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Growth and
Human Development in
North-East India

edited by **P. NAYAK**

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Preface

It took centuries to realize that people are the real wealth of a nation. They produce goods and services for their own welfare. The development and growth of a nation depends upon the proper utilization of natural and cultural endowments available to it. To utilize these endowments, human participation is required. Human participation, on a sustained and autonomous basis, cannot be expected without enhancement in the capability of the population. Thus, self-sustained growth cannot be ensured without human development. Further, since the basic objective of development of a nation is to improve the well-being of the people, every nation strives hard, not only to increase her wealth and productive resources, but also to ensure a better standard of living for its citizens by providing them with adequate food, clothing, housing, medical facilities, education, etc. In fact, governments of various nations, at different levels, take the initiative to create an enabling environment for their people to enjoy healthy, long, and creative lives. However, technical considerations of the means to achieve human development and the use of statistical aggregates to measure national income and its growth have, at times, obscured the fact that the primary objective of development is to benefit the people. Of course, people want higher incomes as one of their options, but income is not the aggregate of human life and, hence, not an end in itself.

The human development approach of looking at development differs from conventional approaches to economic growth, human capital formation, human resource development, human welfare, and basic human needs. Gross National Product (GNP) growth is treated as being necessary but not sufficient for human development. Human

progress may be lacking in some societies despite rapid GNP growth unless some additional steps are undertaken to improve the same. Human welfare approaches look at human beings more as beneficiaries of development processes than as participants in it. They emphasize only the distributive policies rather than production structures. Recent development experience has once again underlined the need for paying close attention to the link between economic growth and human development for a variety of reasons. Many fast-growing developing countries are discovering that their high GNP growth rates have failed to reduce the socio-economic deprivation of substantial sections of their population. Even industrial nations are realizing that high income is no protection against the rapid spread of such problems as drugs, alcoholism, AIDS, homelessness, violence, and the breakdown of family relations. At the same time, some low-income countries have demonstrated that it is possible to achieve high levels of human development if they skillfully use available means to expand basic human capabilities.

Human development also encompasses elements that constitute the critical issues of gender and development. There are four major elements in the concept of human development—productivity, equity, sustainability, and empowerment. People must be enabled to increase their productivity and to participate fully in the process of income generation and remunerative employment to achieve higher economic growth, which is a subset of human development models. Productivity is not the only means to achieve welfare in a society. People must have access to equal opportunities. All barriers to economic and political opportunities must be eliminated so that people can participate in and benefit from these opportunities. These benefits also need to be distributed over generations. Access to opportunities must be ensured, not only for the present generation but for future generations as well. All forms of capital such as physical, human, and environmental should be replenished. Besides, empowerment is a necessity. People must participate fully in the decision-making process that can shape their lives. Human development is impossible without gender equality. As long as women are excluded from the development process, development will remain weak and lopsided (UNDP 1995).

Development should increase peoples' choices. While enhancing the choices of one individual or a section of a society, it should not restrict the choices of another. It calls for equity in human relationships. It should not mortgage the choices of future generations while

improving the lives of the present generation (UNDP 1991). In other words, the development process must be sustainable.

Literature in this regard is vast and varied. It reveals that a large number of studies have been undertaken in India and abroad on various aspects of human development. While some literature dealt with concepts of human development, some have dealt with methods of measurement, construction of Human Development Index (HDI) for various states and sub-states, and for different sections of society. There have been numerous efforts over time to remedy the defects of traditional measures of development, and to create composite indicators that could serve either as complements or alternatives to this. There are studies relating to debates on the selection of variables to be included in HDI and weights to be assigned to different variables under consideration. While some studies dealt with disparities in human development between rural and urban areas and between males and females, some others concentrated on trends of human development. There are some studies that concentrated on finding the two-way relation between human development and economic growth of nations. Available evidence reveals interesting insights relating to the impact of economic growth on human development, and vice versa, with different time lags. Some scholars have also tried to examine the link between poverty and human development. The factors responsible for low levels of human development are also identified in some studies. While some authors prescribed increased allocation of resources on social sectors for improving human development, some others put emphasis on the aspects of implementation of programmes relating to social sector development. There are some authors who believe that high growth could lead to high human development, while some others opine for achieving high growth through the achievement of high human development. There are also some studies that argue in favour of a balanced path of development that combines the strategies of growth and human development with appropriate weights.

