to suit the growing processes of the market.

Reflections in Future

The critical question that we are [illegible] what kind of future would such a trail of past events lead us to? As [illegible]

Western World is concerned, it seems quite clear that from the beginning of the 'seventies the diseconomies of the space-ship earth have started to emerge.[16] The problem of ecology, exhaustion of the non-renewable resources, and the deterioration of environment are all the signs of approaching 'limits' which are by now well recognised.[17] The fact that this awareness has dawned on developed countries right after the race for moon was over, is not a coincidence. Extension into outer space for resources is the natural culmination of the process of the industrial evolution. It is quite identical to the earlier expansion into colonies, although it is now exponentially magnified in terms of spatial boundaries. 'Columbia', the first reusable space shuttle, is yet another successor of man who once wandered out of his cave in search of food and the old pioneers who set out in search of the new world. In the same vein, the Western economies have to now look outwards for their growth. Because internally, the spoils of the earth have been earmarked and appropriated by different groups to the point of stalemate. It is partly awareness of these exhaustible resources (particularly at absurdly low prices)[18] and partly the awareness of the 'nature and causes of poverty' which have lead to the formation of cartels like OPEC.

The long-term effects of OPEC and such other cartels may take several years to be reckoned, but there is no doubt that it has already accomplished perhaps the single largest shift of wealth without any bloodshed in recorded history. It is one of the rare eddies in the market evolution which have flown the other way, i.e. from the developed to the underdeveloped. It need not be told how close it has brought the world to collapse.[19] It is a sobering thought, as it reveals the precarious path which the world today is treading and the fragile nature of the future that it harbingers. However, it is ironical that OPEC welath should find itself back in the western financial capitals as bank deposits or payment for ensuing development projects. The fellow developing countries, particularly non-oil producing ones, have not registered much gain. It needs to be noted that the poor countries are today not in a position to even absorb the gains without again contributing to the widening inequalities. The current glut and crash of oil prices is again symptonic of how technology can within a short time off-set the gains of developing countries.

In addition to the forays in outer space most of the Western economies are going to keep themselves busy in the near future of ten to fifteen years by transplanting their technological know-how in the

relatively rich developing countries, or in the "favoured" socialist countries. In the meantime the trips to space are going to be perfected so that the open solar, and vaccum-filled fields could be farmed for still higher growth.

Such kind of physical relocation of the industrial production system in other developing countries (the type of which is already witnessed in Nationalist China, Korea, Singapore and Hong Kong) would also serve the present ethos of the developing countries which are vying with each other to grab a greater share of this diversification and decentralization process.

It is important to realize that this process, greased with technology and know-how as it is, may succeed in generating employment among the developing countries, may give them the feeling of becoming advanced, but would certainly not bring them anywhere near the developed countries' standard of living. Neither would it reduce the dependence of the poor nations on the rich ones. Like in any ancilliarization process, the developing countries would have to be content with marginal gains arising out of the additional jobs done.[20] In return they would also be obliged to maintain a strict law and order and discipline internally so that they can be favoured with a greater share of the production market. The emergence of so many military backed 'progressive' and 'benevolent' dictatorial governments in the Third World is a vivid testimony to this process.

The Indian Future

Keeping in view the purpose of the present paper we confine ourselves to make some observations regarding the Indian economy in the near future. In India, a large infrastructure is now available as a result of the planned efforts of the last three decades. The country has a large pool of scientific and technical manpower. The size of the domestic market has grown so large that now it can cushion a lot of impact from the rest of the world without its being totally thrown out of gear. The Indian economy has with-stood the world-wide uncertainties of the 'seventies' pretty well.[21] It is a good indicator of the inherent stability of the system under uncertain conditions. The agricultural performance, which in spite of widespread industrialization is even now the lynchpin of the Indian economy, is quite commendable when compared to the previous period or with other comparable instances.[22] There is no doubt that with further growth in the irrigated area and widespread availability of energy in the rural areas, the agricultural potential

can be exploited further more. The break-through in agriculture has boosted the morale of other sectors as well. There has also been a change in the attitude towards managing the economy. All these factors combined with the fruition of the heavy industrial sector which was laid down in the earlier plans indicate that the Indian economy has come of age.

In the case of industrial sectors, the redistribution of wealth caused by OPEC has also opened abroad new avenues for the Indian entrepreneurs - both public and private. In addition, the country is also entering into several international contracts with regional economies of Asia and Africa. With the greater emphasis on technical cooperation among the developed countries (TCDC) it is visualised that the economy will be managed with much more initiative and imagination than has been the case in the past.

This kind of role of the Indian economy in future also fits in with the present state of the developed countries. There are too many small and fragmented jobs which the developed countries would like to sub-contract in view of various economic and other factors. Moreover, almost all the major contracts which are entered into by India are done either alongwith their technical cooperation, or with the technical cooperation of their Indian subsidiary. The conditions of work in some of these developing countries also do not suit the convenience of labour from developed countries. And moreover, they have to pay the migrant workers from developed countries several times more than they pay to labour from developing countries. Thus, it suits the developed countries to have Indian collaboration while controlling the technical know-how themselves.Thus, it is felt that India is emerging as an important developing country which is acting as an ally of developed economies in the international economic market[23]. In terms of the framework described above, this mode of transactions further co-opts India into the world market system. In addition, the integration of the regional small economies of South Asia is also gradually taking place.

On the other hand there are several aspects of the Indian economy which are not faring well. For example, the problem of unemployment, as well as of working poor continues to haunt the Indian economic planners. In certain regions the problems are so severe that they are threatening the entire system. A large segment of the India population is outside the reach of the organized market and it remains untouched by the corresponding gains.[24] What is

worse is that the present pattern of growth does not even promise any gain for these left-outs. The nature of on-coming technological gains, also do not hold any promise that the future for the masses would be any better.

A small fraction of society which is largely operative in the organised sector, has throughly entrenched itself in the system and is calling the tune for future development. The future pattern of growth, the diffusion of gains from development and the selective adoption of the technology from the West is very much governed by the preferences of this small but effective section of Indian society. As of now it does not seem possible that future growth of the economy would be much faster or that the trickle-down effects would improve. Moreover, a basic shift in the present pattern of development also seems unlikely in the near future. This is largely because the prime forces which are governing the process of development are essentially global in their nature and do not easily permit a complete isolation of any economy.

It can be debated that the continental economies like India can be, atleast partially, isolated and the pressures of the world economy can be staved off to that extent and this was one of the crucial assumptions with which the Indian experiment in planning had started. However, if the events of the last few years are any indication, the economy is now gradually becoming more and more open. Moreover, it needs to be kept in mind that even if it were possible to sustain the economic process in a large country by itself, it does not imply that geo-political factors would let the system be isolated.[25] The global communication network does not permit primacy to national economies any more. As we have outlined in the earlier part of the paper, socio-political institutions do play an important role, and quite often than not, force the system to seek patronage from others. Restoration of unprecedented economic progress in this world economy does require some kind of guaranteed protection, which rests on mutual transitivity of global interests.

Educational Implications

The foregoing discussion has been essentially concerned with the process of industrial evolution as it took place during the last three centuries. It was done largely with two points in view. Firstly, that the market propelled socio-economic growth is a complex but highly inter-dependent model and that with time this inter-dependence is becoming more and more deeply rooted. It is felt that

the degree of this relationship is so strong that in the interest of better understanding one should envisage one's future in some common framework. Secondly, it is realized that education, right from the earlier times, had twin objectives viz. scholarship for the sake of knowledge and the inculcation of vocational skills. It is felt that due to the onset of the industrial revolution it is the second type of education which has undergone basic changes in its character, magnitude and methodology. One cannot understand the rise of the technocratic education without comprehending the extent of the industrial developments which the world has witnessed during this period.

Now, with the first round of industrial evolution being completed, with the large scale induction of micro-chips and robots in the production stream, the proliferation within the educational sector is increasing faster. More and more of the routine physical as well as cerebral tasks are getting done by modern equipments. The result is that essentially two kinds of the job stream are going to be demanded viz. highly skilled jobs for devising, managing and regulating computers and totally unskilled tasks which are performed outside the ambit of the modern industrial sector. As opposed to these, most of the semi-skilled physical and cerebral jobs are getting usurped by the modern technology. But at the same time due to increasing opulence and leisure and non-employment in the productive jobs, a different type of education is going to be needed for the masses so that they can live happily even when they are not fully engaged in the production activities in their life. Education for life-style, for living and being at peace with the world around is going to be again an important facet of future developments. This resurrection of education for its own sake is going to be a major implication for the future.

Education in the future will have to address itself to the millions of the people who are as yet uncovered by the educational system. This is particularly so in the case of the socially weaker sections of the society, and the backward regions of the country. In addition, even in the areas where the coverage is tolerable as of now, the expansion in the educational system will have to keep pace with the growing population.

Moreover, the type of education will have to be different in the years to come. As has been mentioned above, vocational education seems to have been predominant during the rise of industrial evolution. Now a more comprehensive educational system will be

required. Such a system of education will not only have to equip persons with the requisite skills to get employed but will have to continuously update these skills as the pace of technology is increasing very rapidly. This kind of a role for education presupposes a widespread absorption of educated manpower in the remote areas. It would be possible only if the location of economic activities, their distribution across space, and the nature of economic activities are such in which human resources have a vital role to play.

But the present pattern of economic development, the nature of sectoral imbalances, the technical profile of new growth sectors and the innovations on the anvil do not betray signs of a wide-spread diversified pattern of growth in which the masses could participate. If these sectoral imbalances are not corrected, more and more of the general liberal education and even some of the technical education would be rendered useless in the future. With greater use of computers, the future technology is going to attain those levels of precision and complexities, wherein the role of human beings would become less important (and hence of traditional education as we know it now). On the other hand, if the technology has to compensate for such tendencies, it will have to undergo a metamorphosis. The technology has to become malleable enough to be able to spread thinly across human resources so that a direct inter-action between the two is ensured. Education will have to play extremely significant roles in such a setting. On the one hand, it will have to assist in the production of alternative technology and on the other hand, it will have to educate persons to live within a newer post-industrial setting. Such an effort would require restructuring of the curriculum so as to make it modern and yet keep it less capital intensive, atleast for the developing countries.

With the growth in the communication technology, the process of education, its pedagogy as well as the curriculum are going to undergo a major change. The outcome of the communication revolution is going to snowball in future and the form of education is going to become far more diversified. The regimentation of single entry, specific age structure, modalities of teaching, learning and evaluation etc. are going to be diversified and will take different shapes in different contexts. For once, education is really going to be a perennial process; at home through TV, in the work situation by programmed machines, and in new entertainment devices. It seems that the adage of the seventies, 'medium is the message', is going to be true. We feel that it is going to alter the very definition of education. This

diversification of education suits the state of hardware technology, which has become so cheap that it is no more a major determinant of knowledge applications. With the help of micro-chip electronics the creation of different teaching learning situations is possible. It is this 'custom' made software which is going to decide the uses of technology in the days to come.

Persons instead of getting enrolled in the old style classrooms can get their education in any way they like it. They do not have to form a captive audience for that purpose.[26] To the extent that the emphasis on employment is not going to be all that spedific, at least for some persons, such a kind of open education will permit the learners to undertake whatever form of the curriculum as they may deem fit. This will manifest itself in depreciation of certification function of formal education which so far seems to be the major raison d'etre for enrolment inflation in the educational institutions.[27]

In other words, we envisage atleast three types of implications for education in the future;

i) leading to education for living as opposed to education for working[28]

ii) more emphasis on open education in view of the growing communication revolution

iii) growth in high power research (R & D)

In addition we expect that in India the following factors would fashion the development of education :

First of all it can be expected that more and more industrial activities will be relocated in India in collaboration with multi-national corporation. Such industries will not only satisfy the demand of home markets but would also be used for exporting to other countries. The availability of cheaper raw material and labour would be the major determining factor in this. Needless to say that use of labour in these jobs will be more and more at a high level of skills. Even for adopting and managing the outside technology, a fairly high level of manpower will be required. This may also include marginal variation in the nature of the product. For all these, local development of requisite manpower and R & D will be required within the country. Education will have to play an important role in this regard.

Secondly, it is also expected that instead of transplanting the Western technology in toto, in the case of India it should also be possible to have it in piecemeal and combine it with some Indian counterparts. This argument is based on the assumption of decomposibility of technology. With a broadbased industrial infrastructure that we have, it is not difficult to identify certain segments of the jobs which could be done locally with certain improvisations. This again would necessitate some R & D efforts and close monitoring of the Western technologies. Hence the Indian education will not only have to provide the necessary know-how but will also have to keep a constant watch on the developments taking place in the other countries.

NOTES

1. Different sections of this chapter have been earlier used in Moonis Raza et.al "Education and Future - An Indian perspective" a study sponsored by UNESCO, (Bangkok), NIEPA, (1983).

2. Our emphasis on the inter-dependence enables us to view the present state of developing countries as the obverse of the state prevailing in the developed countries. Hence we examine the question of our futures in the context of the futures of the developed countries "in which the technical apparatus of production and distribution (with an increasing sector of automation) functions, not as the sum-total of mere instruments which can be isolated from their social and political effects, but rather as a system which determines a priori the product of the apparatus as well as the operations of servicing and extending it. In this society, the productive apparatus tends to become totalitarian to the extent to which it determines not only the socially needed occupations, skills and attitudes but also individual needs and aspirations. It thus obliterates the opposition between the private and public existence, between individual and social needs. Technology serves to institute new, more effective control and social cohesion. The totalitarian tendency of these controls seems to assert itself in still another sense - by spreading to the less developed and even to the pre-industrial areas of the world, and by creating similarities in the development of capitalism and communism." (Marcuse 1964 p.xv.).

3. It needs to be clarified that here we are viewing technology as a wholistic phenomenon. As Marcuse put it, "In the medium of technology, culture, politics, and the economy merge into an omnipresent system which swallows up or repulses into all alternatives. The productivity and the growth potential of the system stabilize the society and contain technical progress within the framework of domination." (Marcuse, 1964 p. xvi).

4. See for example Piel, "Technology is said to have its own imperatives; its accelerating change (no long 'progress') gives history increasing momentum, beyond deflection by any force or will. The future of the world, thus ever more strongly determined, comes even more swiftly into sight". (Calder, 1983:10)

5 For an excellent exposition of imperial colonial relationship vis-a-vis India, see R.C. Dutt (1900,1902); Ranade (1982); Ganguly (1965) and (1977).

