

## HUMAN RESOURCES AND THEIR DEVELOPMENT

### I. Human Factor and Economic Growth

Gross National Product (GNP) has been traditionally ascribed to the combined output of three productive factors, *viz.*, land, labour and capital. This would be true for a static model or a stationary state of affairs. But when GNP is viewed qualitatively and dynamically over a period of time, it cannot be ascribed only to the three factors. A number of studies have indicated that the human factor also accelerates economic growth. Increases in the GNP can be explained, for the main part, as a return on the very heavy investment which all countries undertake at all times in the development of their human resources. This includes all expenditures — capital and recurrent — on all forms of formal education which invest human resources with knowledge and skill on all forms of mass media which circulate knowledge over a wide area, and on all forms of development and research. In developing human resources, the active agents of modernization are the human beings as they alone can accumulate capital, exploit natural resources and build political and social organization. In the ultimate analysis, it is on the development of people and the effective commitment of their energies and talents that the wealth and vitality of nations rest.

The two reciprocally related processes are the development and utilization of human resources. While the development of human resources essentially means the enlargement of personnel potential through the acquisition of beliefs, values, skills and knowledge, the utilization of human resources development is not only providing so many jobs for people but also providing jobs that will enable them to do what they are become capable of doing.

It has to be accepted that accelerated economic growth is to a large degree a function of adequate or commensurate development of human resources and that increase in the GNP has causal relationship with increase in investment in education, health, housing, scientific research, etc. Investment in human resources, to be productive, implies that all expenditure must be the result of a system of rational and integrated educational planning as a part of an overall and social development programme in a country. This involves, among other things, mapping the demand of all types of personnel over a requisite period of time, identifying the educational and training sectors which are hindering economic growth through either under-supply or over-supply of skilled personnel and concentrating investment in those sectors which need to

be expanded, bearing in mind the inter-related character of the different levels of education and training and educational pyramid, undertaking a qualitative appraisal of the content of education and training programmes and gearing them both to the humanistic values and traditions of society and to the development demands of the growing economy, particularly its innovation-mindedness, reducing rapidly and finally eliminating all forms of waste in the educational system.

The size, composition and socio-cultural characteristic of a population are the basic determinants of the pace and level of economic development. Not only do demographic forces influence the nature and quantum of all factors of production, they also determine the kind of economic climate within which all activity takes place. The constant inter-action between man and his environment has an effect on the size and quality of the natural resources base. Similarly, demographic and cultural factors are important determinants of the rate of capital accumulation. The quality of the human resources also plays an important role in determining the type of technology, the modes of organization, and the targets of production. Human resources (or the total population) have a two-pronged relationship with economic development. As a resource, people are available as factors of production to work in combination with other factors. As consumers, the goal of economic development is to maximize realization of their desires and aspirations. Thus, economic analysis has to consider the human element in both its roles as producer and as consumer.

## II. Indicators of Human Resource Development

It would be useful to identify quantitative indicators of human resource development and to find out whether there are significant statistical relationships among various human resource indicators and measures of economic development. Quantitative approach in identifying indicators of human resource development obviously presents certain difficulties. But at the same time, even qualitative approach involves difficulties of evaluation. Recently, several attempts have been made to determine qualitative relationships between indicators of educational development and economic growth for a limited number of countries. Here also, one has to distinguish between the human resource indicators which might be desirable and which are available. It is, however, agreed that the most important indicators of human resource development fall into two general categories:

- (i) those which measure a country's stock of human capital; and
- (ii) those which measure the gross or net additions to the stock or more precisely the rate of human capital formation over a specified time period.

While the stock of human capital indicates the level of human resource development which has been achieved by a country, the rate of human capital formation indicates its rate of improvement. In both cases, one is forced to make a distinction between those indicators which would be regarded as desirable if data were available and those which are used because data are available.

For purposes of international comparison, the following indicators of stock of human capital would be useful:

- (i) levels of educational attainment; and
- (ii) the number of persons, expressed as percentage of the population or labour force, who are in high level occupations.

Under category (i) one would like to particularly indicate the first (primary or elementary), second (secondary) and third (higher) levels of educational attainment. The last two are particularly important in indicating the stock of high level manpower, especially the proportions in the second and third levels which have completed scientific and technical courses. Under category (ii) the numbers would relate to the people in selected strategic occupational groups like scientists, engineers, managers, teachers, doctors and dentists, scientific and engineering technicians, nurses and medical assistants and persons in the foreman and skilled worker category.

In addition to data on educational attainment for the latest available census years, it may be useful to treat literacy also as a measure of human capital. In a number of studies, literacy is regarded as an important indicator of human resources development. This indicator is, however, relatively poor because the census data is based on getting answers to questions "can you read or write". The resultant answers may vary widely depending upon the interpretation put on the question, and the reported estimates also vary within ranges.

The second best measures, indicating the growth of human resource development, universally recognized, are as under:

- (i) number of teachers (first and second levels) per 10,000 population;
- (ii) engineers and scientists per 10,000 population;
- (iii) physicians and dentists per 10,000 population;
- (iv) pupils enrolled at first level (primary education) as a percentage of the estimated population in the corresponding age-group;
- (v) the adjusted school enrolment ratios for first and second levels combined;
- (vi) pupils enrolled at second level (secondary education) as a percentage of the estimated population in the corresponding age-group; and
- (vii) enrolment at the third level (higher education) as a percentage of the population in the corresponding age-group.

The first three are partial measures of the stock of human resources and the next four are measures of additions to it. In addition to these, there are two other indicators of human resource development which indicate the orientation of higher education. These are:

- (i) the percentage of students enrolled in scientific and technical faculties in recent years; and
- (ii) the percentage of students enrolled in faculties of humanities, fine arts and law in the same year.

While the task of identifying indicators of human resource development is somewhat easy, the collection of data relevant to the selected indicators, their presentation in a coherent form and an analytic study indicative of the growth or otherwise of human resources development, is undoubtedly challenging and to some extent difficult.

### III. Survey of Human Resource Potential in India

Any survey of human resource potential would be incomplete without a study of the demographic trends, its composition in terms of various age-groups, under-privileged and socially backward classes, distribution by livelihood classes, levels of education, etc. An attempt is made below to present briefly the demographic position in India.

Population in India has been growing at a very fast pace. While in 1901, the population was 238 million, it rose to 319 million in 1941, 361 million in 1951, 439 million in 1961 and to 548 million in 1971.

TABLE I

Growth of Population in India, 1901-1971  
Total Population

Year	Males	Females	All Persons
1901	120,760,506	117,330,453	238,337,313*%
1911	128,340,309	123,665,161	252,005,470
1921	128,504,733	122,734,759	251,239,492
1931	142,873,864	135,734,938	278,867,430*
1941	163,622,013	154,632,036	318,539,060*
1951	185,456,252	175,494,113	360,950,365
1961	226,208,008	212,864,574	439,072,582
1971	283,936,614	264,013,195	547,949,809

\*The distribution of population by sex of \*Pondicherry for 1901 (246,354), 1931 (258,628) and 1941 (285,011) is not available. The figures for these years are, therefore, exclusive of these population so far as distribution by sex is concerned.

%In 1901, sex-wise distribution of Chandannagar (26,831) of West Bengal and Gonda (18,810) of Uttar Pradesh is not available.

The proportion of females to males is slowly declining over the years. While the number of females to per 1,000 males was 946 in 1951, it declined to 941 in 1961 and to 932 in 1971.

Bulk of the population, however, has been in rural areas. According to the Census of 1951, the population in rural areas was 295 million *i.e.*, 82.7 per cent of the total population of 357 million and according to the Census of 1961, the rural population was 360 million, 82 per cent of the total population of 439 million. However, according to the Census of 1971, the rural population was 439 million, 80 per cent out of the total population of 548 million.