Since 1990, United Nations Development Programme (UNDP) has been publishing *Human Development Reports (HDRs)* at the global level for various nations and every year a report is published to this effect with emphasis on a different theme. The Planning Commission of India has also undertaken a similar exercise and has published the *National Human Development Report (NHDR)* for the years 1981, 1991, and 2001. The reports for the years 1981 and 1991 include data on HDI for all the states and union territories of India. But in the 2001

report, the index has been constructed only for fifteen major states due to non-availability of required data for smaller states, including the states in the North-East.

If we take a look at the *NHDR 2002*, we get some idea on the status of human development in the North-East, though data is somewhat dated. The report reveals that the region comprising the eight states of Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim (the last to be included in the region), and Tripura constitutes a land surface of 262,230 square kilometers with a population of 38.9 million belonging to different ethnic and cultural groups. Topographically, the region is a mixture of hills and plains. While Arunachal Pradesh, Meghalaya, Mizoram, Nagaland, and Sikkim are almost entirely hilly, about four-fifths of Assam is plains. Manipur and Tripura have both plains and hilly tracts. The hills account for about 70 per cent of the area and accommodate about 30 per cent of the population of the region while the plains, constituting the remaining 30 per cent area, hold about 70 per cent of its population. A wide variation in altitude coupled with abundance of rainfall has given rise to a wide variation in climatic conditions within the region, which in turn has endowed the region with rich biodiversity. The richness of biodiversity of the region is almost matched by its ethnic diversity. The region is a meeting place of large number of races, creeds, cultures, and languages. The impingement of the diversity of physical and cultural environment is naturally found in the organization of economic life of the people of the region.

Keeping all this in view, it was thought to bring out a volume on growth and human development for the region by inviting papers from academicians from within and outside the region. The present book is an outcome towards achieving that end. While every effort has been made to bring analysis and discussion on the issues of human development, touching upon various states in the region, the study is constrained due to non-inclusion of the newly included state, Sikkim. It must be borne in mind that although Sikkim has been included in the north-eastern region for administrative and developmental considerations, it is geographically non-contiguous to the rest of the states in the region. Its cultural background is much different from the other states. This sociological, cultural, and geographical difference gives a different character to Sikkim.

The book has been broadly divided into three sections on three different themes:

1. Concept and measurement issues;
2. The national scenario; and
3. The issues at the level of the north-eastern region.

The first section deals with the concept and measurement, and has three chapters. The first chapter titled 'Human Development: Concept and Measurement' contributed by the editor discusses in detail not only the evolution of the concept of human development but also its measurement. The author provides an account of change in the methods of measurement of human development proposed by UNDP, the Government of India, and individual academics.

The second chapter 'Concept of Human Development: A Critique' contributed by P.K. Chaubey, critically examines the literature on the concept of human development and its measurement. He points out that the motivation for UNDP, under the advice of Mahbub-ul-Haq, to bring out a report on human outcomes of economic, social, development, and welfare activities in the public, private, and other spheres in different countries emanated from the fact that wide failures were noticed in terms of reduction in poverty and infant mortality, enhancement in longevity, education, improvement in health, and the like. Contributions from economists like Amartya Sen, on capability approach as against the commodity approach, provided the right kind of theoretical support to define 'human development' in terms of enlarging people's choice through enhancement of capabilities. However, everything is not hunky dory with the idea of human development as it is too individualistic in approach, and shorn of communitarian ethos. Again, when it comes to measuring human development, it is not in terms of capabilities but in terms of attainment and performance, which is possible only when capability space interacts with commodity space. The author, in this connection, tries to delineate the history of evolution of the idea of human development and its contribution in shifting the focus of the development debate, and the weakness it inheres.

The third chapter 'Construction of an Index: A New Method' has been contributed by Sudhanshu K. Mishra. In this paper the author argues that composite indices are often constructed by a linear combination or weighted sum of indicator variables. While constructing indices, weights are either subjectively determined on the basis of expert opinion, or mathematically determined by the Principal

Components Analysis (PCA). By its very logic, such composite indices are elitist—assigning large weights to highly correlated variables and negligible weights to poorly correlated variables. The author proposes to construct a composite index by maximizing the sum of absolute correlation between the composite index and the indicator variables. In the first part of this chapter, the author shows that such a composite index is inclusive—duly weighting the poorly correlated variables. Thus, composite index does not undermine the importance of an indicator variable merely because it is not well correlated with others. In the later part of the paper, the author, by adopting the proposed method, has constructed HDI with equality in income distribution for 125 countries. The study reveals that while the traditional PCA assigns poor weight to the measure of income inequality, the proposed method ameliorates its position by assigning reasonable weight to it.