6. Instances of this type of organization of production are briefly mentioned in Prakash (1982)

7. World Bank 1983

8. See Apter and Goodman (eds) 1976.

9. Even the socialist countries could not remain aloof. They may have tamed markets within their national boundaries but are very much part of the world market system. As a matter of fact the pace of technology within these countries is proceeding along the lines of market economies by the sheer process of "keeping up with Jonesses". The recent expermients in Hungary to develop "entrepreneural socialism" are an interesting pointer in this direction.

10. For a lucid interpretation of this idea see Bell (1972).

11. See Calder (1983).

12. It has been aptly described as the case of "extended present" by Ackoff (1974).

13. Mellors (1976).

14. It is estimated that working hours have fallen by one third between 1880 and 1975 for all workers, a statement by Sir Bruce Williams, Director of Technical Change Centre, UK in Times Higher Education supplement (April 22/1983 No. 546) See also Sobel (1980), p. 133.

15. For the role of education during the nineteenth century see Roderick and Stephens (1978).

16. In this context Sobel observes that 1972 was the last year in which the tools of conventional literature were being used and faith was being sustained.

17. For details see Meadows et al 1972 and the literature which followed in its wake.

18. See World Bank (1983 : 1).

19. See Sobel p. 210.

20. See Tinbergen "The existing tendency to break them (trans-nationals) up into federations of smaller units connected by markets rather than hierarchies, may become stronger. Consideration of such a policy is related to questions of how organization and technology may have to be adopted to the level of education of the work-force in order to optimize productivity and job satisfaction (Calder : 1983, 133).

21. See World Bank (1983 : p. 2, 24, 35).

22. See, for example Sen "How is India Doing" New York Review of Books V. 20 Christmas Number 1982 pp. 41-45.

23. The educational implications of the above statement are obvious from the following quote : "The factors determining the pattern of migration during the next decade and beyond will include the the changing structure of skills demanded in the labour importing countries and the ability of the labour exporting countries to provide these skills" (World Bank 1983 : 32).

24. Only 11% of the labour force is absorbed in the organised sector.

25. In this connection the following quote of Tinbergan, is rather instructive, "Nations may be able 'to opt out' but they should not think that by doing so they take their future in their own hands again". (Calder : 1983, 123).

26. See Richard Garner (1983 : 10).

27. See Consultative Committee Report on National Merit Examinations, NIEPA (Mimeo 1983).

28. See Coggin p. 150.

CHAPTER 2

PLANNING FOR YEAR 2000 - A DEVELOPMENTAL PERSPECTIVE

In the previous chapter, a general perspective on historical development trends has been provided along with its implications for education. The discussion has been carried out at a macro level and emphasis was laid on the evolving nature of education and development. Now we focus on the development perspective provided in the Seventh Five Year Plan (hereafter known as Seventh Plan or Plan) upto the year 2000. The discussion is carried out separately for different sectors of development and an attempt is made to derive some of the educational implications from the Plan perspective.

The first section analyses the general objectives of planning in India followed by a discussion of the developmental perspective of the Seventh Plan. This is seen from two angles. First in terms of investment policies in major sectors like agriculture, industry and social and physical infrastructure, second in terms of the increased emphasis on anti-poverty programmes. It is followed by an analysis of the employment perspectives in the Plan. The final section draws some educational implications of the plan perspective.

Long Term Planning - A Development Perspective

The central objective of planning in India is to raise the standard of living of the people and to provide them opportunities for a richer and more varied life (First Five Year Plan). Each successive Plan has been an attempt in this direction. Hence, there is a need to perceive each plan as a link in a continuing commitment and a step in the persistent efforts of development. However, the emphasis in this chapter is confined to analysis of the developmental perspective provided by the Seventh Five Year Plan in the context of long term objectives and short run targets and their implications.

The lng-term objectives of planned effort in India can be broadly stated as (a) growth (b) modernisation (c) self-reliance and (d) social justice.[1]

Growth denotes the quantitative expansion of output while modernisation aims at structural and institutional changes. Right from the fifties the attempt has been to transform the feudal and colonial economy into a modern and independent entity through the

process of establishing heavy and basic industries. Self-reliance implies making the economy independent by reducing foreign dependence in terms of aid, imports, investments and technology absorption. Social justice has the twin objectives of improving the living standards of the poorest groups and a gradual reduction of inequities in society. It seeks to remove socio - economic imbalances among different regions and castes.

These four elements have been the guiding principles of planning in India. It is naturally expected that each plan would bring India closer to the fulfilment of these objectives. However, the immediate emphasis of each plan has been varying depending upon the level of development achieved in the previous plans and the contemporary demands of the economy. In this sense the programme-wise comparison of each plan may vary while the long term implications will be towards achieving the objectives noted above. Looked at from this perspective, each plan contributes towards long term objectives and short run targets.

Many of the immediate requirements of the economy cannot be achieved or derived from the long-term development strategy. Therefore, each plan visualises supplementary efforts. Even when growth is achieved, it may not reach the poorest segments of the population because of structural and/or institutional constraints. To overcome this problem, supplementary or special programmes are included in each Plan. Therefore, each plan has a long term developmental perspective reflected through its investment policy in critical sectors and short-run supplementary programmes to tide over the immediate constraints which may be thwarting the progress.

However for a better understanding of the long-term perspectives of the plan it is necessary to examine the investment strategies followed in each of the major sectors viz., the agricultural, industrial and social services. Programmes in these sectors are supposed to have the twin objectives of promoting immediate growth and generating conditions of sustained growth in the future. In the following discussion, the objectives of the Seventh Plan have been analysed from this angle.

Development Perspectives of the Seventh Five Year Plan

The Seventh Plan seeks to emphasise policies and programmes which will accelerate the growth in food grains production, increase employment opportunities and raise productivity.[2] These form the

major thrust areas in the Seventh Plan. A logic diagram of the summary of the Seventh Five Year Plan is shown in the figure 2.1.

To start with, an analysis of the public sector investment policy would be necessary to understand the long-term strategies. It has been recognized that as a result of our investment policy during the earlier plans, we have attained considerable diversification in the industrial structure and a shift towards production of capital goods. The emphasis on the capital goods industries and the leading role assigned to public sector make public sector investments to be capital intensive. Consequently at present India is passing through a fairly capital intensive phase of development. This implies that substantial increase in capital investment in agriculture, industry and social services is essential to create infrastructural facilities to maintain the tempo of development. The industrial policy invariably plays a crucial role so far as the structural transformation of the economy is concerned. This is more so, given the international climate of technological development and industrial diversification. Moreover, as will be obvious from the following discussions, industrial development also plays a crucial role for self-reliance, modernization and transformation of agriculture. It is envisaged that the industrial sector will be able to play this crucial role by responding to the export requirements, domestic consumption necessities and the import requirements of agriculture.

i) Agriculture

We have already achieved near self-sufficiency in foodgrains. However, there exist inter-crop and inter-regional disparities with respect to pace and level of development. There is a serious regional imbalance in the impact of green revolution at present. 15% of the area under foodgrains accounts for 50% of the increase in the production of foodgrains. Inter-crop disparities show that there exist imbalances in production between rice and wheat on the one hand and betwen cereals and pulses on the other. Keeping these factors in view the major attempt during the Seventh Plan would be to maintain self-sufficiency in food grains and attain self-sufficiency in the production of pulses, oilseeds and fibres.[3] It is estimated that the food requirements for the year 1999-2000 will be around 240 million tonnes which shows an additional production of food grains to be extent of 60% over the base year of the Seventh Five Year Plan.

There are many constraints in bringing about the desired change in the production levels. It may be noted that the possibility of

increasing food production by increasing the area under cultivation seems rather limited. Similarly, the possibility of extending irrigation facilities beyond a point are also limited. It has been estimated that by the end of the plan nearly 50% of the cultivated area will still be depending on rainfall. Thus the option left is for increasing cropping intensity and raising the per hectare productivity which may be possible through increased use of fertiliser, through adopting high yielding and drought resistent varieties of crops and by developing appropriate technologies for dry land farming.

In addition to yield and productivity the agricultural sector plays another important role of sustaining the active labour force in the rural areas till they can be gainfully employed in secondary and tertiary sectors. This transition is critical in determining the pace and shape of growth in labour surplus in pre-dominantly agricultural countries.[4] At present nearly 52% of the total employment is accounted by the agricultural sector. As per the Plan Perspectives, nearly 45% of the additional employment generation in the Seventh Plan will be in the agricultural sector.

The significant developments in the agricultural sector may not take place unless there is a back up in terms of industrial, scientific and technological development. The fertiliser and other farm input requirements will have to be produced in sufficient quantities and new varieties of seeds and techniques of dry land farming will essentially flow from research laboratories. In this sense, the Seventh Plan is yet another attempt to make agricultural development science and technology-based and industry - linked. As far as R & D is concerned, the seventh plan emphasises the emerging areas of bio-technology, genetic-engineering, photo synthesis and tissue culture.

ii) Industry

At the time of independence, our industrial structure was confined to selected industries like textiles and sugar. With the emphasis of industrialisation in the Second Plan onwards our industrial structure became diversified. The emphasis given to capital goods industries and to the creation of infrastructural facilities through public sector investment led the country towards self-reliance. The Seventh Plan envisages to consolidate these gains and emphasises new areas of intervention. In the industrial sector, the major thrust during the Seventh Five Year Plan is marked by technical change and productive efficiency.[5] It is envisaged that a

large scale upgradation of technology will be undertaken in this sector, as the technical progress and productive case of large scale industries. There will be a marked difference between large scale capital intensive industries and small-scale labour intensive consumption goods industries.

Low productivity is the result of inefficient use of capital and it is realised that under-utilisation of existing capacities in the industrial sector is a major crisis facing the Indian industry. With a view to remedy this situation one of the policy objectives will be to improve operational efficiency of these industries. Better utilisation of capacities in existing industries coupled with accelerated growth of manufacturing, radical restructuring and induction of the 'sunrise' industries is expected to bring about a substantial growth in industrial production. To achieve these objectives the government intervention will be through direct physical controls like licensing and indirect financial controls involving fiscal, monetary and credit policies.

The public sector is expected to play a crucial role as a pace setting institution in the core sector and encourage the absorption of high technologies in different areas of production. In fact, it is expected that public sector investments in infrastructure and basic industries will provide productive input facilities and market for the private sector.[6] It is also visualised that financial support to the private sector will be enhanced through financial institutions. The public sector will encourage the private sector in the development of 'sunrise' industries. Hence, the public sector is expected to play a leading role in technological modernisation by creating the required infra-structural facilities.

The small scale industries will continue to be an integral segment of manufacutring. The emphasis will be more on the production of mass consumption goods and employment generation by forging linkages with the high technology industries. The industries which have been identified for rapid growth during the Seventh Plan are: electronics, tele-communications, computers, petro-chemicals, fertilisers etc. The thrust during the Seventh Plan will be on technological upgradation, export orientation and production of goods for mass consumption. The overall growth rate envisaged for the industrial sector is 8.3%.

iii) Physical Infrastructure

Public sector plays a leading role in industrialisation of our country by creating adequate infrastructural facilities. The Seventh Plan also seeks to make a concerted effort in the creation of these facilities primarily through public sector investments. It considers energy to be the most important input for industrial and agricultural development. It is in recognition of this vital role that nearly 30.5% of the total public sector outlay relates to the energy sector. Similarly, transport and communications account for more than 16% of the outlay.[7] In many sectors, under-utilisation of existing capacities in the industrial sector is partly attributable to the energy crisis. In this sense, the Seventh Plan envisages the creation of infrastructure for further growth.

iv) Human Resource Development

The Seventh Plan lays considerable emphasis on human resources development which calls for creation of facilities especially in areas like education, health, sanitation and drinking water. The emphasis during Seventh Plan is to eradicate illiteracy, provide education for all children between 6-14 years and have health improvement programmes for all. Human resource development is envisaged to facilitate people to take advantage of the developmental programmes and to reduce inter-regional inequalities. It is expected that the HRD programmes will enhance the accessibility to the basic infrastructural facilities for development. The plan earmarks 16.3% of public outlay for provision of facilities for HRD.

v) Supplementary Programmes

It is now being increasingly realised that the investment strategies in agriculture, industry and infrastructure while bringing about growth of output will not necessarily ensure an equitable distribution. Inspite of many efforts which have been made during the past decades, the problems of poverty and unemployment have continued to persist. In order to tackle these problems, a number of anti-poverty programmes have been formulated. These supplementary programmes help in effective utilisation of the human resources developed during the plan period. These programmes by definition are target-group oriented. It is estimated that through the direct and indirect policy measures the proportion of people below the poverty line will be brought down from 36.9% in 1984-85 to 25.8% in 1989-90.

The important anti-poverty programmes suggested in this context are NREP, IRDP, RLEGP etc.

Anti-poverty programmes can be seen in the context of the growth perspective for the economy. One of the essential conditions of growth in the industrial sector is the size of the domestic market. At present in India the top 30% of the population account for more than 50% of the consumption of consumer goods and a still higher proportion of the manufactured goods. Through anti-poverty and employment generation programmes, it is expected that the purchasing power of the poor masses will increase. This will have a direct impact on the demand for consumer goods which would result in enhancing of the domestic market. In this sense supplementary programmes are not only desirable from the social justice point of view but are also seen as an inducement to growth.

vi) Employment Perspectives[9]

An interesting aspect of the employment perspective is that the rate of growth of employment will be faster than the rate of growth of labour force. It is expected that during the plan period it would be possible to provide employment not only for all new entrants but also reduce the backlog. The backlog of unemployed in the beginning of the Seventh Plan is 9.2 million. The net addition to the labour force during the plan period is expected to be 39.38 million and the Seventh Plan would generate employment for 40.36 million i.e., at the rate of 3.94% per annum and thus incidence of unemployment would reduce considerably by the end of the plan period.

It should be noted here that at present the distribution of total employment in terms of wage employment and self employment is nearly 40% and 60% respectively. Of the total wage employment 75% is in the unorganised sector.[10] The Seventh Plan does not propose to bring any substantial change in this pattern. Employment generation programmes in the Seventh Plan are largely concerned with generating additional employment in the unorganised sector and through self employment.

The high-tech and large scale industries will continue to be capital intensive and as such their direct impact on employment will be limited. It is expected that these industries through their forward linkages would generate employment mostly in the small scale and unorganised sectors.

Seventh Plan envisages that the maximum growth rate of employment generation will be in the industrial category of electricity, gas and water supply. If we look into the investment pattern the energy sector accounts for nearly one third of the total public sector investment. However, in absolute terms employment generation potential in this sector is very small. Therefore, a higher growth rate does not add significantly to the reduction of unemployment.