TABLE II  
Total Population in India 1951, 1961 and 1971  
Urban and Rural Classification

Category		1951*	1961	1971
1		2	3	4
		(000's)		
Males	Urban	33,273 ( 18.1)	42,789 ( 18.9)	—
	Rural	150,061 ( 81.9)	183,504 ( 81.1)	—
	Total	183,334 (100.0)	226,293 (100.0)	283,937 (100.0)
Females	Urban	28,602 ( 16.5)	36,148 ( 17.0)	—
	Rural	144,943 ( 83.5)	176,794 ( 83.0)	—
	Total	173,545 (100.0)	212,942 (100.0)	264,013 (100.0)
All Persons	Urban	61,875 ( 17.3)	78,937 ( 18.0)	109,097 ( 19.9)
	Rural	295,004 ( 82.7)	360,298 ( 82.0)	438,853 ( 80.1)
	Total	356,879 (100.0)	439,235 (100.0)	547,950 (100.0)

\*Excludes figures for Jammu and Kashmir; Goa, Daman and Diu; Pondicherry (Karaikal, Mahe and Yanam); NEFA; major portion of Nagaland and Dadra & Nagar Haveli.

Figures given in brackets indicate percentages.

While the total increase in population during 1951-61 was 82 million, in rural areas alone the increase was of the order of 65 million. There has, however, been some slight shift in the rural population. While the percentage of population living in rural areas in 1901 was 89, it decreased to 82 in 1961. Urbanization is both a consequence and a causal factor in economic development. The rate of urban growth is an important index of progress of the economy. It was expected that there would be much faster rate of urban growth in the 1951-61 decade. The urban population in 1951 was 17.3 per cent of the total population and it was 18 per cent in 1961. Many reasons have been advanced for the slow rise in the growth of urban population. The Census of 1971 indicates higher trend in urban population.

The percentage distribution of India's population by four different well recognized age-groups *viz.*, 0-4, 5-14, 15-59, and 60 and over, during the period 1911-66 and projected upto 1976, is given in the following Table:

TABLE III

**Percentage Distribution of India's Population  
by Age-Groups 1911-76**

Year	Age-group				Total
	0—4	5—14	15—59	60 and over	
1	2	3	4	5	6
1911	—	38.8*	60.2	1.0	100.0
1921	—	39.2*	59.6	1.2	100.0
1931	—	38.3*	60.2	1.5	100.0
1951	13.3	24.1	56.9	5.7	100.0
1961	16.5	24.5	53.3	5.7	100.0
1966	16.3	25.3	53.4	5.0	100.0
1971**	15.7	25.8	52.7	5.8	100.0
1976**	14.7	25.6	54.1	5.6	100.0

\*Relate to age-group 0—14 as break-up between the ages 0—4 and 5—14 is not available.

\*\*Estimates.

Thus over the years, the proportion of age-group 0-14 to the total population has increased and that of the productive population (i.e. age-group 15 to 59 years) has fallen. The preponderance of the younger population increases the dependency load, leads to diversion of resources from capital formation to population maintenance and amounts to a wasteful exploitation of children workers who may be forced into work at under-developed levels of skill and stamina and may cause under-employment.

Two categories of the population belonging to weaker sections are Scheduled Castes and Scheduled Tribes. They together comprise more than one-fifth of the total population. In 1961, the population of Scheduled Castes increased to 64 million or 14.7 per cent of the total population. More than 57 per cent of the Scheduled Caste population (37 million) was concentrated in the States of Uttar Pradesh, West Bengal, Bihar and Tamil Nadu. The population of Scheduled Tribes in 1961 increased to 30 million or 6.8 per cent of the population. More than 50 per cent (17 million) of the Scheduled Tribes population was concentrated in the States of Madhya Pradesh, Orissa and Bihar.

The distribution of population in India, classified as workers and non-workers, according to 1971 Census, is indicated in Table IV.

TABLE IV

## Distribution of Population in India — Workers and Non-Workers

Category	Number of Persons in Thousands		
	Male	Female	All Persons
<b>Workers</b>			
1. Cultivators	68,910 (24.2)	9,266 ( 3.5)	78,176 (14.2)
2. Agricultural labourers	31,695 (11.2)	15,794 ( 6.0)	47,489 ( 8.6)
3. Livestock, Forestry, Fishing, Hunting and Plantations, Orchards and Allied Activities	3,514 ( 1.2)	783 ( 0.3)	4,297 ( 0.8)
4. Mining and Quarrying	799 ( 0.3)	124 ( 0.0)	923 ( 0.2)
5. Manufacturing, Processing, Servicing and Repairs			
(a) Household Industry	5,021 ( 1.8)	1,331 ( 0.5)	6,352 ( 1.2)
(b) Other than Household Industry	9,851 ( 3.5)	865 ( 0.3)	10,716 ( 2.0)
6. Construction	2,012 ( 0.7)	204 ( 0.1)	2,216 ( 0.4)
7. Trade and Commerce	9,482 ( 3.3)	556 ( 0.2)	10,038 ( 1.8)
8. Transport, Storage and Communications	4,255 ( 1.5)	146 ( 0.1)	4,401 ( 0.8)
9. Other Services	13,536 ( 4.8)	2,229 ( 0.9)	15,765 ( 2.9)
(A) Total Workers	149,075 (52.5)	31,298 (11.9)	180,373 (32.9)
(B) Total Non-Workers	134,862 (47.5)	232,715 (88.1)	367,577 (67.1)
Grand Total	283,937 (100.0)	264,013 (100.0)	547,950 (100.0)

This means that of the total population, 33 per cent (53 per cent males and 12 per cent females) were working. The Census of 1971 also revealed that participation rate for each sex was distinctly higher in the rural areas.

The percentage distribution of workers by industrial categories,

according to the 1971 Census, indicates that India continues to be a peasant economy, as shown in the Table below:

TABLE V  
Percentage Distribution of Workers by Industrial Categories and Sex

Category	Total	Percentages	
		Male	Female
1. Cultivators	43.4	46.2	29.6
2. Agricultural labourers	26.3	21.3	50.5
3. Livestock, Forestry, Fishing, Hunting and Plantations, Orchards and Allied Activities	2.4	2.4	2.5
4. Mining and Quarrying	0.5	0.5	0.4
5. Manufacturing, Processing, Servicing and Repairs			
(a) Household Industry	3.5	3.4	4.2
(b) Other than Household Industry	6.0	6.6	2.8
6. Construction	1.2	1.3	0.6
7. Trade and Commerce	5.6	6.4	1.8
8. Transport, Storage and Communications	2.4	2.8	0.5
9. Other Services	8.7	9.1	7.1
Total:	100.0	100.0	100.0

The pattern of occupational structure over the past sixty years is indicated below:

TABLE VI  
Occupational Distribution of Working Force in India

Sectors	YEARS					
	1901	1911	1921	1931	1951	1961
Primary	71.5	74.9	76.5	74.7	74.4	76.4
Secondary	11.7	10.8	9.7	10.3	10.6	11.0
Tertiary	16.8	14.3	13.8	15.0	15.0	12.6
Total	100.0	100.0	100.0	100.0	100.0	100.0

The Table indicates that primary employment has been increasing and the employment in tertiary sectors has been showing a decline. It also seems that the decade of planned development has not made any impact on the employment in the secondary sector. The relative upsurge of the primary sector on the one hand and stagnation and even moderate to considerable shrinkage in the secondary and tertiary sectors on the other have produced a stage when surplus agricultural labour has not been effectively siphoned off from the primary sector.