The second section of the book which deals with growth, human development, and other related issues at the all India level, has seven chapters. In this section, Saundarjya Borbora in the chapter titled 'Economic Growth and Human Development: Chain Relationship' discusses the relationship between economic growth and human development, and opines that they reinforce each other. He argues that development of social sectors, such as education, health, and good governance, is a major precondition for achieving economic growth with the help of effective government policy and appropriate public expenditure. This in turn would help the states to move above the threshold level in human development. He also admits that it is necessary to identify the weak links between growth and human development, and that appropriate policies are required to be formulated and implemented to strengthen the links; and that such policies must be dynamic in nature with changes in the development process. He suggests that in the early stages, priorities might be given to education and health, and at a later stage higher education, technology, and better health facilities might assume a greater role. He concludes by reiterating that the view of *grow first and worry about human development later* is not supported by evidence and, hence, focus on human development must be targeted at the beginning of the growth process.

Santanu Ray, in his chapter 'Transformation of Economic Growth to Human Development: A Long-Run Study of Indian States' states that the role of income growth in determining the level of human

well-being has become a topical issue in recent literature. Indian performance in this regard has been far from satisfactory. Using disaggregated data for the country over a long period of time, Ray examines the relationship between growth and human development. He also addresses the question whether the economic growth achieved by Indian states in the last three decades has any significant influence in determining the level of human development. Using the latest formulation of UNDP, he not only computes HDI for each of the major states of India, but also makes an analysis of HDI over time and across states. His study reveals that per capita income levels of Indian states play a positive role in determining the non-income component of human development in the long-run. He expresses his concern over huge regional variation in income levels and disparity in human development indicators across states.

The chapter titled 'Effect of Structural and Conditional Rigidities: A Case Study of a Poverty Reduction Programme' has been contributed jointly by Arindam Banik and Pradip K. Bhaumik. In their paper, the authors are very critical about the previous studies conducted on poverty reduction programmes, most of which concentrated on evaluation of the effectiveness of government interventions in meeting the stated programme objectives and targets, gaps between desired and actual targeting of beneficiaries, and adherence to programme guidelines. In their paper the authors have made an attempt to analyse the effect of structural and conditional rigidities, on moving a beneficiary of poverty reduction programme from passive to active state, with the help of micro-level field data comprising a fairly large sample of poor beneficiary artisans collected under SITRA programme. Using ordered logistic analysis, they have provided an analytical characterization of the beneficiaries in a situation of structural and conditional rigidity, where all beneficiaries do not move from a passive state to an active state and are able to take advantage of the government intervention despite their having access to the benefit. The authors view that identification of ageing artisans as beneficiaries of the programme might not bear much fruit as they are unlikely to become economically active due to their conditional rigidities. Therefore, they opine that a thorough understanding of the conditional and structural rigidities and their impact on economic behaviour of beneficiary artisans is required, which perhaps would go a long way in helping to design and implement poverty reduction programmes.

The chapter titled 'Public Distribution System: An Instrument for Improving Human Development' has been contributed by R. Gopinath. The author states that the PDS is a major component of public delivery system in India that started functioning during the 1930s and, subsequently, was replaced by the Targeted Public Distribution System (TPDS) in the 1990s. The programmes were mainly designed to play an important role in improving human development, particularly among the rural masses and the poor people. The paper revolves around the discussion on the loopholes in operational mechanism of both PDS and TPDS, and strongly argues for addressing the problems associated with their implementation.