An examination of the sectoral shares in the growth of employment reveals that the agriculture sector accounts for nearly 45%, services for nearly 25% and the manufacturing for nearly 17%. In terms of their sectoral contribution to national income in 1989-90, it can be seen that 32% would be from agricultural, 15% from manufacutirng and nearly 33% from services. The share of agriculture, manufacturing and services in employment by 1989-90 will be 50.2%, 14.73% and 21.50% respectively. Stated in other words, by the end of the Seventh Plan these sectors would account for nearly 80% of the national product and more than 85% of the total employment. In this sense, these three sectors are critical so far as employment is concerned. It may be added that employment generation in agriculture will be of self-employment nature and that in manufacturing will be in the unorganised sector and in the service sector a combination of both would take place.

The sectoral programmes promoting employment give credence to the above characterisation of the pattern of employment generation. The agricultural and allied activities provide avenues for mass employment generation. The prospects of the organised sector in terms of employment generation are rather limited. Construction activities are expected to create a substantial proportion of employment opportunities. In manufacturing, the emphasis of the plan is on 'sunrise' industries, which will have good employment prospects in the unorganised sectors.

Educational Implications

The development perspective discussed above would have two types of implications for education viz. implicit and explicit. Implicit implications would largely flow from the educational interface of the development scenario whereas explicit implication would emerge from the sectors having interface with the programmes of human resource development. In the following discussion an attempt has been made to capture some of these implications.

The developmental scenario and its employment potential provide the back ground for drawing the educational implications stemming out of economic considerations. In a process of integrated approach to planned development, educational development should be closely related to these aspects. Employment implications of a plan should be drawn from the investment policies in different sectors and also from the supplementary programmes oriented towards a direct attack on unemployment.

If we take the investment pattern in agriculture it can be seen that nearly 7% is for the R & D component in agriculture which may require highly educated personnel, especially scientists and technologists. Nearly 18% of the investment is in the areas of marketing and credit management where middle level skills seem to be important. About 48% of the investment is for management of crops and allied activities in which the skill requirements are of a lower order. The remaining part of the investment is important for the agricultural workers whose literacy requirements may be minimal but from the functional point of view skills have to be provided, perhaps through adult and non-formal education. From this pattern of emphasis in the Seventh Plan one may tentatively conclude that the requirements of highly educated persons are rather limited in this sector. Perhaps, this sector requires a larger number of middle level skilled personnel, which can be developed through vocational courses or through specific short-duration training programmes. So far as the other lower skilled category is concerned, it is the adult and non-formal education which can play a vital role. Most of the people have to take up jobs in relation to crops, fisheries and dairying. Hence it is better that specific training in these areas are given. This can be done through organisation of short duration courses during the slack seasons of agriculture.

The anti-poverty programmes which are focussed on certain target groups are highly employment oriented. Most of the rural development programmes and works related to irrigation and transport facilities come under this category. The educational requirements can be broadly of two types. First, to create awareness among the poor masses about the benefits of these programmes and thereby increasing their accessibility to the beneficiaries of these programmes. Second, to open up self-employment avenues where minimum training is required. The former case may demand adult and non-formal education while the latter may require skills in various specific areas, where vocational training is required. This again need not be through the vocational courses at the plus two stage of the formal education system; the

local based short-term vocational courses may perhaps be more significant, or vocational courses may be introduced in the post-elementary stage.

In the industrial sector the emphasis is on industrial diversification, technological upgradation and induction of 'sunrise' industries. This basically requires technical personnel of varying levels. It may be noted that employment generation in the organised industrial sector will be rather limited. However, given the emphasis on new technologies new areas of thrust will emerge. In this sense, the requirements of the organised manufacturing sector will be generally for higher educated technical and middle-level skilled personnel. The organised sector may require more of technical degree holders and diploma holders than in the past. However, with the advent of 'screw driver technology' short-term job specific courses may acquire considerale importance in this sector.

Employment in the unorganised sectors, which is substantial, will require personnel of different skills, middle level and semi-skilled. The existing industrial and technical training institutes may contribute to the middle level skills. Vocationalisation at the plus two stage may be of immense help in this respect. Given the emphasis on self-employment, the choice of vocations and the training facilities will become important. However, the necessity of short-duration courses to generate semi-skilled personnel will continue to constitute an important segment of employment in this sector. Moreover, many a time on-the-job training in specific vocations is a usual practice in the unorganised sectors. Therefore, efforts are to be made so as to strengthen these on-going but informal training programmes.[11]

The industrial sector, to sum up, basically requires technical personnel of varying levels. For most part of its personnel requirements it has to depend on the formal education structure. The short duration training programmes too will be an area of import for this sector.

For the higher educated in general faculties it will be banking, transport, public services and administration which will be the sources of employment. However, it is to be noted that in all sectors there will be a substantial requirement of additional managerial hands, especially given the emphasis on improving the operational efficiency of the industrial sector.

Energy accounts for 30% of the public sector investments. The requirements of this sector will be to design, operate and maintain the developmental projects. This will be an area which will attract a good number of highly qualified technical personnel.

The area of human resources development requires health personnel and teachers. Both require relatively high level professional education. So far as the health facilities are concerned the emphasis in terms of numbers of para-medical personnel is also important. Here too, the formal education has to play an important role.

To sum up the educational implications of the Seventh Plan perspective, the following broad generalisations can be made. The pressure for general higher education may decline in the coming years or may stabilize around the existing level. On the other hand, the demand for higher technical education should register an increase. Vocationalisation cannot be seen in the narrow sense of confining it to the plus two stage alone. Short duration vocational courses and vocational courses in the post-elementary level will be in high demand. Arrangements should be made to provide these opportunities. But this needs strengthening of the elementary education in terms of orienting the students to work related activities and work attitudes. However, from the Seventh Plan perspectives, it is clear that a substantial proportion of the new demand will be for lower level skills which may have to be satisfied through non-formal and adult education in order to make the supplementary programmes effective.

It may be of interest to compare the above observations with the initiatives taken in chapter on education in the Seventh Plan. Though there is a clear emphasis on elementary education, the details vis a vis the secondary education have been left open. Probably that needs to be planned at a more disaggregated level. It is envisaged that the distance learning and open school systems will be encouraged to ease the pressure on the secondary level. Coming to higher education, the policy becomes more obvious. Distance teaching will find an increasing place in general higher education. Open university system is in fact being provided as an alternative chanel of higher education. The six centres for educational technology developed by UGC will help in generating modern means of education. However, the emphasis on technical education will have to continue because of added emphasis on modernisation.

The attempt of this chapter was to provide long term development perspective as described in the Seventh Plan and draw some

implications for education. We have analysed the long term planning objectives and the specific emphasis of the Seventh Plan. While discussing the areas of emphasis in the Seventh Plan, an attempt was made to provide the sectoral perspectives in terms of agriculture, industry and physical infrastructure. Based on the development strategy and the supplementary programmes, the potential employment generation in different sectors is derived and from there the required educational profile of the employees was also inferred. The analysis showed that employment generation in the Seventh Plan do not mean wage-employment. On the other hand, a substantial proportion of it may be in the rural and agricultural sectors mainly in the form of self-employment. This has far reaching implications so far as the educational system is concerned. Based on this, we have argued that there is a need to re-emphasise the role of adult and non-formal education with an vocational orientation.

NOTES

1. Planning Commission (1981) The Sixth Five Year Plan 1980-85, Chapter II.

2. Planning Commission (1985) The Seventh Five Year Plan, 1985-90, P. 23 Chapter II, Vol. I.

3. Planning Commission (1985) The Seventh Five Year Plan, 1985-90, Chapter II, p. 14, Vol. I.

4. K.N. Raj, (1976) "Trends in Rural Unemployment in India : An Analysis with Reference to Conceptual and Measurement Problems : Economic and Political Weekly, Vol. II, Nos. 31, 32 &33 (August).

5. Planning Commission (1985) : The Seventh Five Year Plan, 1985-90, Chapter II, p. 16, Vol. I.

6. Planning Commission (1985) : The Seventh Five Year Plan, 1985-90, Chapter 7, Vol. II, p. 171.

7. Planning Commission (1985) : The Seventh Five Year Plan, 1985-90, Chapter 3, p. 27, Vol. I.

8. Planning Commission (1985) : The Seventh Five Year Plan, 1985-90, Chapter 3, Vol. I. and Chapters 2, 3, 4, 8, and 12, Vol. II.

9. Planning Commission (1985) : The Seventh Five Year Plan, 1985-90, Chapters 2 and 3, Vol. I. and Chapters 5, Vol. II.

10. Statistical Outline of India 1984, Tata Services Ltd., Department of Economics and Statistics, Bombay, 1984.

11. ILO-ICSW (1983) : Urban Dead end and Pattern of Employment among slum-dwellers, Bombay, Somaiya.

12. Planning Commission (1985) : The Seventh Five Year Plan 1985-90, Chapter 10, Vol. II.

CHAPTER 3

ENROLMENT, EXPENDITURE AND EMPLOYMENT

ENROLMENT SCENARIOS

In the process of educational planning and policy-making a variety of information including the enrolment patterns of students in the educational system is required. It is the enrolment size and the changes in their patterns that serve as the main criteria for determining teacher requirements, deciding location of institutions and resource allocation. However, for an effective and meaningful educational planning, exercise, the basic enrolment data must be disaggregated in terms of institutions, region, classes and sex. The higher the level of disaggregation, the greater can be the precision in educational planning.

In order to gain an overall view of the stock and flow of students in the educational system, an attempt has been made in the present exercise to analyse the aggregate enrolment patterns. The enrolment data is specified according to the stages of the education system (primary, middle, secondary etc.) and is disaggregated sexwise. The stagewise analysis of enrolment data is in conformity with the fact that the stage is the operational unit of educational planning in India. Sexwise disaggregation of the data serves to comprehend the magnitude of disparities that exist between the sexes in terms of their respective educational levels. The basic data is available in the form of time series from the period 1950-51 to 1982-83.

The major objective of the analysis is to identify the sexwise enrolment trends in different stages over the last three decades. Simple linear regression has been used to identify the trends in the schooling system. The regression-based trend equations have been used to obtain projections of student stock in the primary stage. In order to obtain an idea of the flow of students from one stage to another, sexwise inter-stage enrolment ratios have been analysed as time series. These ratios express the enrolments in each stage as a proportion of the enrolments in the previous stage during the same period. The trends present in these inter-stage enrolment ratios have also been captured using simple linear regression. Thus projections of enrolments in the middle and secondary stages have been worked out by using the ratios.

The trend-based enrolment figures yield one scenario of the student population within the schooling system. In this exercise some more enrolment scenarios have been constructed on the basis of alternative enrolment strategies. Such strategies include the achievement of UEE by 1990, UPE by 1990 and so on. Four such scenarios have been constructed for elementary education. These four scenarios reflect the magnitude of the task involved in pursuing the achievement of UPE and UEE. Using the trend-based scenario for elementary education, two more scenarios have been carried out by varying the secondary - middle and senior secondary - secondary inter-stage ratios. Lastly one scenario has been constructed for higher education which has been disaggregated into general and professional categories. All these enrolment scenarios when put together yield an overall view of the enrolment pressures on the education system.

Scenario I - Trend Analysis

The trends in the stagewise enrolments of boys and girls and the inter-stage ratio between the primary and middle stages have been identified using simple linear regression. The respective trend equations and the trend based enrolments of the future are given in Table 3.1 and Table 3.8. For each period, starting from 1980-81, the corresponding population and enrolment figures have been provided. The respective enrolment ratios have also been calculated and given so that the relative coverage of education can be gauged. The trends in the enrolments essentially reflect the gross enrolments which include the over-age and under-age children who attend school. The exact percentage of children of the correct age-group in a given stage is not known. However, certain rough estimates of the net enrolment, for a given gross enrolment, are available. Some crude estimates indicate that twenty-five per cent of the gross enrolment in the primary stage is due to over-age and under-age children. Even such crude estimates are not available for stages other than primary.

The trend-based enrolments presented in Table 3.1 clearly point out that even UPE will not be achieved by the year 2000, let alone UEE. The striking disparities between the enrolments of boys and girls are quite evident. In the case of boys' enrolment in the primary stage, the position is somewhat better as the gross enrolments may have already started to exceed the age specific population. However the girls' enrolment has not reached any desirable level in spite of a significant improvement in primary enrolment during the 1950s, 1960s and 1970's. The decadal rates of growth of boys enrolment were 5.53%, 4.24% and 2.23% respectively. The same figures

for the girls' primary enrolment were 7.79%. 6.45% and 2.81% during the 1950s, 1960s and 1970's respectively. A comparison of growth rates reveals that at the primary stage the girls' enrolment grew at a faster rate than the boys'. However, it ought to be kept in mind that the magnitudes of the enrolments are also significantly different between boys and girls. The slowing down in the growth rates also suggests that the effort required to have marginal improvement in enrolments would be proportionately more in the future.

If the strategy in the immediate future is to atleast have UPE then the focus should be on improvements in girls' enrolment at primary stage. This must be done with the background information on over-age and under-age enrolments. The exact figures for a sexwise breakup are not known. Thus the age-specific population for either sexes should be used mainly as a reference point while discussing UPE or UEE. The growth rates, as envisaged by the trends, during the 1980's and 1990's are 2.54% and 1.77% in the case of boys and 2.9% and 2.02% for girls. The smaller magnitude of the growth rates during 1980's and 1990's is mainly due to the expanding base of the enrolments during every decade.

Yet another interesting feature of the primary enrolments is the variation in the composition of boys and girls in the total enrolment. The proportion of girls in the total primary enrolment has substantially increased from 28% during 1950-51, through 33% in 1960-61, 37% in 1970-71 and finally to 39% in 1980-81. The trends point out that the proportion would stablise at about 40% during the rest of this century whereas the proportion of the age-specific population of boys and girls has remained stable around 0.51 : 0.49. This once again supports the point made earlier that more attention needs to be given to girls' enrolment in the primary stage.