#### IV. Human Resources Development and the Indian Constitution

The Constitution of India, in its various articles, gives a prominent place to the development of the human factor. The Preamble of the Constitution itself is a recognition of this fact. The articles of the Constitution relating to 'Fundamental Rights' and 'Directive Principles of State Policy' among others, lay down that the State shall not deny to any person equality before the law, nor shall the State discriminate against any citizen on the ground only of religion, race, caste, sex, place of birth or any of them: nothing shall prevent the State from making any special provision for the advancement of women and children and socially and educationally backward classes of citizens or for the Scheduled Castes and Scheduled Tribes. Further, the Constitution also embodies in its fundamental rights that no citizen shall, on grounds only of religion, race, caste, sex, place of birth or any of them, be subject to any disability, liability, restriction or condition in regard to use of any public place, entertainment, etc. It has also laid down that nothing shall prevent the State from making any special provision for men and women. There shall be equality of opportunity for all citizens in matters relating to employment or appointment to any office under the State. Untouchability, which was one of the greatest banes of Indian society and discriminated man against man, was abolished by the Constitution and its practice in any form was forbidden. Freedom of speech and expression to every citizen which is a condition precedent for human resources development, is a fundamental right guaranteed in the Constitution. The Constitution also prohibits traffic in human beings and *begar* (forced labour) and other similar forms of forced labour. No child below the age of 14 years should be employed to work in any factory or mine or engaged in any other hazardous employment. Any section of the citizens residing in any part of India having a distinct language, script or culture of its own, has been given the fundamental right to conserve the same. No citizen shall be denied admission in any educational institution maintained by the State or receiving aid out of State funds on grounds only of religion, race, caste, language or any of them.

Part IV of the Constitution deals with the 'Directive Principles of State Policy' which are fundamental in the governance of the country and it shall be the duty of the State to apply these principles in making laws. Article 39 in the chapter 'Directive Principles of State Policy' has stated that the State shall, in particular, direct its policy, among other things, towards securing that the citizens, men and women, equally have the right to an adequate means of livelihood; there is equal pay for equal work for both men and women; the health and strength of workers, men and women, and the tender age of children are not abused and that

citizens are not forced by economic necessity to enter avocations unsuited to their age or strength; and childhood and youth are protected against exploitation and against moral and material abandonment. Article 41 lays down that the State shall, within the limits of its economic capacity and development, make effective provision for securing the right to work, to education and to public assistance in cases of unemployment, old age, sickness and disablement and any other cases of undeserved want. Provision for just and human conditions of work, living wage, etc., are set out in Articles 42 and 43 of the Constitution. Article 45 stipulates that the State shall endeavour to provide, within a period of ten years from the commencement of the Constitution, for free and compulsory education for all children until they complete the age of fourteen years. Article 46 of the Constitution lays down that the State shall promote with special care the educational and economic interests of the weaker sections of the people, and, in particular, of the Scheduled Castes and the Scheduled Tribes, and shall protect them from social injustice and all forms of exploitation.

Article 41 of the Constitution lays down that the State shall, within the limits of its economic capacity and development, make effective provision for securing the right to education, but the right to education, as such has not been included in the list of fundamental rights under the Constitution, although Articles 29 and 30 grant certain educational rights to the minorities. It seems that the Constitution makers could not make the right to education a fundamental right and the extreme difficulty they contemplated even in implementing Article 41 under the 'Directive Principles of State Policy' is evident in the phrase 'within the limits of its economic capacity and development'. Article 45 of the Constitution is important from the point of view of human resource development which makes provision for free and compulsory education for children until they complete the age of 14 years. Since 1951, all-out efforts are being made to achieve the constitutional directive. The Constitution makers, though not unaware of the financial implications of such a directive, were serious about its implementation especially when Article 45 is read with Article 24 of the Constitution, under the 'Fundamental Rights' which states: "No child below the age of fourteen years shall be employed to work in any factory or mine or engaged in any other hazardous employment". The Constitution makers rightly believed that this is the age when a child should be studying in some school.

#### V. Five Year Plans and Human Resource Development

Soon after the passing of the Constitution in 1950, the Government of India set up the Planning Commission in March 1950, with a view to realizing the basic objectives of the Constitution which were set forth in the 'Directive Principles of State Policy'. Articles 38, 39, 42, 43,

44, 45, 46, 47 and 48 of Part IV of the Constitution dealing with the 'Directive Principles of State Policy' are directly relevant to the development of human resources. Among the Directive Principles, the position of eminence goes to Articles 38 and 39, reproduced below, which set the tone to the basic philosophy and programmes embodied in the Five Year Plans of India:

*Article 38*

"The State shall strive to promote the welfare of the people by securing and protecting as effectively as it may a social order in which justice, social, economic and political, shall inform all the institutions of the national life."

*Article 39*

"The State shall, in particular, direct its policy towards securing —

- (a) that the citizens, men and women equally, have the right to an adequate means of livelihood;
- (b) that the ownership and control of the material resources of the community are so distributed as best to subserve the common good;
- (c) that the operation of the economic system does not result in the concentration of wealth and means of production to the common detriment;
- (d) that there is equal pay for equal work for both men and women;
- (e) that the health and strength of workers, men and women, and the tender age of children are not abused and that citizens are not forced by economic necessity to enter avocations unsuited to their age or strength;
- (f) that childhood and youth are protected against exploitation and against moral and material abandonment."

In the context of planning and with special emphasis on human resource development, it would be useful to draw attention to three other Articles *viz.*, 41, 45 and 46.

The Planning Commission, under its terms of reference as defined in the Government of India Resolution of March 1950, was asked to make an assessment of the material, capital and human resources of the country, including technical personnel and investigate the possibilities of augmenting such of these resources as are found to be deficient in relation to the nation's requirements; and formulate a plan for the most effective and balanced utilization of the country's resources. In chapter I of the First Five Year Plan, while discussing planning and its economic and social aspects, it was observed that the central objective of planning in India at the present stage is to initiate a process of development which will raise living standards and open out to the people new opportunities for a richer and more valid life. The problem of development of an under-

developed economy is one of utilizing more effectively the potential resources available to the community, and it is this which involves economic planning. It was pointed out that the economic condition of a country, at any given time, is a product of the broader social environment and economic planning has to be viewed as an integral part of a wider process aiming not merely at the development of resources in a narrow technical sense but at the development of human faculties and the building up of an institutional frame work adequate to the needs and aspirations of the people. It was further observed that an under-developed economy is characterized by the co-existence, in greater or lesser degree, of unutilized and under-utilized man-power on the one hand and of unexploited natural resources on the other. The elimination of poverty cannot obviously be achieved merely by redistributing existing wealth, nor can a programme aiming only at raising production remove existing inequalities. Referring to the determinants of economic development, the First Plan observed that economic development of an under-developed country cannot proceed far unless the community learns how to get from its resources of men and materials the larger output of commodities and services. The pace of economic development depends on a variety of factors which constitute the psychological and sociological setting within which the economy operates. A major element in the setting is the community's will to progress and its readiness to develop and adopt new and more efficient methods and processes of production. Basically, development involved securing higher productivity all round and this is a function of the degree of technological advance the community is able to make.

Referring to investment, income and economic development in India, the First Plan observed that development effort is something more than investment, defined in the technical sense of additions to capital equipment. When the levels of education and health are as low as they are in India today, measures designed to raise them — which might require only moderate amounts of capital equipment — would yield larger returns than many forms of investment in the narrower sense of the term. The potentialities in this direction are immense. The scope for raising agricultural productivity in the country by relatively small outlays of money on agricultural extension service is an instance in point. Technical education and training, together with slight improvements in methods of production, may have similarly the effect of increasing productivity substantially in small-scale industries.

The central object of planning, as defined in the First Plan, is to create conditions in which living standards are reasonably high and all citizens, men and women, have full and equal opportunity for growth and service. It was further observed that we have not only to build up a big production machine—though this is no doubt a necessary condi-

tion of development—we have at the same time to improve health, sanitation and education and create social conditions for vigorous cultural advances. Planning must mean co-ordinated development in all these fields. Fuller utilization of the idle manpower in the country must be a major objective, and every effort must be made to create opportunities for work in the rural areas through improvements in agriculture, development of cottage and small-scale industries and extensive programmes of public works, especially in the slack season, and by providing necessary equipment and other materials needed for improving labour productivity limits and the rate at which idle manpower can be absorbed. Rigidity of the occupational pattern is incompatible with rapid economic development. The First Plan, therefore, suggested that steps must be taken to ensure the fullest possible utilization, in furtherance of development programmes, of labour power now running to waste, and the long-run objective must be to encourage rather than to discourage the mobility of labour, geographical and occupational.