The enrolment situation in the middle stage does not present a healthy picture. Although the enrolments of both, boys and girls, have increased over the years even the gross enrolment ratios have not reached any respectable levels. The growth rates of boys' middle enrolment during the 1950s, 1960s and 1970s were 6.97%, 6.39% and 3.49% respectively. The corresponding growth rates for girls' middle enrolment were 11.81%, 9.08% and 5.38% during the 1950s, 1960s and 1970s. The high current levels of the gross enrolment ratios of boys and girls in the middle stage are roughly 58% and 31% of their respective age-specific populations (11-14 years). A sexwise comparison of the enrolment ratios for both, the primary and the middle stages, is given in the Table 3.2. As can be seen from this

table there has been a substantial improvement in the enrolment ratios during the last three decades. However, the enrolment ratios for the middle stage do not offer a satisfactory note. If UEE is to be achieved, a lot of attention needs to be given to the retention of students in the middle stage, especially in the case of girls. The proportion of girls in the total middle stage enrolment has substantially improved from a mere 17.12% in 1950-51 through 24.31% (1960-61), 29.21% (1970-71) finally to 33.1% in 1980-81. The trends suggest that the boys' middle enrolment would grow from 1.33 crores in 1980-81 to about 2.51 crores by 2000-01, leading to a growth rate of about 3.2%. Correspondingly the girls' at middle stage would have a trend-based growth rate of about 4% touching 1.45 crores by 2000-01 from only 0.66 crores in 1980-81.

The whole of elementary education and the achievement of UEE, even by 2000-01, would be severely handicapped by the low enrolment of girls and their low retention level. There is a cause for some satisfaction in that we may be pretty close to achieving UPE during the course of the 20th century. However, even in the case of UPE the girls' enrolment remains the bugbear. Although the gross elementary enrolment ratio by the period 2000-01 seems respectable at 92% of the age-specific population, a sexwise disaggregation reveals the 'gender gap'. The trends show that the Indian education system has a major challenge in even moving towards UEE, mainly because of the relatively low enrolment levels of girls. This suggests that considerable research needs to be done in identifying ways and means of effecting improvements in enrolling and retaining girls within the schooling system. The silver lining is provided by the fact that the relative improvement in girls' enrolment, both, with respect to their age-specific population as well as with respect to boys' enrolment, has been significantly large.

Scenario II - UPE by 1990-91

In this scenario we seek to obtain an understanding of the magnitude of enrolment growth needed to achieve UPE by 1990-91 and the implications of the same for the middle stage. It ought to be evident that upto 1985-86 the enrolment figures would remain the same as in Scenario I. From 1990-91 onwards we consider only the net enrolment for purposes of universalisation of primary education, as we would not have a clear idea about the levels of the gross enrolment needed to achieve UPE. For a given level of enrolment in the primary stage, we assume that the sexwise inter-stage transition ratios would not change

their trends and that they can be used for calculations of middle stage enrolments.

This scenario involving UPE by 1990-91 is given in Table 3.3. In the case of boys primary enrolment the gross enrolments have already exceeded the age-specific population. Applying a rough correction factor of 0.75 to the gross enrolments we notice that the net enrolment of boys during 1985-86 would be of the order of 3.89 crores. The projected age-specific population of boys for the period 1990-91, is 4.98 crores. Thus in order to have UPE by 1990-91 the net enrolment of boys must grow at a rate of 5.1% in the primary stage. Using the same logic we find that the net enrolment of girls must grow at a rate of 13.5% in order to reach 4.70 crores in 1990-91 from 2.50 crores in 1985-86 - an enormous growth rate. In other words, the enrolment of girls needs to be doubled during the short span of 5 years. Such a massive expansion in enrolment has a number of significant implications in terms of provision of buildingss, teachers, opening of new institutions and creating the other infrastructural facilities including the reading material. The foregoing analysis therefore, clearly indicates, that the key to UPE by 1990-91 lies in concentrating on achieving major improvements in girls' enrolments, and their retention in the school system.

It may be noted that with an expansion in primary enrolment, the enrolment at the middle stage would also go up. The increase in middle enrolments consequential to UPE is studied below. A note of caution at this point would serve to understand the dynamics of student flow. One may argue that the achievement of UPE by 1990-91 would affect middle level enrolments only after, say, 2 or 3 years, as it would take time for students to flow from the primary to the middle stage. We may recall the assumption made earlier that the inter-stage ratios would retain their trends and hence they can be used to link any level of enrolment in the primary stage with a corresponding level in the middle stage. Another point for consideration is that UPE, if achieved, would be a gradual and linear process. It would not be correct tc visualize a quantum jump in enrolments in achieving UPE or UEE, as the chances of such an event occuring would be low. Given these conditions we find that the enrolments in the middle stage would increase to 1.65 crores (net enrolment of boys) and 1.28 crores (net enrolment of girls) by 1990-91. We have assumed that the inter-stage ratios would be consistent for the gross as well as the net enrolments. The sustenance of UPE from 1990-91 onwards would involve a significant increase in middle level enrolments purely on the basis of the trend. Yet, if certain structural changes intervene or if

there is deterioration in the quality of elementary education then it is possible that under-achievements may result by 1990-91 and consequently the education system would still be far away from achieving the constitutional goal of UEE.

Scenario III - UEE by 1990-91

This scenario discusses the immensity of the tasks to be performed in terms of enrolment levels to be attained for UEE (Table 3.4). From the previous scenario it is evident that very high growth rates in girls enrolment are needed even for UPE and that UEE would still be left unaccomplished by 2000-01 in spite of UPE. The main challenge to UEE comes in the form of retaining the students through the middle level. That would mean achieving stupendous growth rates in middle level enrolments. The primary stage enrolment figures would remain the same as in the previous scenario. However, in the middle stage increases of 1.16 crores in boys and 1.38 crores in girls enrolment must be had over the net enrolments due to UPE. In terms of percentages this would mean a 70% increase in boys net enrolment and 108% increase in girls net enrolment in the middle stage. This increase has to be achieved after the increase in middle enrolments due to UPE has been accounted for. This scenario appears to be near impossible to materialise unless substantial structural and qualitative improvements are made within and outside the education system. Even if it were possible we must pose certain questions like:

- Can the structure of the education system withstand a quantum jump in enrolments?

- What would be the effects on the quality of education due to a sudden increase in enrolments?

- Should the processes of education be changed in order to support the drive towards UEE and still save the structure?

These questions have been posed only with a view to reinforce the viewpoint that one must also get beyond numbers and picture a holistic scene of the education system.

Scenario IV - UPE by 1990-91, UEE by 1995-96

In the previous scenario it was observed that the achievement of UEE by 1990-91 would have the apparent effect of a shock on the education system simply due to the voluminous increase in enrolments

in the middle stage. In this scenario we explore the nature of enrolment increases in which UPE is achieved by 1990-91 and UEE is achieved by 1995-96 Table 3.5). Perhaps the effects of an enrolment shock would be less telling under such a strategy. Upto 1990-91 this scenario would remain the same as scenario II, with the middle enrolments increasing due to UPE. However, in order to achieve UEE by 1995-96 the middle level net enrolments would have to grow at a rate of 14.8%, the boys enrolments at 13.15% and the girls enrolment at 16.78%. The girls' enrolment has to more than double within the intervening period and that would involve special efforts. However, if UEE is to be achieved only by 2000-01 then the growth rates of net enrolments of boys and girls would look less fearsome at 6.85% and 8.93% respectively. One aspect that holds out some promise is that there are ten whole years before UEE should be achieved as per this scenario. Thus the system would be given sufficient time to consolidate the enrolment gains flowing from UPE. Our concern in this paper also lies in obtaining a basic understanding of the effects of enrolments in elementary education on enrolments in secondary and higher education. The inter stage ratios would again serve as the pins that link the chain of enrolments. In brief, we may say that girls enrolments are mainly responsible for our education system's inabiliity to move anywhere near UPE or UEE. The other aspect concerns the non-retention of students in the middle stage. Whatever has been presented so far has solely concentrated on enrolments in elementary education. We now shift our discussion to a study of enrolments in the higher stages of the education system.

Secondary and Senior Secondary Education : Two Scenarios

The two scenarios for secondary and higher secondary enrolments have been derived from Scenario 1 of the elementary stage which was based on trend based projection. We seek to study the enrolment implications of these two stages in the wake of the trends existing in the elementary stage. The pattern of education from elementary to secondary education has undergone structural changes in the country since Independence. The previous pattern was of 10 years of matriculate with 2 years of junior college followed by 2 years of under-graduate education. This was followed by higher secondary system which consisted of 11 years of schooling plus 1 year of pre-university pre-degree education. The current pattern consists of 10 years of schooling plus 2 years of higher secondary/pre-university education. Thus, previously classes IX, X and XI belonged completely to the schooling system, and were referred to as the secondary stage. In contrast, now only classes IX and X are completely within the

schooling system and they form the secondary stage. The 2 years of senior secondary/pre-university education partly belongs to the schooling system and partly to the college system. The exact nature of affiliation of this stage varies from state to state. Thus one can easily comprehend the difficulty in handling enrolment data corresponding to the secondary and senior secondary stages. In our analysis we have combined the higher-post-basic schools and the higher secondary (old pattern) schools in arriving at the enrolments in the secondary stage. Similarly, the enrolments of the senior secondary stage were calculated by combining the enrolments in senior secondary (10+2) new pattern schools, pre-university (one year course), pre-degree/pre-university (2 years course) and the intermediate/junior colleges. The analysis of enrolment patterns in the institutions, according to their types or categories, has not been attempted here.

The sex-wise inter-stage ratios between secondary and middle were arrived at by considering their values during the period 1980 to 1984 and calculating their means. The same method was adopted for the inter stage ratios linking the senior secondary and secondary stages. The Scenario A is a simple extension of the trends in the middle stage, while Scenario B considers a situation of reduction in the enrolments in these two stages as it assumes elementary education to be a terminal stage. The enrolments corresponding to both the scenarios are presented in Tables 3.6 and 3.7.

The trend-based growth of boys enrolments in the secondary stage is expected to be 4.76% during the 1980's and 2.88% during the 1990's. The corresponding growth rates of girls secondary enrolment during the 1980s and 1990s are expected to be 5.5% and 3.6%. In this case we are not attempting to study the enrolment ratios as they do not carry the same importance as in the elementary stage. However, we would still be interested in the proportion of girls enrolments in the total secondary enrolment. In 1950-51 this proportion was as low as 13.28%. In 1980-81 it rose to 29.73%. This rise in the proportion of girls enrolment is expected to taper off near 32% during the rest of this century. The increase in the proportion of girls in all the three stages - primary, middle and secondary - appear to follow a similar pattern of steady increase. These steady - state levels however do not match with the proportion of girls in the respective age-specific populations.

The senior secondary stage is a more recent creation, hence it will not be possible to analyse its past enrolment patterns. The mean inter-stage ratios between senior secondary and secondary stage were

calculated from the data available from 1980-81. Using these inter-stage ratios the enrolments of boys and girls were calculated for different points of time in the future. The enrolment of boys is expected to grow from 20.78 lakhs in 1980-81 to 43.93 lakhs in 2000-01 at the growth rates of 4.76% during the 1980s and 2.88% during the 1990s. The girls enrolment is expected to grow at the rates of 6.13% and 3.58% during the 1980s and 1990s respectively. As per the trends the proportion of girls is not expected to change significantly in the future. It is likely that secondary education as a whole may not witness any major expansion during the coming years. Under this situation if elementary education is considered as a terminal stage then one could expect the enrolment levels in secondary education to drop.

Scenario B (Table 3.7) considers a situation wherein enrolments would decrease in the secondary and senior secondary stages. The scenario has been built by reducing the inter-stage ratios by some amounts successively from 1990-91. Following these reductions the enrolment patterns would naturally undergo a change. The growth rates of boys enrolment in the secondary stage are expected to be 3.66% and 1.67% during the 1980s and 1990s respectvely. Girls enrolment is expected to grow at a rate of 4.44% during the 1980s and 2.73% during the 1990s. In the senior secondary stage the boys and girls enrolment growth rates during the 1980s are expected to be 2.74% and 3.68% respectively. During the 1990s the growth rates would be 1.67% and 2.73% for boys and girls respectively.

Both the scenarios for the secondary and senior secondary stages do not conceive of any major deviation from the present situation. It may be possible that if elementary education is treated as a terminal stage the enrolments in the secondary stage would be reduced further than what has been described by Scenario B. The enrolments in the general stream of secondary and senior secondary stages are more likely to reduce due to vocationalisation rather than other reasons. That would however depend on the design and operation of vocational education and the capacity of the labour market to absorb its products. As a whole, the schooling system would face tremendous enrolment pressures if the new education policy manages to intervene successfully in achieving UEE. The stage that would be hit the most would be the middle stage as the enrolment shock would have a telling effect on the resources available in this stage. It may be fruitful to consider the idea of achieving UPE by 1990-91 and UEE by 2000-01, as then there would not be any enrolment shocks and sufficient

attention could be given to bringing about improvements in the quality of education.

EXPENDITURE IMPLICATIONS

In the foregoing discussion,we have highlighted some alternative scenarios in terms of enrolments. No effort was made to examine their resource implications as the emphasis was on understanding the magnitude of numbers involved. An attempt would be made in this section to critically examine the implications corresponding to different enrolment scenarios. The note also assumes certain over all alocations to education and then examine their inter-sectoral allocations.

Financial resources for education can be looked at from two different angles. Firstly, it can be seen as expenditure analysis and secondly it can be seen as an allocation problem. In the former sense, the observed expenditure pattern of the past will be taken as an indicator to project the financial requirements for future. In this case, important variables which determine expenditure estimates are the projected enrolments and the facilities like provision of teachers, buildings etc. Needless to say that the expenditure patterns will be different for different levels of education. In the second type of analysis, resources for education are seen in a much broader context. In this case one may examine the proportion of the national income being spent on education. This has serious implications for public expenditure on education as well as other sources. However, a related important question is how total resources will be internally allocated so as to make it consistent with the projected enrolments.

In the following, some features of educational expenditure in India have been discussed. The analysis is followed by an estimation of expenditure based on the enrolment projections. Finally, we shall be examining the problem of inter-sectoral allocations especially in the context of education.

Resources for education as a proportion of GNP show an increase over the years. From a figure of 1.2% in 1950-51, it has reached 3.9% by the end of the 'seventies. Though expenditure on education as a proportion of GNP has shown an increase in India it is lower than the world average which is 5.8% for the year 1982. More significantly it is lower than that of the developing countries (4.3%) and of the Asian Region (5.1%).

The plan allocations to education show a declining trend over different Five Year Plans. It has come down from 7.5% in the First Plan to 2.6% in the Sixth Plan. Seventh plan allocations of 3.5% show a marginal increase over the Sixth Plan outlays.

The resources for education in India come from governmental and private sources. Governmental sources include central, state and local bodies. Private component has two sources : the compulsory and voluntary. For example, feel is the compulsory component of the private expenditure whereas endowments and contributions relate to the voluntary component of the private sector. However, a substantial proportion of educational expenditure in India comes from the governmental sources. Over the years, it seems to have gone up. In the early fifties, the governmental contribution (including local governments) constituted nearly two-thirds of the total educational expenditure in India. The fee contribution was one-fifth and endowments and other private voluntary contributions constituted 11.6%. In 1980-81, governments expenditure (including local governments) constituted 85% of the total educational expenditure, while the proportion of fees was 12% and that of the private voluntary contributions as low as 3%. The decline was sharper in the case of endowments and private voluntary contributions.