The First Plan also observed that the problem of unemployment among the educated middle classes in the urban areas is an instance of a failure of co-ordination between the system of education and the needs of the economic system.

The first two Five Year Plans emphasized the importance of developing human resources through various schemes. The 'Directive Principles' of the Constitution were given a more precise direction in December 1954, when Parliament adopted the "Socialist Pattern of Society", as the objectives of social and economic policy. It was made clear that the approach of planned development should be realized under the frame work of democratic socialism. Thus the Second Five Year Plan stated:

"The task before an under developed country is not merely to get better results within the existing framework of economic and social institutions, but to mould and refashion these so that they contribute effectively to the realisation of wider and deeper social values."

These values or basic objectives have been summed up in the phrase: "Socialist Pattern of Society".

Thus the socialist pattern of society envisages maximization of production and reduction of economic and social disparities, and these two may be regarded as the corner-stone of the envisioned new pattern of society.

In a nutshell, it could be stated that the salient features of the socialist pattern of society in terms of a programme of action are as under:

- (i) provision of basic minimum standard of life;
- (ii) reduction of economic disparities;
- (iii) prevention of concentration of economic power;
- (iv) production of social gain and not for mere earning profit; and

- (v) provision of opportunities for the full growth of an individual's personality.

The main emphasis, one could conclude, is on the development of human resources through the attainment of different types of objectives.

In the Third Five Year Plan, while discussing the objectives of planned development, it has been mentioned that the basic objective of India's development must necessarily be to provide the masses of the Indian people the opportunity to lead a good life. That indeed is the objective of all countries for their peoples, even though the good life may be defined in many ways. The Third Plan also mentioned that in a democracy: the pace of change depends to a large extent on increase in public understanding and in public response and on the growth of scientific outlook on the part of large numbers of people. Besides the economic and social objectives, the educational aspects of planning are, therefore, of great emphasis. These are emphasized through the wide sharing of responsibility for drawing up and carrying out plans and through the participation in the process of planning by organizations representing all sections of opinion as well as universities and educational institutions and voluntary social service agencies.

Referring to equal opportunity, the Third Five Year Plan document states that the first condition for securing equality of opportunity and achieving a national minimum is assurance of gainful employment for everyone who seeks work. The economy is able to achieve a rate of growth sufficient to provide work at an adequate level of remuneration to the entire labour force only when the industrial base has been greatly strengthened and education and other social services developed. The Third Plan also concedes that the development of education and other social services in advanced countries, has played a large part in ensuring greater equality of opportunity to different sections of the population and greater social mobility. Similarly, social services have also helped to bring about a measure of redistribution of income and provide the basic necessities and it is expected that in India too, the expansion of social services will exert a similar influence, specially through the extension of free and universal education at the primary level, provision of larger opportunities for vocational and higher education, grant of scholarships and other forms of aid and improvement in the conditions of health, sanitation, water supply and housing. Further, programmes for the welfare of Scheduled Tribes and Castes and other backward classes, for the provision of minimum amenities in the rural areas, for local development at the village level and for the housing of industrial workers and slum clearance and improvement, need to be viewed not merely as extensions of social services but as vital ingredients in the scheme of economic development. More equal opportunities to different sections of the community can be provided by combining social services like the

provision of scholarships and other facilities in the field of training and education with programmes of intensive economic development. Under the subject of economic and social integration, the Third Plan document has mentioned that planning is a continuous process and cannot be isolated for short periods. "Ultimately, it is the development of human being and the human personality that counts. Although planning involves material investment, even more important is the investment in man."

The Fourth Five Year Plan, 1969-74, states the philosophy of planned development of economy in a much clearer tone with emphasis on human resource development in the following terms:

"The objective of national planning in India is not only to raise the per capita income but also to ensure that the benefits are evenly distributed, that disparities in income and living are not widened but in fact narrowed, and that the process of economic development does not lead to social tensions endangering the fabric of the democratic society. In part these can be achieved by seeing that, in the implementation of the programmes, the weakest are looked after first and the benefits of development are made to flow by planned investment in the underdeveloped regions and among the more backward sections of the community. In part this will be the result of purposeful policy decisions effectively pursued. Fiscal and other policies should prevent concentration of wealth, check ostentatious consumption and promote savings. The programmes and policies of public financial and other institutions should ensure wider dispersal of benefits. Reforms in the educational system should help the growth of initiative and enterprise, make for horizontal and vertical mobility, open up wider opportunities for employment and enable the lowering of caste, class and regional barriers so that a purposeful change towards an egalitarian society can be brought about. In the last analysis, planned economic development should result in a more even distribution of benefits, a fuller life for an increasingly larger number of people, and the building up of a strong integrated democratic nation."

## VI. Education and Training

Prior to independence, education did not receive the attention it deserved. The position did not change very much till the launching of the First Five Year Plan in April 1951. On the eve of the First Plan, the development of human resources was not even thought of.

Illustrative of the fact is that in 1946-47 out of the total population of about 40 million in the age-group 6-11, only 14.11 million i.e. 35% of the children in this age-group attended classes I-V. In classes VI-VIII, the enrolment was about 2 million forming only 9 per cent of the total number of 22 million children in the age-group 11-14. The number of

secondary schools was 5,297 and the enrolment in these schools was 0.87 million or 3.8% of the boys and girls in the age-group 14-17. There were 19 universities, 297 arts and science colleges with an enrolment of 0.21 million students and 140 professional technical colleges with an enrolment of 0.04 million students. Even after a century of State aided effort, only 17% of the people in the country had been made literate. The total expenditure on education in 1947 was 576.6 million or Rs 1.94 per head of population of which the Government's contribution was only Rs 0.69. The picture in the rural areas was worst.

Apart from the inadequacy of facilities, the system of education obtaining before independence had no national direction. First it was, by and large, mechanical emphasising memory work rather than independent thinking or problem solving. The schools were ill-equipped and teachers were poorly paid. The curricula had no relation either to individual or social needs. Wastage and stagnation was rampant. In the arts and science colleges, the methods of teaching were hardly conducive to the development of a critical and cultivated mind which is the hallmark of an educated individual. The facilities for research at the post-graduate level were meagre. Some reform had partly begun at the elementary stage without affecting the other stages with the result that this stage got isolated from the rest of the educational system with obvious hardship to the students and the teachers.

The development of human resources was recognized as one of the basic objectives of the Constitution and also of the economic and social plans initiated in the country since 1951. It was realized that education was the main instrument of change and that the development of human resources through education was more crucial and important than the development of physical resources which could be achieved through modernization of agriculture and rapid industrialization requiring adoption of a science-based technology, heavy capital formation and investment and provision of the essential infra-structure of transport, credit marketing and other institutions. The reason why human resources development is more important is because of the realization of the country's aspirations which involves changes in the knowledge, skills, interests and values of the people as a whole. This is basic to every programme of social and economic betterment. For instance, it has been assumed that there can be no hope of making the country self-sufficient in food unless the farmer himself is moved out of the age-long conservatism through a science-based education, becomes interested in experimentation, and is ready to adopt techniques that increase yields. The same is true of industry. The skilled manpower needed for the relevant research and its systematic application to agriculture, industry and other sectors of life can only come from a development of scientific and technological education. Similarly, economic growth is not merely a matter of



physical resources or of training skilled workers; it means the education of the whole population in new ways of life, thought and work. For a traditional society which has accepted the goal of modernization, high priority has to be given to human change on a grand scale.