Educational expenditure can be divided into recurring and non-recurring. Recurring expenditure constitutes a substantial proportion of the total expenditure. The non-recurring component is a small proportion but increases with the level of education. The higher the level of education, the higher is the non-recurring expenditure. As per the latest available information (1976-77) recurring expenditure constituted 95% of the total educational expenditure in India. At primary level, the proportion was as high as 98%, at middle 97%, at secondary level 96% and at higher education level it was 89%. It may be noted that teachers' salarries are a high component of the recurring expenditure.

Expenditure Estimates

The estimations of expenditure have been arrived at by using trend based enrolment projections and the per pupil expenditure as given by the Ministry of Education.[1] However, these norms have been used after making necessary adjustments for price rise.[2] Before discussing the results, some observations are warranted which are as under:

First, the expenditure estimates are based on the enrolment projections, the details of which have already been discussed in the previous chapter. Expenditure estimates have been worked out corresponding to four alternative scenarios for elementary education. For secondary and higher education the trend based elementary enrolment scenarios were used in conjunction with the interstage enrolment ratios. It may be recalled that for elementary education, the first scenario was trend based, scenario 2 assumed UPE by 1990-91 scenario 3 was based on UEE by 1990 and scenario 4 assumed UPE by 1990-91 and UEE by 1995-96. It needs to be emphasized that for a better understanding the expenditure estimates should be seen in conjunction with the corresponding projections on enrolment.

Second, the estimated expenditure constitutes only the recurring cost component of education which of course is as high as 95% of the total educational expenditure in India. However, the non-recurring part would be in addition to the estimates desired above. Third, the per pupil expenditure is available for the year 1977-78. And our projections are based on 1984-85 price level. 1984-85 price level is chosen because it coincides with the base year price level of the Seventh Five Year Plan. Fourth, to arrive at 1984-85 prices we have assumed an annual inflation rate of 10%.

Expenditure estimates have been worked out for the years 1985-86, 1990-91, 1995-96 and 2000-20001. The expenditure estimates based on the trend based analysis are given in Table 3.9. The expenditure on education for the year 1985-86 is Rs. 4590 crore. Out of this total expenditure 63% goes to elementary level (45.9% for primary and 17.1% for middle). Nearly 22% goes to secondary and nearly 15% to higher education. The significant feature of the estimates is that over the years the proportion of money required for primary education comes down and that for higher education shows an increase.

In terms of growth of total expenditure, it works out to be less than 3% throughout the period. For example, expenditure between 1985-86 to 1990-91 shows an increase (compound) of 2.87%, between 1990-91 and 1995-96: 2.69% and at the rate of 2.15% for the period between 1995-96 and 2000-01.

Table 3.10 shows the estimations of public expenditure, if universal primary education is to be achieved by the year 1990-91. It shows that the total recurring expenditure on education by the year 1990-91, will be Rs. 5347 crores. Moreover, if no further

assumptions on UPE are made, then the expenditure needs to grow for the remaining years upto year 2000 at a relatively lower rate. The total recurring expenditure by the year 2000 will be Rs. 6498 crores. It is quite interesting to compare tables 3.10 and 3.9. Table 3.9 does not assume UPE. It can be seen that between the period 1985-86 and 1990-91, the rates of growth of expenditure will be higher in the case of UPE. On the other hand for the remaining period till 2000 trend-based expenditure increases at a faster rate; that is if UPE is achieved by 1990, then the growth of expenditure, rather slows down during the subsequent years. And to achieve UPE by 1990, the additional efforts needed are two fold :

(i) general increase in resources for education; and

(ii) allocation of a higher proportion to primary level.

The analysis shows that nearly 47.6% of the total resources to education would be allocated to primary education.

Table 3.11 is based on the enrolment projections which assume UEE by 1990. It indicates the need for a immediate massive increase in expenditure if UEE is to be achieved by 1990-91. In fact, it requires an almost one-third increase of the total expenditure as compared to the 1985-86 level. More significantly the pattern of allocation within the education sector has also to be changed. If UEE is to be achieved more than two-thirds of the educational expenditure needs to be allocated to elementary education. On the other hand if UEE is achieved by 1990-91, the expenditure growth in the later periods needs to be at a very low rate lower than the rates indicated by the other two scenarios. However, the total recurring expenditure required in the later periods will be higher than other two scenarios. Therefore, the implications of achieving UEE by 1990-91 are :

(i) an immediate increase in the total expenditure;

(ii) allocating atleast two-thirds of the educational expenditure to elementary level; and

(iii) continuing the increased allocation to education and a high proportion of the same to elementary.

Table 3.12 shows the expenditure implications if UPE is to be achieved by 1990-91 and UEE by 1995-96. In this case the maximum increase in expenditure has to be at a rate of 4.85% per annum. It

may be noted that once UEE is achieved the expenditure pattern gets more or less stablised.

Some important observations made on the basis of the above discussion on expenditure analysis can be stated as follows :

(i) Elementary level of education accounts for a substantial proportion of the educational expenditure. This is independent of the assumptions regarding UPE or UEE.

(ii) If UEE or UPE is assumed, total expenditure and allocation to elementary level show a high increase.

(iii) Achievement of UEE by 1990 requires a steep increase in allocation of resources.

(iv) Once UEE is achieved, expenditure pattern is likely to stabilise. However, even at this stage elementary education will require a substantial proportion of the total educational expenditure.

EMPLOYMENT INTERFACE

In this section an attempt has been made to derive the educational profiles of the population and workforce in India for the year 2000. This is done on the basis of the given educational profile for the year 1981. The long range perspective for Indian economic development as postulated in the Seventh Five Year Plan alongwith the empirical data relating to the existing education-employment relations has been used so as to keep the exercise realistic and consistent with the development perspective. It may be noted that the results presented in the following paragraph are essentially crude and tentative and need to be refined further for a better understanding of the issues involved.

Educational Profile of the Population : 1981

According to 1981 Census, 64% of the population is illiterate and another 11% is just 'literate' without any formal education.[1] This indicates that nearly 75% of te population has remained outside the orbit of the formal educational system. Of the total population, 18% possesses elementary education, 5.6% secondary and the proportion of graduates and diploma holders is as low as 1.62%.

Table 3.13 presents the educational profile of the population for 1981. Nearly 76% of the total population is in rural areas. But 70% of the rural population is illiterate, 15% possesses education upto elementary level, 3.3% possess secondary education and only less than one per cent have graduation or diploma. However, in the case of urban areas nearly 58% of their population is literate. one-fourth of them possesses elementary education, 13.3% possesses secondary and nearly 5% are graduates and above. It is thus not difficult to conclude in general that the urban population is relatively more educated. Moreover, for any given level of education, the proportion of population belonging to urban areas is much higher than their rural counterpart. Distribution of educated population between rural and urban areas for each level of education is given in Table 3.14. It may be observed that lower the level of education, higher is the proportion of population belonging to the rural areas in that category of education and vice versa. By way of an example, it may be pointed out that 72% of the adult and non-formally educated are in rural areas whereas 71% of the graduates and diploma holders are in urban areas.

Educational profile of the workforce : 1981

Depending upon their work status, the population has been devided into three groups according to 1981 census. These are main workers, maginal workers and non-workers. The data show that the workforce participation rate for main workers is 33.4% and nearly 1.6% for marginal workers, and the remaining 64% has been classified as non-working population. The non-working population would normally comprise of young and old, in addition to, population which is engaged in education as students. Educational profile of the working and non-working population is presented in Table 3.15. It shows that a certain proportion of the non-working population is also educated. This would largely comprise of the people who are either not willing to work or are in search of it. However, the proportion of the educated in the working population is relatively higher and this is more so at higher levels of education.

The total working population comprises of those engaged in wage-employment and the self-employment. The proportion of working population in wage employment is only 38.5% and the remaining are self-employed. Of the wage earners nearly 25% are employed in the organised sectors and the remaining in the unorganised sector of the economy. Of the workers in the organised sector, 60% are in public and the remaining 40% in the private sector. Similarly for the

unorganised sector 77% are employed as agricltural workers. Out of the total self-employed nearly 80% are cultivators.

The educational profile of the main workers and their rural-urban distribution is given in Table 3.16. Accordingly 64.5% of the workers in rural areas are illiterates whereas the corresponding value for the urban areas is only 30.4%. So far as 'literates' are concerned they are distributed across urban and rural areas, but at all other levels of education there is a concentration in the urban areas. The interesting point that emerges from Table 3.16 is that nearly 58% of our workforce is illiterate, one-fifth of them have reached elementary level and when it comes to the level of graduates the proportion is an small as 3.29%. The rural-urban pattern is similar to that of the general population where at higher levels of education urban proportion is more than that of the rural proportion. These differences continue to increase with higher levels of education. Before deriving the educational profile of the population and workforce for the year 2000, it would be appropriate to discuss the Seventh Plan perspective on employment and labour force.

Seventh Plan Perspective

Progressive reduction in unemployment remains to be one of the major objectives of Seventh Plan. This is intended to be achieved through additional employment generation with the help of the following factors :

i) high rate of overall economic growth;

ii) forward linkages of the high technology industries in the organised sectors; and

iii) specific target group oriented supplementary programmes for generation of employment.

According to the Seventh Plan perspective, the labour force would be increasing at a rate of 2.56% during 1985-90 and 2.24% betwen 1990 and 2000. The rate of growth of population during the corresponding periods will be 1.96% and 1.69% respectively. Employment is envisaged to be growing at a rate of 3.94%. In other words, rate of growth of employment will be faster than that of population and labour force. This gives hope that there will be a reduction in the amount of unemployment in absolute terms

The net addition to labour force between 1985 and 1990 will be 39.38 million and another 81 million between 1990 and 2000. Employment generation in the Seventh Plan period will be 40.36 million. The backlog of unemployed by the beginning of the present plan is 9.2 million. Hence one can observe that Seventh Plan will not only provide employment to all the new entrants in the labour force during the plan period, but also to the backlog of unemployed, thus bringing down the absolute number of unemployed by the end of the Plan period.

However, it may be noted that employment generation in the Seventh Plan does not mean only creating wage employment. Provision of self-employment will play a prominent role in it The sectorial thrust in the Plan clearly shows this

Agriculture assumes a significant role so far as generation of employment is concerned. Nearly 45% of the additional employment generation has to come from this sector And within this sector the non-crop sector has to play a dominant role. It is expected that the rate of potential employment in of this sector (3.5%) is higher than the rate of growth of rural labour force (2%). Similarly employment in the non-agricultural sector is expected to increase at 4.5% per year. The anti-poverty and rural development programmes like NREP, IRDP and RLEGP are expected to generate substantial amount of employment

The other sectors which will significantly contribute to employment generation are services and manufacturing. In the industrial sector the emphasis will be on productive efficiency. Large scale industries will continue to be capital intensive and hence their direct impact on employment will be rather limited. Moreover, our experience in the past decades shows that manpower absorptive capacity of our organised industrial sector has been rather limited. Therefore, even if our industrial sector shows higher growth rate, direct employment generation resulting from their higher growth rates will not be large enough to make a dent to the problem of unemployment. And it is expected that these industries will have an indirect impact on employment generation through forward linkages. The ancilliary and informal sectors will play a dominant role especially in the wake of 'sunrise industries'.

Banking, transport, communication and public services will have an important role for employment generation in the services sector. It is expected that apart from the traditional service sectors, there

would be a growth in the demand for manpower for implementing the plan programmes at different levels, especially with the new emphasis on decentralised planning. (Seventh Five Year Plan (1985-90) : p. 118)

To sum up, employment generation in the Seventh Plan is one of the prominent objectives. However the efforts are confined only to wage employment. The emphasis is more on self-employment. Agricultural and rural sectors are considered to play key roles in employment generation. Similarly, informal sector will be important in the industrial sector. Service sector is also expected to show relatively high growth in enrolment.

Education profile in 2000

In this exercise, we will first estimate the educational profile of the workforce then the educational profile of the non-working population, and thus come to estimate the educational profile of the total population in the year 2000. It may be observed that such an exercise is possible only under some assumption about the behaviour and the direction of changes in the population size and its composition. The following assumption were made to envisage a "preferred" scenario:

i) Most of the workers are expected to be educated in future;

ii) Substantial proportion of the non-formal educated are likely to be in the rural areas;

iii) The proportion of the workforce with elementary education will substantially increase over the years; and

iv) The relative emphasis on secondary and higher general education will be diminishing in future.

According to the population projections for the year 2000 (Registrar General, Census) there would be 972 million people out of which 326 million would be in the urban areas. Considering 1981 participation rates and after adjusting it for increased growth of labour force in urban areas it is expected that there will be 225 million workers in the rural areas and 100 million in the urban areas.

The estimated workforce and their educational levels are given in Table 3.17. It is envisaged that by the year 2000 the size of illiterate workers in the labour force will be reduced. This would

become possible due to various programme of educational development. The distribution of workforce in terms of their educational qualification is given in Table 3.18. It may be noted that the proportion of illiterates will be reduced to 8.46% in 2000 as against 57.5% in 1981. This is expected to be facilitated through the increasing emphasis on non-formal and adult education programmes and also the open-learning systems with wide coverage. A substantial part of these programmes will be directed towards the rural areas. The share of this category will increase to 33% as against only 9% in 1981. On the other hand, the proportion of workers with higher education shows only a marginal increase.

Similarly, the estimated profile of the non-working and working population is given in the Table 3.19. Illiteracy level of the working and non-working population is envisaged to decline during the next 15 years. The proportion of illiterates in the working population is estimated to be 8.5%. It is expected that non-working population would continue to have illiteracy rate of around 23%. However, to gauge the exact magnitude of illiteracy the absolute size of the population in the age-group 0-5 has to be excluded and consequently the effective illiteracy rate will be much less. It is assumed that more than two-fifth of the non-working population will be covered under adult and/or non-formal education.

The required growth rates, by levels of education, to facilitate the envisaged scenario is given in Table 3.20. Accordingly adult and non-formal education has to grow at the maximum rate with an annual rate of growth of 9.1% elementary will grow at a rate of 4.5%, secondary at 5.5% and higher education at a rate of 4.3%. If we compare the derived growth rates with the same in the recent past, it can be seen that the anticipated growth rates at higher education and secondary education are not much higher than those already observed. However, there is a large gap in the case of adult and non-formal sectors. To some extent the anticipated expansion of education is also significantly higher as compared to the past trends.