The assessment carried out by the Planning Commission on the eve of the First Plan, indicated that considering the size of the population, the overall provision of educational facilities was very inadequate. Similarly, the literacy percentage of the population was 17.2 which was only a very rough measure of the huge task ahead in the field of adult education. Facilities for technical education required to be expanded considerably to meet the needs of the country adequately. The overall structure of the educational system was defective in many ways, one of which was that it was top heavy. Although the provision at the secondary stage was proportionate to that of the primary stage but at the university stage it was larger than the basic structure could profitably support. It was also revealed by the distribution of educational expenditure among the various stages. There were grave disparities between different States in the matter of provision of educational facilities. The expenditure on education compared to total revenues and population also varied in different States. Educational facilities were not properly distributed between urban and rural areas. Whereas about 83 per cent of the population lived in rural areas, the percentage of the total number of pupils in recognized primary, middle and high schools, who were studying in rural areas in 1949-50, was 60, 67 and 26 respectively. At the university stage, facilities were practically non-existent in rural areas. There was lack of balance between provision of facilities for different sections of society. Whereas women constituted nearly half the population, the girl pupils in the primary, middle and high school stages were 28, 18 and 13 per cent respectively of the total number of pupils studying in different stages. Though the various stages of the educational system were not clearly and rationally marked out, the duration and standards of the primary and secondary stages varied considerably in different States. Another disturbing feature of the situation was the large wastage in various forms at different stages of education. Of the total number of students entering schools in 1945-46, only 40 per cent reached Class IV and the expenditure on the remaining 60 per cent was largely wasted. The experiment of compulsion which was then regarded as the only remedy for improving the position had not made much progress. The absence of adequate facilities for technical and vocational education resulted in a much larger number of students going in for general education than was justified by the requirements of the country or the tastes and aptitudes of the people. The position in regard to percentage of untrained teachers was highly unsatisfactory; the percentage of untrained teachers in primary schools

was 41.4 and in secondary schools 46.4. There was dearth of women teachers. The scales of pay and conditions of service of teachers were generally very unsatisfactory and constituted a major cause of the low standards of teaching.

Summing up the position, the Planning Commission in their Report on the First Five Year Plan indicated the following lines of direction:

- (1) Reorientation of the educational system and integration of its different stages and branches;
- (2) expansion in various fields especially in those of basic and social education, remodelling of secondary education and technical and vocational education;
- (3) consolidation of existing secondary and university education and devising a system of higher education suited to the needs of the rural areas;
- (4) expansion of facilities for women's education especially in rural areas;
- (5) training of teachers especially women teachers and teachers of basic schools and improvement in their pay scales and conditions of service; and
- (6) helping backward States by giving preferential treatment to them in the matter of grants.

Since 1951-52 till now, there has been a systematic effort to reorganize the system of education and enrich its content so as to meet the needs of trained manpower, particularly in the context of the developing economy. The University Education Commission (1948), Secondary Education Commission (1952-53) and the Education Commission (1964-66) provided the guidelines for future development in different sectors of education. The Central Advisory Board of Education, the All India Council for Technical Education and other consultative bodies, which were set up from time to time, helped in the formulation of policies in the reconstruction of the educational system in the country. Mention may also be made of the setting up, during this period, of the University Grants Commission with the object of raising standards of teaching and research in the universities, of the establishment of the Institutes of Technology for teaching and research facilities of a high standard, of the establishment of the National Council of Educational Research and Training to undertake programmes of training and research in teacher education including in-service education, examination reforms, improvement of curricula, text books, educational and vocational guidance etc., and the setting up of a National Staff College for educational administrators and planners to organize short-term orientation and training programmes for educational administrators to carry out researches and studies in the field of educational administration and planning.

Ever since the initiation of the First Plan, there has been an increas-

ing emphasis on allocation of resources for educational development. The national income, the expenditure on education and the per capita expenditure and its growth during the first 20 years of planning is reflected in the following Table:

TABLE VII  
National Income and Expenditure on Education

S. No.	Year	National Income (Current Prices) (in crores)	Total Expenditure on Education (All sources) (in crores)	Per Capita Income (in Rs.)	Per Capita Expenditure on Education (in Rs.)	Total Expenditure on Edn. as %age of National Income
1	2	3	4	5	6	7
1.	1950—51	9,530	114	266.5	3.2	1.2
2.	1955—56	9,980	190	255.0	4.8	1.9
3.	1960—61	14,140	344	306.3	7.8	2.4
4.	1965—66	19,990	600	426.1	12.1	3.0
5.	1970—71	31,569	1,000	577.0	18.2	3.1

The progress in terms of establishment of institutions and enrolment has been phenomenal as will be evident from the figures given in the Table below:

TABLE VIII  
Progress of Education in India

S. No.	Year	Total Number of Institutions	Total Enrolment (in thousands)	Total Number of Teachers (in thousands)
1	2	3	4	5
1.	1946—47	157,192	13,573	704
2.	1950—51	286,860	25,542	818
3.	1955—56	366,641	33,923	1,116
4.	1960—61	472,655	47,964	1,508
5.	1965—66	727,262	70,555	2,135

The increase in the establishment of institutions, in the enrolment of students and appointment of teachers in the institutions during the last twenty years has been unprecedented and is unparalleled in the history of either developed or developing countries of the world.

Since one of the major programmes, accepted in the national reconstruction and development plans, has been the development of our human resources this implies that there can be no limit to the education to be provided. During the past two and a half decades, priority has been given, within the constraint of resources, to programmes aimed at raising the educational level of the average citizen. Such programmes are essential on grounds of social justice, for making democracy viable

and for improving the productivity of the average worker in agriculture and industry. One of the important objectives of human resource development is to equalize educational opportunities, enabling the backward or under-privileged classes and individuals to use education as a lever for the improvement of their condition. This is presumed to be one of the conditions for building up of an egalitarian and human society in which the exploitation of the weak will be minimized. The progress of enrolment at various stages of education, during the last 20 years and what is expected to be achieved by the end of the Fourth Plan is given in the following Table:

TABLE IX  
Growth in Enrolments

Year	Classes I-V		Classes VI-VIII		Classes IX-XI		University Stage	
	Enrolment (in lakhs)	% age to total Population in the age-group	Enrolment (in lakhs)	% age to total population in the age-group	Enrolment (in lakhs)	% age of total population in the age-group	Enrolment (in lakhs)	% age to total population
1	2	3	4	5	6	7	8	9
1950—51	192.0	42.6	31.0	12.7	12.0	5.3	3.26	0.8
1955—56	252.0	52.8	43.0	16.5	19.0	7.4	5.75	1.3
1960—61	350.0	62.4	67.0	22.5	29.0	10.6	8.08	1.7
1965—66	505.0	76.7	103.0	30.8	50.0	16.2	13.31	2.4
*1970—71	592.5	80.3	133.9	34.1	71.6	20.4	21.49	3.7

\*Figures are provisional

In terms of sheer numbers, the progress has been very remarkable.

For practical and administrative reasons, the programme of education for the age-group 6-14, visualized in the Constitution has been divided into two stages 6-11 and 11-14. If the entire age-group 6-14 is considered together, the position would be as shown in the following Table:

TABLE X  
Provision of Schooling Facilities in the Age-group 6-14

Year	Enrolment in Classes I-VIII (lakhs)			Percentage of Population in the age-group 6-14		
	Boys	Girls	Total	Boys	Girls	Total
1	2	3	4	5	6	7
1950—51	163.6	59.1	222.7	45.9	17.5	32.1
1955—56	209.5	85.1	294.6	54.6	23.5	40.0
1960—61	282.0	124.3	406.3	65.4	30.6	48.5
1965—66	371.2	222.7	593.9	73.0	46.1	59.5
1970—71*	463.4	263.1	726.5	—	—	64.3

\*Figures are provisional

During the years 1951-71, the number of children (age-group 6-14) at school has gone up from 22.3 million to 72.6 million, the proportion of the total population in the age-group rising from 32 to 64 per cent.