Summing Up

In view of the fact that future societies are going to require a certain amount of awareness and attitudinal commitment from individuals to be able to sustain a peaceful living it is expected that for most of the population of the country whether they are rural or urban, working or non-working and irrespective of their sex the provision of education would be required by the year 2000. As far as

the workers are concerned it is felt that future production technologies would require a relatively high level of knowledge and skills which cannot be thought of without a reasonable amount of education. Hence it is expected that most of the workforce of the country will be educated. Most of the workers entering labour market by the turn of this century are already in the school system, or are about to enter it. The corresponding resource requirements without a significatn change in the allocation pattern will be forbidding in the provision of education for all selective education may have to be provided. Therefore, some kind of norms which may be related to the possible work pattern will have to be devised. Workers may then be provided education in commensuration with its potential use.

Secondly, looking at the skill requirements of the rural areas and more importantly upon the habitat pattern it is felt that non-formal and adult education will have to be resorted to a large scale with the help of modern media. It is felt that the pedagogy of the open learning systems is amenable to the varied situations which one comes across in our rural areas. However, one must hasten to add that these alternatives are not being looked at either as cheaper alternatives or as inferior substitutes to the formal educational system. But it is felt that this kind of open systems can lend themselves to such situtation and it would be possible to extend the coverge to large masses of the country.

Thirdly, it is assumed that in view of the resource constraint as well as our committment to equity, a fairly large segment of the population and the workforce may not be able to get education beyond primary level. On the face of it, one may consider it to be a retrogade step as it falls short of the Constitutional provision for elementary education. However pragmatic considertions of sheer feasibility force one to make such a constricting assumption.

As a corollary to the preceeding point, it may be stated that the growth of the secondary, senior secondary and higher general education may have to be somewhat more controlled than has been the case hitherto. Preceeding years have witnessed persistent expansion at these levels, at times even at the cost of the qualitative aspects of educational development. The negligence seems to have cost us tremendously both in terms of the decline in the quality of education as well as in the sense of dampening the demand for education all along. In the future scenario that has been drawn, it is envisaged that the secondary and higher education will grow only in a controlled manner.

Finally, keeping in view the nature of the present development pattern and our committment for self-reliance, it is important that the country must continue to build its capabilities in the area of technical education. Without this vital input, one can hardly conceive of the national development in any meaningful manner. Hence while working out the scenario for the year 2000, high priority has been given to the higher technical education.

Above mentioned were some of the considerations that have gone into making of the scenario as presented in this chapter. For the sake of consistency these have also been checked with the perspective of the Seventh Five Year Plan as given earlier. These also seem to be broadly in agreement with the enrolment picture drawn and its implications for the educational expenditure.

NOTES

1. Ministry of Education, Handbook of Education and Allied Statistics, 1983, New Delhi.

2. Tilak J.B.G. and Varghese N.V., Resources for Education in India, Occasional Paper No. 2, NIEPA, 1983. (Mimeo.)

Table 3.1

ELEMENTARY EDUCATION

Scenario I - Trend Based

		PRIMARY			MIDDLE			ELEMENTARY		
		B	G	T	B	G	T	B	G	T
1980-81	P	4.66	4.37	9.03	2.60	2.37	4.97	7.26	6.74	14.00
	GE	4.46	2.81	7.27	1.33	0.66	1.99	5.79	3.47	9.26
	GER	0.96	0.64	0.81	0.51	0.28	0.40	0.80	0.51	0.66
1985-86	P	4.71	4.47	9.18	2.81	2.65	5.46	7.52	7.12	14.64
	GE	5.18	3.33	8.51	1.62	0.83	2.45	6.80	4.16	10.96
	GER	1.10	0.74	0.93	0.58	0.31	0.45	0.90	0.58	0.75
1990-91	P	4.98	4.70	9.68	2.81	2.66	5.47	7.79	7.36	15.15
	GE	5.73	3.74	9.47	1.89	1.02	2.91	7.62	4.76	12.31
	GER	1.15	0.80	0.98	0.67	0.38	0.53	0.98	0.65	0.82
1995-96	P	5.31	4.97	10.28	3.06	2.78	5.84	8.37	7.75	16.12
	GE	6.28	4.16	10.44	2.19	1.23	3.42	8.47	5.39	13.86
	GER	1.18	0.84	1.02	0.72	0.44	0.59	1.01	0.70	0.86
2001-01	P	5.43	5.12	10.55	3.20	3.01	6.21	8.63	8.13	16.76
	GE	6.83	4.57	11.40	2.51	1.45	3.96	9.34	6.02	15.36
	GER	1.26	0.89	1.08	0.78	0.48	0.64	1.08	0.74	0.92

P = Population (in crores)
GE = Gross Enrolments
GR = Gross Enrolment Ratio = (GE/P)

1. 1980-81 are actual figures.
2. Primary Enrolments :

$$P_{Boys} = 12148.318 + 1101.334\ t$$
$$P_{Girls} = 3440.977 + 829.087\ t$$

3. Middle Enrolments :

$$M_{Boys} = (0.1787 + 0.0037052\ t)\ P_{Boys}$$
$$M_{Girls} = (0.090329 + 0.0044405\ t)\ P_{Girls}$$

t = 1 is for 1950-51

4. Elementary Enrolments :

$$E_{Boys} = P_{Boys} + M_{Boys}$$
$$E_{Girls} = P_{Girls} + M_{Girls}$$

Table 3.2

ENROLMENT RATIOS FOR PRIMARY AND MIDDLE CLASSES

	PRIMARY Class I to V ASP 6-11 years		MIDDLE Class VI to VIII ASP 11-14 years	
Period	Boys	Girls	Boys	Girls
1950-51	59.8	24.6	20.7	4.5
1960-61	82.6	41.4	33.2	11.3
1970-71	92.6	59.1	46.5	20.8
1980-81	99.0	66.2	52.1	27.1

Source: Handbook of Education and Allied Statistics, Ministry of Education, 1983.

Table 3.3

ELEMENTARY EDUCATION

Scenario II - UPE by 1990-91

		PRIMARY			MIDDLE			ELEMENTARY		
		B	G	T	B	G	T	B	G	T
1980-81	P	4.66	4.37	9.03	2.60	2.37	4.97	7.26	6.74	14.00
	GE	4.46	2.81	7.27	1.33	0.66	1.99	5.79	3.47	9.26
	GER	0.96	0.64	0.81	0.51	0.28	0.40	0.80	0.51	0.66
1985-86	P	4.71	4.47	9.18	2.81	2.65	5.46	7.52	7.12	14.64
	GE	5.18	3.33	8.31	1.62	0.83	2.45	6.80	4.16	10.96
	GER	1.10	0.74	0.73	0.58	0.31	0.45	0.90	0.58	0.75
1990-91	P	4.98	4.70	9.68	2.81	2.66	5.47	7.79	7.36	15.15
	NE	4.98	4.70	9.68	1.65	1.28	2.93	6.63	5.98	12.61
	NER	1.00	1.00	1.00	0.59	0.48	0.54	0.85	0.81	0.83
1995-96	P	5.31	4.97	10.28	3.06	2.78	5.84	0.37	7.75	16.12
	NE	5.31	4.97	10.28	1.85	1.46	3.31	7.16	6.43	13.59
	NER	1.00	1.00	1.00	0.60	0.53	0.57	0.85	0.83	0.84
2001-01	P	5.45	5.12	10.55	3.20	3.01	6.21	8.53	8.13	16.76
	NE	5.43	5.12	10.55	2.00	1.62	3.62	7.45	6.74	14.17
	NER	1.00	1.00	1.00	0.53	0.54	0.58	0.86	0.83	0.84

P = Population
NE = Net Enrolment
NER = Net Enrolment Ratio = (NE/P).

1. After 1990-91 all enrolments are net for primary stage.
2. Constant proportion of net to gross - sexwise
3. Inter-stage ratios unaffected by change from gross to net.

1980-81 are actual figures.

. Table 3.4

ELEMENTARY EDUCATION

Scenario III - UEE BY 1990-91

		PRIMARY			MIDDLE			ELEMENTARY		
		B	G	T	B	G	T	B	G	T
1980-81	P	4.66	4.37	9.03	2.60	2.37	4.97	7.26	6.74	14.00
	GE	4.46	2.81	7.72	1.33	0.66	1.99	5.79	3.47	9.26
	GER	0.96	0.64	0.81	0.51	0.28	0.40	0.80	0.51	0.66
1985-86	P	4.71	4.47	9.13	2.81	2.65	5.46	7.52	7.12	14.64
	GE	5.18	3.33	8.51	1.62	0.83	2.45	6.80	4.16	10.96
	GER	1.10	0.74	0.73	0.58	0.31	0.45	0.90	0.58	0.75
1990-91	P	4.98	4.70	9.68	2.81	2.66	5.47	7.79	7.36	15.15
	NE	4.98	4.70	9.68	2.81	2.66	5.47	7.79	7.36	15.15
	NER	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
1995-96	P	5.31	4.97	10.28	3.06	2.78	5.84	8.37	7.75	16.12
	NE	5.31	4.97	10.23	3.06	2.78	5.84	8.37	7.75	16.12
	NER	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2001-01	P	5.43	5.12	10.55	3.20	3.01	6.21	8.63	8.13	16.76
	NE	5.43	5.12	10.55	3.20	3.01	6.21	8.63	8.13	16.76
	NER	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Table 3.5

ELEMENTARY EDUCATION

Scenario IV - UPE BY 1990-91 & 1995-96

(in Crores)

		PRIMARY			MIDDLE			ELEMENTARY		
		B	G	T	B	G	T	B	G	T
1980-81	P	4.66	4.37	9.03	2.60	2.37	1.97	7.26	6.74	14.00
	GE	4.46	2.81	7.27	1.33	0.66	1.99	5.79	3.47	9.26
	GER	0.96	0.64	0.81	0.51	0.28	0.40	0.80	0.51	0.66
1985-86	P	4.71	4.47	9.13	2.81	2.65	5.46	7.52	7.12	14.64
	GE	5.18	3.33	8.51	1.62	0.83	2.45	6.80	4.16	10.96
	GER	1.10	0.74	0.73	0.58	0.31	0.45	0.90	0.58	0.75
1990-91	P	4.98	4.70	9.68	2.81	2.66	5.47	7.79	7.36	15.15
	NE	4.98	4.70	9.68	1.65	1.28	2.93	6.63	5.98	12.61
	NER	1.00	1.00	1.00	0.59	0.48	0.54	0.85	0.81	0.83
1995-96	P	5.31	4.97	10.28	3.06	2.78	5.84	8.37	7.75	16.12
	NE	5.31	4.97	10.28	3.06	2.78	5.84	8.37	7.75	16.12
	NER	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
2001-01	P	5.43	5.12	10.55	3.20	3.01	6.21	8.63	8.13	16.96
	NE	5.43	5.12	10.55	3.20	3.01	6.21	8.63	8.13	16.96
	NER	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

P - Population
NE - Net Enrolment in Crores
NER - Net Enrolment Ratio = (NE/P).

Table 3.6

SECONDARY AND HIGHER SECONDARY EDUCATION

Scenario A

(in Lakhs)

	PRIMARY			MIDDLE			ELEMENTARY		
	B	G	T	B	G	T	B	G	T
1980-81	133	66	199	59.37	25.11	84.48	20.78	7.56	28.34
1985-86	162	83	245	81.00	34.86	115.86	28.35	11.16	39.51
1990-91	189	102	291	84.50	42.84	137.34	33.08	13.71	46.79
1995-96	219	123	342	109.50	51.66	161.16	38.33	16.53	54.86
2000-01	251	145	396	125.50	60.90	186.40	43.93	19.49	63.42

1. 1980-81 Figures are actuals (rest are projected).

2. Middle enrolments are trend-based.

3. Secondary/Middle ISR = (0.500 - boys)
   (0.420 - girls)

4. Higher Sec./Sec. ISR = (0.350 - boys)
   (0.320 - girls)

Table 3.7

SECONDARY AND HIGHER SECONDARY EDUCATION

Scenario B

(in Lakhs)

	MIDDLE			SECONDARY			HIGHER SECONDARY		
	B	G	T	B	G	T	B	G	T
1980-81	133	66	199	59.37	25.11	84.48	20.78	7.56	28.34
1985-86	162	83	245	81.00	34.86	115.86	28.35	11.16	39.51
1990-91	189	102	291	85.05	38.76	123.81	27.22	10.85	38.07
1995-96	219	123	342	87.60	43.05	130.65	28.03	12.05	40.08
2000-01	251	145	396	100.40	50.75	151.15	32.13	14.21	46.34

1. Secondary/Middle ISR = (0.45 for boys)
(0.38 for girls) for 1990
(0.40 for boys)
(0.35 for girls) for 1995-2000.

2. Hr. Sec./Sec. ISR = (0.32 for boys)
(0.28 for girls) for 1990 onwards.

Table 3.8

HIGHER EDUCATION

Scenario - I

(in lakhs)

	Senior Secondary			General Stream			Professional			Total Higher Edn.		
	B	G	T	B	G	T	B	G	T	B	G	T
1980-81	20.78	7.56	28.34	13.62	5.25	18.87	1.91	0.48	2.39	15.33	5.73	21.26
1985-86	28.35	11.16	39.51	16.81	7.05	23.86	2.18	0.65	2.83	18.99	7.70	26.69
1990-71	33.08	13.71	46.79	19.61	8.66	28.27	2.55	0.80	3.35	22.16	9.46	31.62
1995-96	38.33	16.53	54.86	22.73	10.44	33.17	2.95	0.97	3.92	25.68	11.41	37.09
2000-01	43.93	19.49	63.42	26.05	12.31	38.36	3.38	1.14	4.52	29.43	13.45	42.88

1. 1980-81 are actual figures.

2. Senior Secondary Enrolments are trend-based (Scenario I)

3. Senior Education/Senior Sec. ISR = 0.67 boys)
0.69 girls)

4. (88.5% of boys in Hr. Education are in General Hr. Education)
(91.5% of girls in Hr. Education are in General Hr. Education)

Table 3.9

PUBLIC EXPENDITURE ON EDUCATION

(Scenario 1 : Trend-Based)

(Rs. in crores)

	1985-86		1990-91		1995-96		2000-01	
	Expenditure	%	Expenditure	%	Expenditure	%	Expenditure	%
Primary	2108	45.9	2346	44.4	2586	42.8	2824	41.4
Middle	787	17.1	934	17.7	1098	18.2	1272	18.7
Secondary	1002	21.8	1188	22.5	1393	23.1	1611	23.6
Higher (General)	355	7.7	421	8.0	494	8.2	571	8.4
Higher (Professional)	338	7.4	400	7.5	468	7.7	539	7.9
Total	4590	100	5289	100	6039	100	6817	100

Growth Rates : 1985-86 to 1990-91 : 2.87%
1990-91 to 1995-96 : 2.69%
1995-96 to 2000-01 : 2.45%

Notes : (i) Expenditure estimations are based on the per pupil expenditure given by the Ministry.

(ii) Expenditure for all years is based on 1984-85 prices.

Table 3.10

PUBLIC EXPENDITURE ON EDUCATION

(Scenario 2 : UPE by 1990-90C

(Rs. in Crores)

	1985-86		1990-91		1995-96		2000-01	
	Expenditure	%	Expenditure	%	Expenditure	%	Expenditure	%
Primary	2108	45.9	2398	47.6	2546	42.6	2613	40.2
Middle	787	17.1	941	17.6	1063	17.8	1162	17.9
Secondary	1002	21.8	1188	22.2	1393	23.4	1611	24.8
Higher (General)	355	7.7	421	7.9	494	8.3	571	8.8
Higher (Professional)	338	7.4	400	7.5	468	7.8	539	8.3
Total	4590	100.00	5347	100.00	5964	100.00	6500	100.00

Growth Rates : 1985-86 to 1990-91 : 3.1%
1990-91 to 1995-96 : 2.2%
1995-96 to 2000-01 : 1.72%

Notes : (i) All estimates are at 1984-85 prices
(ii) Estimates are based on per pupil expenditure

Table 3.11

PUBLIC EXPENDITURE ON EDUCATION

(Scenario 3 : UEE by 1990-91)

(Rs. in Crores)

	1985-86		1990-91		1995-96		2000-01	
	Expenditure	%	Expenditure	%	Expenditure	%	Expenditure	%
Primary	2108	45.9	2398	38.9	2546	37.6	2613	35.65
Middle	787	17.1	1756	28.5	1875	27.7	1994	27.02
Secondary	1002	21.83	1188	19.27	1393	20.1	1611	22.00
Higher (General)	355	77.74	421	6.8	494	7.3	571	7.80
Higher (Professional)	338	7.4	400	6.48	468	6.9	539	7.40
Total	4590	100.00	6163	100.00	6777	100.00	7329	100.00

Growth Rates : 1985-86 to 1990-91 : 6%
1990-91 to 1995-96 : 1.9%
1995-96 to 2000-01 : 1.58%

Notes : (i) All estimates are at 1984-85 prices
(ii) Estimates are based on per pupil expenditure

Table 3.12

PUBLIC EXPENDITURE ON EDUCATION

Scenario 4 : UPE by 1990-91 and UEE by 1995-96

(Rs. in Crores)

	1985-86		1990-91		1995-96		2000-01	
	Expenditure	%	Expenditure	%	Expenditure	%	Expenditure	%
Primary	2108	45.9	2398	44.8	2546	37.6	2613	35.7
Middle	787	17.1	941	17.6	1875	27.7	1994	27.2
Secondary	1002	21.8	1188	22.2	1393	20.6	1611	22.0
Higher (General)	355	7.7	421	7.9	494	7.3	571	7.8
Higher (Professional)	338	7.4	400	7.5	468	6.9	539	7.4
Total	4590	100.00	5347	100.00	6777	100.00	7329	100.00

Growth Rates : 1985-86 to 1990-91 : 3.1%
1990-91 to 1995-96 : 4.85%
1995-96 to 2000-01 : 1.58%

Notes : (i) All estimates are at 1984-85
(ii) Estimates are based on per pupil expenditure

Table 3.13

POPULATION BY EDUCATIONAL LEVELS : 1981

(Percentage)

		Rural	Urban	Total
1.	Literates	70.3	42.6	63.8
2.	Adult & Non-formal	10.5	13.1	11.1
3.	Elementary	15.2	26.1	17.8
4.	Secondary	3.3	13.3	5.7
5.	Graduates & Diploma	0.6	4.9	1.6
	Total	100 (507.6)	100 (157.7)	100 (665.3)

Note: Figures in brackets indicate the population size (in million)

Source: Tata Services Ltd: (1984) Statistical outline of India; 1984
Tata Services Ltd: Dept., of Economics & Statistics, Bombay.

Table 3.14

DISTRIBUTION OF EDUCATED POPULATION: 1981

(percentage)

		Rural	Urban
1.	Adult & Non-formal	72	28
2.	Elementary	65.3	34.7
3.	Secondary	44.4	53.6
4.	Graduates and Diploma	28.8	71.2

Source: Tata Services Ltd. (1984) Statistical Outline of India: 1984
Tata Services Ltd. Dept. of Economics & Statistics, Bombay.

Table 3.15

WORKING AND NON-WORKING POPULATION BY EDUCATIONAL LEVELS : 1981

		Non-Working		Working		Total	
		No.	%	No.	%	No.	%
1.	Illiterates	296	66.8	127	57.2	423	64
2.	Adult & Non-formal	54	12.2	20	9.0	74	11
3.	Elementary	69	15.6	49	22.1	118	17
4.	Secondary	18	4.0	20	9.0	38	6
5.	Graduates & Diploma	6	1.4	6	2.7	12	2
	Total	443	100	222	100	665	100

Table 3.16

MAIN WORKERS BY EDUCATIONAL LEVELS : 1981

		Rural	Urban	Total
1.	Literates	64.5	30.4	57.5
2.	Adult & Non-formal	9.3	8.3	9.1
3.	Elementary	19.7	29.6	21.7
4.	Secondary	5.2	21.0	8.5
5.	Graduates & Diploma	1.2	10.7	3.2
		100 (176.5)	100 (46.0)	100 (222.5)

Note : Figures in brackets indicate the totals in millions.

Source : Tata Services Ltd., (1984) Statistical outline of India : 1984 Tata Service Ltd., Department of Economics and Statistics, Bombay.

Table 3.17

EDUCATIONAL DISTRIBUTION OF WORKERS : 2000

		Rural	Urban	Total
1.	Literates	22.5	5.0	27.5
2.	Adult & Non-formal	90.0	17.5	107.5
3.	Elementary	78.8	40.0	118.8
4.	Secondary	30.4	25.0	55.4
5.	Graduates & Diploma	3.4	12.5	15.9
	Total	225	100	325

Table 3.18

EDUCATIONAL DISTRIBUTION OF WORKFORCE

		Rural	Urban	Total
1.	Literates	10.0	5.0	8.5
2.	Adult & Non-formal	40.0	17.5	33.1
3.	Elementary	35.0	40.0	36.5
4.	Secondary	13.5	25.0	17.0
5.	Graduates & Diploma	1.5	12.5	4.8
	Total	100.00	100.00	100.00

Table 3.19

WORKING AND NON-WORKING POPULATION BY EDUCATIONAL LEVELS : 2000

		Non-Working		Working		Total	
		No.	%	No.	%	No.	%
1.	Illiterates	150	23.2	27.5	8.5	177.5	18.2
2.	Adult & Non-formal	280	43.3	107.5	33.1	387.5	40.0
3.	Elementary	156	24.1	118.8	36.5	274.8	28.2
4.	Secondary	50	7.7	55.4	17.0	105.4	10.8
5.	Graduates & Diploma	11	1.7	15.9	4.9	26.9	2.8
	Total	647	100	325	100	972	100

Table 3.20

ENVISAGED GROWTH RATES BY LEVELS OF EDUCATION : 1981-2000

		Population (Millions)		Envisaged Growth Rate (%)
		1981	2000	
1.	Literates	423	177.5	-
2.	Adult & Non-formal	74	387.5	9.1
3.	Elementary	118	274.5	4.5
4.	Secondary	38	105.4	5.5
5.	Graduates & Diploma	12	26.9	4.3
	Total	665	972	

CHAPTER 4

THE CHALLENGE OF EDUCATION - DILEMMA OF CHOICE

During the past three-and-a-half decades of planned development there has been a manifold expansion in all sectors of education. In some sectors of education, the expansion has been along the desired lines whereas in some others, the outcome has been disconcerting. At this stage, we will not go into their details, as some of these aspects have already been discussed in the earlier Chapters. However, the critical question for the policy planners relates not only to the extent of coverage in quantitative terms but also to the requisite qualitative transformations and the plan of action required to achieve the long term objectives of education. In the present Chapter, an attempt has been made to arrive at a feasible choice especially in view of the challenges that the education system is facing and its likely role in the future.

The various dimensions of the crisis facing Indian education have already been identified in the document entitled "Challenge of Education - A Policy Perspective". After reviewing the past performance and the future challenges, it was felt that mere "minor modifications of the present framework would not be enough", but that some hard decisions would have to be taken. The major tasks relate to

(i) universalization of elementary education,

(ii) reducing drop-outs to an acceptable level,

(iii) removal of regional imbalances,

(iv) the fulfilment of the objectives of equality and social justice and

(v) reorienting the higher education system to produce the desired manpower so that the workforce is gainfully employed.

In addition to this the development of personal attributes in terms of social well-being and competence of the individuals is also considered as one of the major functions of education. However, all the desirable goals, while seeking to promote the positive attributes and qualities, draw upon the resource input which is scarce. In this

sense they compete with each other and, prima facie, it appears as if there is trade-off between different options. In this context the task of prioritization within the sector of education acquires significance.

Many scholars have argued that the developing countries should place greater emphasis on the development of elementary education rather than higher education as the rates of return for it are higher. Others have argued for a greater emphasis on higher education, particularly in research and development and high technology areas. Their basic argument being that such a strategy is necessary for making developing countries self-reliant in an era of rapidly changing technology. This would also enable large scale production of teachers required for the expansion of elementary education. Another group favours restricting the admission to higher education and have suggested delinking of those degrees from jobs which are of a general nature and do not impart specialized knowledge. It is argued that such a strategy would considerably reduce the burden on educational systems which are breaking down under the pressure of job-markets and mass education.

Each of these alternatives has a bearing on the long-term perspective as well as on the structure and the pattern of resource allocation within the education system. It is therefore necessary that besides the quantitative aspects, critical choices would have to be made about the type of educational spectrum to be produced while keeping in view the long-term goals and objectives of the development strategy.

In the present Chapter, we shall examine the possible choices in respect of different sectors of education. Finally an attempt would be made to arrive at an educational profile keeping in view the long term development perspective in general and that of education in particular. Obviously the broad perspective of Indian planning in the context of global trends needs to be re-emphasised for undertaking this type of analysis. However, it may be worthwhile to point out that the alternataive projections discussed earlier relate primarily to three sectors of education i.e., elementary (primary and middle), secondary and higher education (including consolidation and increased emphasis on professional education). For a discussion of choices it is necessary to assume, at least to begin with, that no major structural changes are envisaged in the near future. Nevertheless changes in the structure of education can be incorporated during the subsequent phases while bringing about the refinements.

Stated in simple terms, the educational targets are usually set in terms of enrolments in different streams. These enrolments may be further disaggregated in different components consisting of boys-girls, rural-urban and in terms of socio-economic stratifications as well as other regional considerations. The over riding constraints within which the targets are to be met are : the limited availability and utilization of infrastructural facilities; low paid teachers and dificient non-teacher inputs; and the limited financial resources.

Needless to say that education is only one of the priority sectors, and hence resource availability is quite constrained. Therefore, there is need to produce per unit school output of a given quality at the lowest cost. In the case of education, the output may be the graduate student and the costs may further be considered as direct and indirect, public and private, etc. In fact, wide variations may be observed in per pupil cost not only for different levels but also for different regions and different types of school. For example, the latest available data indicates that the per pupil public expenditure for higher education (professional) is nearly 48 times and for secondary level it is nearly 3 times of the per pupil public expenditure at primary level. In fact, the variations in per pupil public expenditure provide planners with some basis for a choice.

It is also worth noting here that unlike industrial units, where economies of scale operate and sometimes the per unit cost is reduced as the size of the plant increases, in the case of the educational sector such economies are not always possible. Moreover the provision of educational facilities is location specific. This type of situation quite often leads to establishment of non-viable institutions. In the following analysis we have made use of per unit costs in two ways. First, by considering the present state of per pupil cost and secondly, by considering three possible alternative ways in which per pupil expenditure can vary in future i.e. increasing, constant and decreasing.

It needs to be emphasized here that by making use of modern technology, innovations in teaching-learning processes and resorting to open learning systems, it may be possible to hypothesize a decrease in per student expenditure. The increasing real cost per student hypothesis is based on the assumption that to improve the quality of education, more teaching and non-teaching inputs would be required which would require additional resources. Hence the per pupil expenditure would also go up. This acquires special significance in

view of the fact that at present teachers' salaries at the elementary stage constitute more than 90% of the total educational expenditure. The other possible alternative simply assumes no change in per student expenditure (except that part which may become necessary due to inflation).

Keeping in view the framework outlined above, let us look at the various alternatives in terms of quantitative expansion and resource allocations. The choice matrix based on the long term developmental perspective is presented in Figure 1. The sectorwise results are discussed below.

Elementary Education

While discussing choice parameters for elementary education, a distinction has been made between primary stage (Class I-V) and middle stage (Class VI-VIII) of education. It may be noted that in terms of Constitutional obligation there is not much choice except to achieve universal elementary education at the earliest. However, keeping in view the problems of low retention and high dropout, it may be appropriate at this stage to consider primary and middle stages separately. The problems in the case of primary education relate to lack of educational facilities in small habitations and non-coverage of children from the relevant age-groups particularly among SC/ST and other socio-economically backward classes. The enrolment levels of girls in general and in rural areas in particular, have continued to be very low. The single teacher schools constituting about 30% of total schools have their own problems and most of these are not even viable institutions. Based on enrolment scenarios and the corresponding implications for resources which have been discussed earlier, the alternative choices may be stated as under:

A significant increase in enrolment coverage, especially for girls would be required to ensure universal primary education. The greater emphasis on girls' education particularly flows from its greater multiplier effect. The fulfilment of this objective would require strengthening of the existing infrastructure, provision of additional buildings and opening of schools in inaccessible and backward areas. The provision of lady teachers would considerably facilitate the girls' enrolment and retention. The other measures bringing about qualitative improvements in the standard of education and retaining children in school in future would require some changes in the curriculum. It may involve the use of innovative methods of learning.