Development of the economy and the large increase in the number of secondary schools and in the number of students of the age-group 14-17 enrolled in them altered the character of the demands which secondary education is called upon to meet. New social groups are seeking education and are coming within its influence. Expansion brought into secondary schools a large range of abilities and attitudes. The developments which have taken place in the field of expansion of enrolment during 1951-71 given in the Table below:

TABLE XI  
Provision of Schooling Facilities in the Age-group 14-17

Year	Enrolment in Classes IX-X-XI (Figures in lakhs)			Percentage of enrolment to the age-group 14-17		
	Boys	Girls	Total	Boys	Girls	Total
1	2	3	4	5	6	7
1950-51	10.2	2.0	12.2	8.7	1.8	5.3
1955-56	15.8	3.0	18.8	12.8	2.6	7.8
1960-61	23.9	5.2	29.1	18.4	4.2	11.5
1965-66	35.7	9.9	45.6	23.7	6.9	15.6
*1970-71	—	—	71.7	—	—	20.4

\*Figures are provisional

While the enrolment has increased from 12.2 lakhs in 1950-51 to about 72 lakhs in 1970-71, the percentage of children in the age-group 14-17 attending schools has grown from 5.3 to 20.4 during the same period.

The number of vocational and technical institutions at the secondary level of education has been increasing and also the enrolment in such institutions. This is shown in the Table below:

TABLE XII  
Growth of Vocational Secondary Education

Year	Number of Institutions	Enrolment
1949-50	2,028	162,532
1950-51	2,339	190,568
1960-61	4,145	424,927

The bulk of students in vocational courses are in Teacher Training Schools. Their number in 1960-61 was 123,612. The rest is distributed in commerce, agriculture, engineering, forestry, medicine, industrial arts and crafts and veterinary science courses.

Literacy is an important indicator of stock of human capital. The distribution of the total population in India between literates and

illiterates and among males and females, according to the 1951 and 1971 Census, is shown in the Table below:

TABLE XIII  
Literacy\* in India — 1951 and 1971

1	1951 (000's)**			1971 (000 's)		
	Males	Females	All Persons	Males	Females	All Persons
Literate	45,610 (24.9)	13,651 (7.9)	59,261 (16.6)	111,778 (39.5)	48,731 (18.5)	160,509 (29.4)
Illiterate	137,723 (75.1)	159,895 (92.1)	297,618 (83.4)	171,278 (60.5)	215,169 (81.5)	386,447 (70.6)
Total	185,528	175,566	361,089	283,056	263,900	546,956

1. Excludes Jammu and Kashmir, Goa, Daman and Diu, Pondicherry, (Karaikal, Mahe and Yaman), NEFA, Major portion of Nagaland and Dadra and Nagar Haveli.

2. Figures within parenthesis indicate percentages.

\*The test for literacy, according to Census definition, was satisfied "if a person could, with understanding, both read and write. The test for reading was ability to read any simple letter either in print or in manuscript. If the person could read one of the examples in the enumerators' handbook with facility, he was taken to have passed the test for reading. The test for writing was ability to write a simple letter. To qualify for literacy, a person was not required to pass any standard examination. On the other hand, literacy was recognised as something a man still possessed and actively put to use and it was in this general practical sense that it was uniformly applied. The results are thus comparable from area to area. If a person could both read and write and had also passed a written examination or examinations as proof of an educational standard attained, the highest examination passed was to be recorded." Census of India, 1961, Vol. I, page XIV.

\*\*The total population figures are in absolute number, whereas the figures for literate and illiterate are estimates on the basis the figures obtained in the Census Reports, which were based on a 10% sample of the total population. In the 1971 Census, detailed literacy census was conducted on 10% sample.

Over a period of twenty years, while the number of literates increased from 59 million to 161 million, the percentage to total population improved from about 17 to 29. At the same time, the number of illiterates also increased from 298 million to 386 million. In 1971, while the overall national average of literacy percentage was 29, it was only about 19 in the case of women. The number of illiterates, during 1951-71, increased by 88 million and of these 55 million were women. The increase in total population, during this period, was 186 million. Thus in a way, the unprecedented increase in population during the two decades, among others, has been responsible for the slow rate of growth of literacy.

The distribution of literate population in rural and urban areas, among males and females, according to the 1951 and 1971 Census, is shown in the Table below:

TABLE XIV  
Literate Population — Urban and Rural — 1951 and 1971  
(Figures in millions)

1	Literate Population			Literate as % of total Population		
	Males	Females	All Persons	Males	Females	All Persons
2	3	4	5	6	7	
<b>1951*</b>						
Total	45.610	13.651	59.261	24.9	7.9	16.6
Rural	30.450	7.291	37.741	19.0	4.9	11.8
Urban	15.160	6.360	21.520	45.0	22.3	34.6
<b>1971</b>						
Total	111.911	48.700	160.611	39.51	18.44	29.34
Rural	75.889	27.631	103.520	33.77	12.92	23.60
Urban	36.021	21.068	57.089	61.55	41.91	52.48

\*The total population figures are in absolute numbers, whereas the figures for the rural and urban areas are estimates on the basis of the figures obtained in the Census Report, which were based on a 10% sample of the total population. In 1971 Census, detailed literacy census was conducted on 10% sample basis.

The percentage of literates in rural areas has nearly doubled during the two decades.

The analysis of the 1971 Census data reveals that higher the age-group, larger is the extent of illiteracy. This is clear from the following Table:

TABLE XV  
Literacy by Age-group — 1971 (Census)  
(Figures in millions)

Age group	Total Population	Total No. of Literates	Percentage to total Population
0—4 ..	78.3	18.7	23.9
5—9 ..	82.1	33.6	40.9
10—14 ..	67.6	24.1	35.7
15—19 ..	47.5	18.9	39.8
20—24 ..	43.1	26.0	60.3
25—34 ..	76.6	12.4	16.2
35 — ..	149.3	24.2	16.2
Age not stated ..	0.9	0.2	22.2
All ages ..	545.5	158.1	29.0

Note: Estimates from 1% sample.

The percentage of illiterates is higher in the age-group above 15-19. The population in the age-group 15-34, which roughly represents the youth was about 167 million or 36 per cent of the total population and amongst them only 57 million or about 34 per cent were literate.

For a study of the qualitative growth of education, it would be useful to analyse the composition of population by levels of education. This is shown in the Table XVI. (p. 149)

The increase in literate population between 1951-1971 was 98.8 million and the number of literates who were matriculates and above increased by 17.5 million. Further, within the literate group while the proportion of literates below matriculation was less in 1951 when compared to 1971, their number has increased by 73.1 million. A redeeming feature is that the percentage of persons without educational level of literate population has come down from 85 in 1951 to 37 in 1971.

An adequate supply of skilled manpower is a condition precedent for the success of industrialization. The development of technical education has been one of the major achievements of the post-independence period. The creation of the All India Council for Technical Education in 1944 and the Report of the Scientific Manpower Committee in 1947 had a far-reaching influence on this development. A further impetus was given by the Engineering Personnel Committee (1956) and the Committee for Post-Graduate Engineering Education and Research. The development of technical education, as it relates to industry, was promoted through the Apprenticeship Act (1961), setting up of Industrial Training Institutes (I.T.Is) and Junior Technical Schools, at the skilled worker level, and the expansion of Polytechnics at the technician level. This system has provided the necessary basis to devise further programme of technical education and vocational training. The progress of technical education in terms of number of institutions at the degree and diploma level courses and the intake and out-turn since 1950-51 is indicated in the Table below:

TABLE XVII  
Progress of Technical Education in India 1950-51 to 1970-1971

Year	Degree Courses				Diploma Courses			
	No. of Institu- tions	Intake		Out- turn	No. of Institu- tions	Intake		Out- turn
		Sanctioned	Actual			Sanctioned	Actual	
1	2	3	4	5	6	7	8	9
1950—51	49	4,119	4,119	2,198	86	5,903	5,903	2,478
1955—56	65	5,888	5,888	4,035	114	10,484	10,484	4,499
1960—61	102	13,824	13,692	5,703	195	25,801	23,736	7,969
1965—66	133	24,695	23,315	10,282	274	48,084	48,984	17,699
1970—71	138	21,108	—	17,768	283	42,823	—	22,276

During the last twenty years, the expansion of Technical Education has been phenomenal. Due to a variety of reasons, the sanctioned intake in 1970-71 was, however, reduced both in degree and diploma courses.