The successful implementation of most of these programmes calls for larger per unit inputs, in terms of teaching and non-teaching resources. The available data indicates that there is a considerable backlog in the provision of building and their maintenance, recurring items like black-boards, chalk and other consumables. Expressed in terms of resources, it implies a considerable increase in per pupil expenditure in the formal school system. This is so inspite of the fact that by networking the schools it may be possible to share some fixed resources among different schools. Such a possibility has been expressed in the (1,1)th cell of the choice matrics. It may be noted that even a marginal increase in per pupil expenditure associated with increasing enrolments and improved retention would result in a massive increase in resource requirements for the primary sector alone. However, in view of the the latest technological innovations for teaching-learning situations, it may be possible to develop open learning systems which may result in lowering the operating expenditure and hence it may be possible to increase enrolments which may be associated with reduced per pupil expenditure. However, this has to be interpreted rather cautiously as the capital investment in such projects would be very high. Though the possibility of application of such large open-learning systems in our country in the near future is limited, the possibilities of its long term uses can be seriously considered. However, in the immediate future there seems to be no escape from increasing allocation and increasing enrolment for the primary sector and also to explore and experiment with the large scale use of open learning systems.

At middle stage of education, enrolments are expected to increase on account of three inter-related factors. Firstly, it has to increase as a result of push due to expansion at primary level. The enrolment at middle stage would thus increase even if one assumes that no other changes take place and inter-stage transition also remains the same. Secondly, due to gradual improvement in retention at primary stage along with the expansionary trends; and thirdly, due to the improved interstage transition rates which may be touching 100% in due course of time. This alternative is also desirable from the view point of achieving UEE. Therefore, it seems that enrolments at the middle stage are bound to increase at a faster rate in the coming years. If this happens, the need for additional resources would be very large. This would be particularly true for capital expenditure. The analysis of available data indicates that the situation of middle schools in terms of infrastructural facilities is not satisfactory. There is a growing backlog of buildings and other infrastructural

facilities for the middle schools. Creating these facilities is highly capital intensive. However in view of greater allocations required for the primary stage it may not be possible to increase the allocations for the middle stage. In view of such situation the possible choice, therefore, in the case of middle education seems to be to continue with the increasing enrolments by keeping the real per unit expenditure at almost the existing level. It is at this stage that the networking of schools into viable complexes may provide the necessary support and result in optimal utilization of resource. With a view to achieve these objectives, efforts would be necessary not only to make the best possible use of the existing infrastructure but the use of open-learning systems on a large scale needs to be considered. Developing OLS to specific needs is quite time consuming and expensive. However, in the long run it offers great economies of scale.

Secondary and higher secondary education

The education system that exists in the country for imparting secondary and higher secondary education is quite varied and complex. For the last three decades the secondary system of education has been undergoing various changes. It was at the recommendations of Education Commission 1964-66 that a uniform system of education was begun. The senior secondary system of 10+2 which was introduced a few years ago is gradually spreading to all the states. The likely trends in the development of this sector would not only depend upon the pace at which the remaining states switch over to the 10+2 system but would also be determined by the adoption and successful implementation of the vocationalisation programmes at the +2 stage. There are a number of considerations which need to be borne in mind while taking any policy decision with respect to secondary and higher secondary education. These are :

(i) the expansion of secondary and higher secondary sector as a result of push from the expansion of middle stage due to UEE;

(ii) the improvement in retention resulting from better management because of and making education more relevant to the needs of the individual and the society; and

(iii) the increasing awareness about education among the socio-economically backward groups particularly about girls' education.

If these factors operate without being planned and provided for, it would have serious implications for the expansion of infrastructure in terms of buildings, playgrounds, libraries and laboratories. A significant addition to the existing institutions would also be required in response to enhanced demand from different regions. Therefore, the choice about the location of schools would be critical. Since the capital cost of creating these infrastructural facilities is very large, the resource requirements may be very high even if only a few well provided institutions are to be opened. It may also be noted that a detailed exercise needs to be undertaken so that all the critical questions about the location and extent of coverage can be examined in detail.

It is therefore apparent from the above discussion that some major policy choices will have to be made in respect of secondary and higher secondary education. Considering our earlier options it appears that for the time being the transition from middle to secondary stage needs to be checked and no major expansion should be envisaged for the secondary sector and at the same time there would not be much scope for increasing the per pupil expenditure. The justification for this type of approach towards the expansion of general education streams would also be clear if one considers the requirements for higher secondary and higher education sectors also.

In the case of higher secondary education the major emphasis should be to improve the quality of vocational education even though the enrolments in the vocational stream may not expand necessarily at a very fast rate. The qualititative improvements in vocational education would definitely require a considerable increase in resource allocations to this sector. With a view to provide more resources for vocational education, it would be appropriate if the enrolment and expenditure for the general stream are maintained at almost the present level.

Higher Education

The fulfilment of the Plan objective would call for not only development of high level technology but also the absorption and adoption of imported technology. The use of technology for the eradication of poverty, providing full employment with productive efficiency and making the country self reliant is thus the major thrust area. Neither the planning for higher education can be done without taking note of it nor the economic objectives can be

adequately achieved without bringing about some major structural changes in the system of higher education. It therefore becomes very necessary to examine the role of higher education in the development perspective.

To start with, we may distinguish between the professional and general streams of higher education. Since higher education has a prominent interface with the employment market also, the pattern of workforce participation and its utilization in different sectors of the economy also acquires significance. In the Indian context, a significant proportion of the workforce is not educated, or have very low levels of education. At the same time, the available data shows that all the educated persons are not able to find suitable jobs. The employment situation is particularly adverse for those who graduate from the general stream of education whereas this problem is not serious for those having professional education. Because, the per unit expenditure is very high for higher education there is a need to consolidate the development in this sector. It could, be considered appropriate to curb the expansion of general higher education.

In the case of professional education, not only growth would be desirable but the quality also needs to be improved by providing additional infrastructural facilities and replacement of old and outdated equipment, wherever necessary. This would be particularly true of high level research and development areas which would require creation of large infrastructural facilities to meet the above stated challenges. It is expected that a policy choice in the case of higher education would relate to the identification of areas where public funding would be necessary in view of its inflexibility. It is felt that the investment from public funds would be necessary for the growth of professional education, whereas funding for the provision of general education, can be left at least in part to the private sector so that there is no encroachment on the public resources for the high priority.

The foregoing discussion may be summed up by stating that in the case of higher education, a larger emphasis needs to be placed on the development of professional education especially in the areas of emerging technologies and there is a need to expand this sector further and improve its quality. The implementation of this programme would call for increased allocation of resources from the public exchequer. The expansion in general stream of education will have to be frozen at the existing levels of enrolments as well as allocations. Efforts will have to be made to bring about qualitative improvements

by making efficient use of existing resources and by making this sector self-sustaining by rationalizing the fee structure and other similar measures. It is in this context that private funding of higher education (general) is being thought of. In case, such programmes are to be implemented, adequate care has to be taken to see that the demands of equity and social justice are not violated. This may be possible by increasing the role of scholarships/subsidies to the needy and deserving students.

The secondary sector as it exists today, does not stand on a sound footing and hence there is an urgent need to bring about reforms and this calls for various policy decisions. One such critical decision relates to the transition from the middle to the secondary stage. Should it be controlled or not? The other critical area relates to the successful implementation of programmes at the +2 stage. It is expected that a restricted admission policy and major diversification towards vocational streams may be one viable solution to the increasing pressure on the secondary stage.

In the case of primary education immediate steps would be needed not only to increase the enrolments so that all the children of the relevant age group attend the school but also to improve the quality of education by providing additional infrastructural facilities and thus larger allocation of resources would be needed. In the case of middle level of education, particularly with the above scenario in view, the only possible choice seems to be the expansion within the framework of the existing pattern of resource allocations. However, this is not to deny that additional resources are not needed for this sector.

Finally, the use of open learning systems has to be expanded considerably to provide educational facilities in the form of open schools and open universities. In the long run, this mode may emerge as one of the ideal modes to impart education to the masses at a relatively low cost.

CONCLUDING OBSERVATIONS

So far we have presented different facets of the theme without attempting to weave them together. Now we will try to put-forth an overview of the discussion and describe the major strands which, in our judgement, are critical in delineating the future educational system of the country. While doing so we also briefly re-state the main arguments of each Chapter.

We began by first describing what we considered were the key attributes of the present pattern of development which have emerged in the wake of the industrial revolution. We identified some attributes which have brought about unprecedented changes in the world scene. Though the argument is made primarily in the context of economic development, we have made explicit mention about the role which other social institutions in general and education in particular have played in this process. The prognosis for such a past naturally is that keeping in view the present explosions in communications, information and technology are going to play a still more important role. In other words, the direction and pace of future developments are going to be altered in future. It is precisely due to this speed of oncoming future that one needs to anticipate the nature of likely changes so that one can plan for managing it more efficiently.

However, our immediate focus is on the Indian interface to this global reality. There we find ourselves endorsing the received thesis that the colonial relationship precluded the industrial revolution to take roots in the country in the manner in which it did in the West. But more importantly, we extend the argument further by suggesting that by the time post-independence development efforts were launched, it was a day late for developing countries to be able to ingrain the process of development in its earlier form. The die of world economic structure had been broadly cast and the unequal relationship between the developed and the developing countries had been forged by then. As a matter of fact, the polar version of this argument states that the timing of decolonization marked the coming of an age characterised by maturity of global development relations. The experience of many developing countries has shown that even during the post-independence period, it is quite difficult for them to break away from the earlier pattern of development. Consequently, some of the inadequacies of the colonial rule have continued to persist despite the valiant efforts of the national planners.

Education (particularly Western, English-medium, formal and class-room based) played an important role in facilitating this process of global evolution. The industrial revolution may not have been triggered by education but was certainly fuelled by it at various stages of its maturity. With hindsight it can now be safely argued that it was not the fact of having odd factories and cities that set the Western countries apart from the developing world but that they had been the centres of world market (exchange-places of information) and the know-how to build the industrial arte facts. The emergence of

Japanese and West German economies in the post-war period is testimony to the role of know-how and the productivity of human resources. One would have thought, it need not be debated any more!

It is in pursuance of these facts that we see:

(i) the Seventh Five Year Plan perspective upto year 2000; and

(ii) the growth of Indian education with all its strengths and weaknesses.

The former follows the feasible path of pragmatic development trying to make best use of available science and technology while negotiating the demographic (large size), social (stratification and pluralism), and institutional (nation-state structure) liabilities caused by the fact of being a developing country in the post-industrial world. Education knows not where to look for answers as no country in the world till today had to cater to a society with a nearing billion population, with more than sixty per cent as illiterates, with labour displacing technologies in full cry and unskilled hands in abundance.

It has been argued that the spectrum of problems which the Indian education is facing at present are absolutely unprecedented. The educational system of the future has to be extremely prolific to be able to come to terms with our reality. It has to be geared to reach all social segments rich or poor, men or women, young or old, working or non-working, salaried or self-employed, organised or unorganised workers, and those working on the frontiers of knowledge (inspace, deep sea mining, off- shore explorations, genetic engineering etc.). It has to achieve all this at a fast pace and in an integrated manner. The organisational innovations, implementation strategies and the requirements of monitoring such a system are certainly stupendous.

But unfortunately educational systems all around the world are rather known for their inertia and are usually slow to change. The Indian education system is no exception. The fact that it is by and large state-sponsored makes it particularly bureaucratic and wooden. That is why one needs bold and forthright interventions and that too periodically at short intervals rather than once in a decade or two. The rationale for these interventions arise as much from the objectives/goals of education as much from the "default" state of the system, if allowed to operate unrestrained.

In Chapter 3 we have portrayed different enrolment scenarios which are likely to take place or are sought to be achieved. The consequent discussion clearly brought out that Indian education would need detailed planning and management inputs. It is ironical that these are presently the weakest aspects of the system. It also presents the expenditure implications of the enrolment scenarios. The message is very clear that the investments in education would have to increase, if any planned change is to be ensured. In the "default" case of no increase (or marginal increase), the system would continue to deteriorate, and degenerate. It would soon become dysfunctional, if it has not already become so. It is interesting to note that in public endeavours, if the inputs tend to be insufficient and/or uncertain, it is the goals associated with their public-ness (equity, justice and far-sightedness)that tend to be eroded while the short-run self-interests of individuals and groups display the uncanny acumenship for survival. Hence the need for a determined public policy, planning and management of education.

We have also attempted to foresee a picture of the employment interface in the year 2000. It obviously had to be done along some "preferred" scenario which should not put impossible demands on the system. By and large, we have projected the 1981 profile, with sought after steep decline in illiteracy (hence an increase in non-formal/adult education) and emphasis on scientific/technical and professional education. The secondary/higher secondary schooling has deliberately not been "allowed" to swell. Needless to say that even such a nominal change would require tremendous planning and management inputs for future education.

Notwithstanding the crudeness of our estimates, it is important to point out that the "preferred" scenario, in our judgement, is consistent with the perspective that the Seventh Five Year Plan has put forth. Of course, we are not commenting upon the feasibility of achieving employment levels claimed by the Plan. But our limited purpose is to stress that the goals of the Seventh Five Year Plan are treated as given and then a consistent educational profile of the workforce (and non-workers) has been developed.

The trade-offs among the different sectors have been put-together in a "choice" matrix. With a view to simplify the analysis only two attributes, magnitude of per unit public expenditure, and size of expansion have been taken into account. It is hoped that even this simplified version would help in laying bare the inter-relationships among different facets of education. If it is visualized that the

resource input can not be augmented substantially, then the dilemma of choice become more operative and binding. What is more, we seem to be saddled in such a situation where the hazards of "not-doing" anything are not less severe than the cruelty of choices to be made.

The main theme of the present document is that being a late developing country, historically the odds have been pitched against us. What is worse new technological outbursts are fundamentally changing the problemetique of development. The solutions, if they have to work, have to be thought of afresh and have to be situation-specific. This would require a tremendous draw upon information, knowledge and the Indian genious. Education of the future has to provide an answer to this situation.

The directions of educational development elaborated in the main Chapters would, hopefully, be helpful in making final choices. The catch lies in the fact that if we fail or delay in responding, the odds become even more binding. Hence, the logical response is to have a determined intervention in terms of planning and management of education. Although it is also clear that, if it is left only to education to mop-off all these contra-indications of the development process, we are not likely to succeed. Our dignosis reflect on the pathology of the system, hence, the prescription calls for an integrative planning of education. The inter-dependence of the different sectors among themselves, as well as of regions across the globe is too obvious to warrant any elaboration at this stage. However, as the state of the art of in applied educational research modelling is yet partial and inadequate for the purpose, the broad scenarios have been generated so that a heuristic understanding about the future could be evolved.

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