TABLE XVI

## Distribution of Population by levels of Education 1951, 1961 and 1971

(Figures in thousands)

Level of Education	1951			1961			1971		
	Males	Females	All persons	Males	Females	All persons	Males	Females	All persons
Literates (without educational level)	38,125 (83.5)	12,094 (88.6)	50,219 (84.7)	48,287 (62.0)	18,146 (65.8)	66,433 (63.0)	38,920 (35.4)	19,445 (40.3)	58,365 (36.9)
Below Matric	4,220 (9.3)	1,022 (7.5)	5,242 (8.8)	22,700 (29.1)	8,158 (29.6)	30,858 (29.2)	54,199 (49.3)	24,204 (50.2)	78,403 (49.6)
Matriculates and above	3,265 (7.2)	535 (3.9)	3,800 (6.4)	6,954 (8.9)	1,275 (4.6)	8,229 (7.8)	16,738 (15.3)	4,577 (9.5)	21,315 (13.5)
Total Literates	45,610	13,651	59,261	77,941	27,579	1,05,520	1,09,857	48,226	158,083
Total Population	183,334 (100.0)	173,545 (100.0)	356,879 (100.0)	226,146 (100.0)	212,791 (100.0)	438,937 (100.0)	282,423 (100.0)	263,073 (100.0)	545,496 (100.0)

Figures within brackets indicate percentages.

The estimated stock of engineering personnel by branches of engineering since 1955 is given in the following Table:

TABLE XVIII

Estimated Stock of Engineers by Branches of Engineering 1955 to 1970

(Figures in hundreds)

<i>Speciality</i>	<i>Stock of Engineering Personnel at the end of</i>				
	1955	1960	1965	1968	1970
<b>Degree</b>					
Civil	109	195	298	393	552
Mechanical	72	125	234	346	575
Electrical	62	102	183	279	489
Tele-communication	5	9	19	29	50
Metal	11	19	28	40	68
Mining	5	9	19	25	33
Chemical	27	40	56	77	129
Others	55	81	118	147	194
Total	346	580	955	1,336	2,090
<b>Diploma</b>					
Civil	211	371	594	775	944
Mechanical	85	141	322	568	878
Electrical	79	125	265	431	625
Tele-communication	3	6	11	16	24
Metal	3	4	4	6	12
Mining	6	10	21	26	28
Chemical	4	4	4	4	9
Others	55	90	117	158	241
Total	446	751	1,338	1,984	2,761
<b>Total</b>					
Civil	320	566	892	1,168	1,496
Mechanical	157	266	556	914	1,453
Electrical	141	227	448	710	1,114
Tele-communication	8	44	30	45	74
Metal	14	15	32	46	80
Mining	11	19	40	51	61
Chemical	31	23	60	81	138
Others	110	171	235	305	435
Total	792	1,331	2,293	3,320	4,851

This Table indicates that the stock of engineers increased from 79,200 at the end of 1955 to 485,100 at the end of 1970. It is expected to be 584,300 at the end of 1978.

Another area in which there has been very good progress is that of the training of craftsmen which prepares skilled workers for the middle level of jobs. The Table below indicates the number of Industrial Training Institutes (I.T.I.) set up in the country since 1955-56, the number of seats provided in these institutions and the out-turn.

TABLE XIX  
Progress of Craftsmen Training

	1955-56	1960-61	1965-66	1968-69
<b>1. Craftsmen Training</b>				
(i) No. of I.T.I.'s	59	163	357	356
(ii) No. of seats introduced				
(a) Engg. Trades	8,622	39,797	108,196	139,644
(b) Non-Engg. Trades	1,912	2,885	5,426	7,144
Total	10,534	42,685	113,622	146,788
(iii) Out-turn (cumulative)				
(a) Engg. Trades	27,175	75,031	246,000	399,893
(b) Non-Engg. Trades	10,917	20,161	32,480	42,827
<b>2. Part-time Classes Scheme</b>				
(i) No. of Centres	—	15	34	35
(ii) Total seats introduced	—	1,537	4,280	4,837
<b>3. Craftsmen Instructors</b>				
(i) No. of Centres	1	3	7	7
(ii) Seating Capacity	140	686	2,380	2,428
(iii) Out-turn				
(a) Engg. Trades	1,126	3,071	9,556	13,664
(b) Non-Engg. Trades	349	993	1,667	2,045
Total	1,475	4,046	11,223	15,709

The number of institutions increased from 59 in 1955-56 to 356 in 1969 and the total number of seats, both in engineering and non-engineering trades, during this period, increased from 10,534 to 146,788.

In addition to the Industrial Training Institutes, facilities are provided to workers in part-time classes. There were 35 such centres in 1969 and the total number of seats provided in these part-time courses were 4,837. In view of the large scale expansion of the scheme of craftsmen training, there was some development in the training of craftsmen instructors. The number of their training centres was 7 at the end of 1969 and the out-turn from these centres in the same year was 15,709.

One good measure indicating the growth of human resource development which is universally recognized is the number of teachers of primary,

middle and secondary schools and universities and colleges. The growth in number of teachers during 1950-51 and 1970-71 is given in the Table below:

TABLE XX  
Growth in the Number of Teachers

Year	Primary Schools	Middle Schools	High/Higher Secondary Schools	Universities and Colleges
1950—51	537,918	85,496	126,504	21,065
1955—56	691,249	148,394	189,794	37,865
1960—61	741,515	345,228	296,305	62,229
1965—66	944,377	527,754	479,060	128,364
1970—71*	1111,819	626,495	587,433	N.A.

\*Provisional

This indicates that there has been tremendous addition to the stock of teachers during the 20 years and this trend is continuing.

The out-put of persons, passing B.A., B.Sc., M.A., M.Sc., Ph.D. and professional courses has also been increasing. This is shown in Table XXI. (p. 153)

The category-wise stock of scientists, at the end of years 1955, 1960, 1965 and 1970, is indicated in the Table below:

TABLE XXII  
Growth Among Scientists

Category	At the end of the year			
	1955	1960	1965	1970
1. <b>Graduates in</b>				
General Science	102,900	165,600	261,500	420,000
Agricultural Science	10,100	15,700	30,600	47,200*
Veterinary Science	1,400	4,500	8,800	13,000
2. <b>Post-Graduates in</b>				
Mathematics	6,500	10,700	17,800	28,200
Statistics	600	1,500	3,400	5,200
Physics	4,800	7,500	12,800	20,800
Chemistry	7,000	10,000	18,000	29,100
Geo-Sciences	1,000	2,000	4,200	6,600
Zoology	2,100	3,500	6,500	11,100
Botany	2,100	3,700	6,600	11,400
Agriculture	2,000	3,700	7,700	13,500*
Other Sciences	200	400	600	1,300
<b>Total</b>	<b>140,700</b>	<b>227,800</b>	<b>378,500</b>	<b>607,400</b>

\*The Department of Agriculture have estimated the stock of graduates to be 41,000 and post-graduates to be 10,000 in 1968 in their report "Technical Manpower for Indian Agriculture", 1969.

The total stock of scientists has increased from 1,40,700 in 1955 to 6,07,000 in 1970.

TABLE XXI

## Out-turn — General and Professional Education

Year	B.A./Bsc. (Pass and Hons.)			M.A./M.Sc.			Doctorate (including Professional and other subjects)			Professional Degree and equivalent Diploma only		
	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls	Total
1950—51	27,357	4,881	32,238	6,262	876	7,138	136	10	146	17,892	1,553	19,445
1955—56	44,041	9,948	53,989	9,603	2,166	11,769	321	29	350	31,951	3,821	35,772
1960—61	70,657	22,295	92,952	18,570	5,115	23,685	959	283	1,242	53,045	7,179	60,224
1965—66	89,865	38,589	128,454	25,959	9,628	35,587	808	99	907	67,546	10,721	78,267

The out-turn has been increasing in all the types of courses.

There has been increasing emphasis on the development of science education in the country. This is indicated by the fact that steadily the enrolment in science classes at the university stage, including U.P. Intermediate Board, has been steadily increasing. This is shown in the following Table:

TABLE XXIII  
Growth of Science at the University Stage

Year	Enrolment in Science Courses	Total Enrolment	Percentage
1961—62	336,722	1,155,380	29.1
1962—63	390,174	1,272,666	30.6
1963—64	435,925	1,384,697	31.5
1964—65	478,702	1,528,227	31.3
1965—66	565,254	1,728,773	32.7
1966—67	654,899	1,949,012	33.6
1967—68	737,858	2,218,972	33.3
1968—69	802,369	2,473,264	32.4

The out-turn of scientists at different levels during the period 1951 to 1965 is shown in the following Table:

TABLE XXIV

Year	B.Sc.	M.Sc.	Ph.D.	Total
1951	26,157	4,726	376	31,259
1965	38,234	7,290	519	46,043

The Table below indicates the scientific and technical personnel according to 1961 Census.

TABLE XXV  
Scientific and Technical Personnel

Category	1961		
	Persons	Males	Females
1. Engineering and Technical Personnel	132,932	132,327	605
2. Scientific Personnel	42,207	37,921	4,286
3. Health	333,278	260,664	72,614
4. Agricultural & Allied Personnel	34,529	32,450	2,079
5. Teaching Personnel	1,581,704	1,264,697	3,17,007
6. Managers and Administrators and Social Scientists			
(a) Managers	779,824	748,005	31,819
(b) Administrators	714,247	705,030	9,217
(c) Social Scientists	96,270	88,060	8,210
Total	3,714,991	3,269,154	445,837

Note: Excludes personnel from among a population of 297,853 persons (males 1,47,000, females 1,50,753) of NEFA for whom an abridged family schedule was canvassed of General All India Individual Slip and Household Schedule.

The education of girls and women in our country has acquired a new importance after the attainment of independence. The percentage of women to the total population is about 48 (264 million out of 548 million). In 1950-51, the proportion of boys and girls at the school stage was 80 and 20 respectively and this was 69 and 31 in 1970-71. Although women's education has made some advance, the present position at various stages is still far from satisfactory as will be clear from the Table below:

TABLE XXVI  
Proportion of Boys and Girls at Various Stages

Year	Classes I-V		Classes VI-VIII		Classes IX-XI		University Stage	
	Boys	Girls	Boys	Girls	Boys	Girls	Boys	Girls
1950—51	71.8	28.2	81.9	18.1	86.1	13.9	88.9	11.1
1955—56	69.5	30.5	79.4	20.6	82.7	17.3	86.8	13.2
1960—61	67.5	32.5	74.0	26.0	81.2	19.8	83.1	16.9
1965—66	63.8	36.2	73.0	27.0	76.8	23.2	79.0	21.0
1970—71	62.3	37.7	70.3	29.7	74.0	26.0	76.0*	24.0*

\*Figures are provisional.

The position, however, varies from State to State.

The total strength of the trained teachers and their percentage is given in the Table below:

TABLE XXVII  
Trained Teachers and their Percentage  
(In lakhs)

Year	Teachers	Trained Teachers	Untrained Teachers	%age Trained
1950—51	7.50	4.30	3.20	57
1955—56	10.29	6.25	4.04	60
1960—61	13.78	8.92	4.86	64
1965—66	20.00	14.00	6.00	72
1970—71	22.99	17.24	5.75	75

The percentage of trained teachers increased from 57 in 1950-51 to 75 in 1970-71. The growth in the number of training schools and colleges is shown in the Table below:

TABLE XXVIII  
Number of Teachers' Training Institutions

Year	Teachers' Training Schools	Teachers' Training Colleges
1950—51	782	53
1955—56	930	107
1960—61	1,138	478
1965—66	601	1,272
1971—72*	357	1139

\*Figures are provisional

A good system of scholarships serves two purposes: it supports excellence and it equalizes opportunities. For a large majority of our children, the kind and amount of education which they get depend not on their own abilities but on the economic status of their family. Realizing the need for a large scholarship programme, the Central and State Governments have been providing outlays for scholarships programmes. An idea of the rise in total expenditure on education and scholarships from all sources and the expenditure, which is incurred by the Government on scholarships, stipends and other concessions can be had from the Table below:

TABLE XXIX  
Expenditure on Education and Scholarships

Year	Expenditure from all sources on		Expenditure from Govt. sources on		3 as	5 as
	Education	Scholarships	Education	Scholarships	%age of 2	%age of 4
	1	2	3	4	5	6
1950—51	114	3.45	65	2.75	3.0	4.2
1955—56	190	8.22	117	7.13	4.3	6.0
1960—61	344	20.08	234	17.84	5.8	7.6
1965—66	622	38.25	—	—	6.1	—
1970—71*	1,000	—	—	—	—	—

\*Estimated

### VII—Conclusion

This brief review highlights the deep commitment of the founding fathers of the Constitution to the development of human resources; this is clearly evident from the number of articles devoted to this subject in various chapters of the Constitution. The development plans, initiated soon after the adoption of the Constitution in 1950 had the ultimate objective of improving the quality of human resources through the fuller utilization of existing manpower—physical and material resources. This is again reflected in the investment in man—a high priority item in the development plans. The planners have emphasized that planned economic and social development should result in a fuller life of an increasingly larger number of people.

Education and training are, among others, the major instruments for improving the quality of human resources. In this field there have been phenomenal developments. One index is the percentage of expenditure incurred on education and training to the national income; this increased from 1.2 in 1950-51 to 3.1 in 1970-71. If the expenditure on other informal types of education and training is also taken into



consideration, the percentage is likely to be about 4 which, for a country like India, is not a mean figure. The number of literates, as a result of increased educational facilities and intensive literacy programmes, increased from 59 million in 1951 to 160 million in 1971. The total enrolment in various kinds of institutions rose from 13 million in 1951 to 82 million in 1971. What is important is that the enrolment in elementary classes, corresponding to the Constitutional Directive of provision of schooling facilities for children upto the age of 14, increased from 22 million in 1950-51 to 73 million in 1970-71, more than threefold increase. The percentage of pupils at second level (Classes IX-XI) in the proportion to of the estimated population in the corresponding age-group 14-17 in 1950-51 was 5.3 and it increased to 20.4 in 1970-71. The percentage of population in the age-group 17-23, attending post-secondary institutions, of various types, increased from 0.3 in 1950-51 to 3.7 in 1970-71. The percentage of enrolment in science courses to the total enrolment at the university stage increased from 29.1 in 1961-62 to 32.4 in 1968-69. The output of post-graduates in arts and science in 1950-51 was 7,138 and increased to 35,587 in 1965-66 and of doctorates, during the same period was 146 and 907 respectively. Pursuit and promotion of talent has been the cardinal policy of the Government which is evident from the increased allocation of resources for scholarships. The number of teachers, at the first and second levels of education per 10,000 population in 1951 was 21 and it increased to 42 in 1971. The quality of teachers has also improved; as against 57 per cent trained teachers in 1951, the percentage increased to 75 in 1970-71. The number of engineering personnel per 10,000 population in 1960 was 3 and in 1971 it was 9. The number of scientists per 10,000 population in 1965-66 was about 3.5 and their number in 1970-71 increased to 10 which again indicates about three-fold increase.

All this indicates that, in spite of the unprecedented growth in population during the post-independence period, about 52 per cent increase between 1951-71, the country has taken rapid strides in the development of human resources and improvement in its quality. The criteria laid down as the indicators of human resources development, on an international basis, have been fulfilled to a great extent. This by itself is going to have an impact on a well regulated growth in the population during the next twenty years with all its ramification on economic development. Whatever may have been the imperfections in the planning for human resources development during the first 20 years of planning — these are bound to be in any system — one thing is clear that this period has witnessed the steady and solid growth of various institutions, and the building up of an infra-structure which will give a real base for developing human resources on proper lines during the future Plans.

What will have to be thought out and planned carefully is the further diversification of educational and training programmes, both in formal and informal types of institutions — more so in informal types — which will go a long way in the proper utilization of the vast human resources in appropriate fields to achieve the social and economic goals which the country sets out for itself in the years to come.