Taking a careful look at the HDI estimates for the various districts in Orissa, P.K. Tripathy and Bhabagrahi Mishra, in the chapter 'Status of Human Development in Orissa', make a few intriguing observations. They point out that the districts of Kalahandi and Deogarh, two of the least developed districts by conventional yardsticks, turn out to be ranked as high HDI districts in the *HDR* of Orissa. Keeping this paradoxical result in mind, they raise some important questions on the suitability of the concept of HDI while assessing the economic status of a region. They observe that the implication of high literacy in developed economies is not the same as that in backward economies. In backward economies, mere literacy without employment opportunities neither turns out meaningful educational attainment nor estimated higher life expectancy, and that lower infant mortality reflects sound health conditions of the majority of the population in general, and agricultural labourers, marginal and small farmers, and poor artisans, in particular. In the light of the above observations, they argue that there is a need for inclusion of alternative variables for health, education, and standard of living in the index that can lead to a more realistic ranking of a region based on such indices. For example, a composite index of property ownership (land and other resources), per capita income obtained on the basis of income accrual method, and the average man days employed for the working population shall capture the standard of living index more accurately than mere per capita income. Similarly, education index could be a composite index of literacy as well as its linkage with employment opportunities and the health index as a composite index of anthropometric measurements and pattern of mortality.

The chapter 'Good Governance: The Force behind Human Development', contributed jointly by Ashutosh Dash and Paohulen

Kipgen, reveals that human development cannot just automatically happen without economic development. The authors argue that growth oriented economic progress alone cannot bring progressive human development without good governance which demands greater transparency. That is why social activists are increasingly paying attention to governance, both at the macro and micro level. The authors conclude by laying stress on the importance of governance in the process of human development.

The last chapter in the section, titled 'Politics of Human Development', has been contributed by Apurba K. Baruah. The author brings out the politics involved in the issues concerning human development. Citing the example of poverty, he explains that in Contemporary Development Theory, poverty has been basically reduced to an issue of measurement, and the important issue of the mechanism of its generation is often overlooked. He also pleads that the economic efficiency is in its top gear only when the state takes control. Whether the state controls or leaves the market in private hands is a matter of politics to which the nature of human development is inalienably connected.

The third section deals with the issues of human development in the context of North-East India and has fifteen chapters. M.P. Bezbaruah, in his chapter 'Socio-political Transition, Growth Trends, and Development Attainment in the North-East in the Post-Independence Period', reviews the development experience of the region in the context of its political-administrative transformation in the post-Independence period. He points out that development experience in the region has been mixed and uneven. While there are periods of high growth for individual states, the region as a whole has been increasingly lagging behind the country in terms of per capita income. He believes that the rapid post-liberalization growth of the country is a far cry for the region. While the recent service sector led growth of the country is propelled by expansion of frontier areas like information technology, public administration and other services are the faster growing services in the region. He argues for enhancement of the rate of economic growth in the region based on its inherent strength and endowed resource base. Though funds required for building up the necessary infrastructure to activate the inherent growth potential of the region are no longer a constraint, disruptions caused by insurgency and the *bundh* culture make deployment of such investments difficult and add to the cost of any business venture, reducing the competi-

tiveness and economic viability. However, he is optimistic about the future of the region in the globalized era.

The editor of the book, in the chapter titled 'Human Development in North-East India' highlights that India, in spite of pursuing the policy of liberalization and globalization since the early eighties and witnessing higher growth rates, has not been able to achieve much on account of human development and welfare in comparison to many countries at the global level. Human Development Index in the country was as low as 0.56 in 2001. While some states in the region have performed better than the national level, some others have lagged behind. Rural-urban disparity, gender disparity, and uneven human development across the states in the region are quite significant. The disturbing trend of increasing gender disparity in Nagaland and the escalating rural-urban gap, particularly in the states of Assam and Meghalaya, is a matter of concern. The author, while highlighting some of these issues, stresses on the urgent need for taking appropriate action in this regard.

Nirankar Srivastav analyses the poverty status in the region using three conventional measures of poverty in the chapter titled 'Severity of Poverty and Status of Public Services in North-Eastern States'. His study reveals that poverty, in most of the states in the region, has declined. It has declined more in the hill states and in urban areas. The access to public services is observed to be very poor in the poverty-stricken states. The author states that there is a positive and strong relationship between poverty levels and access to public services in the region and recommends a target-oriented and region-specific poverty reduction programme.

Bhagirathi Panda, in the chapter 'Economic Growth, Exclusion, and Human Development', studies the mismatch between economic growth and human development in the region using empirical data. He observes and apprehends that the region, which is witnessing continuous low economic growth accompanied by relatively high human development, is susceptible to social tension. This has to be overcome by promoting a policy of high economic growth by taking some concrete measures. He prescribes accelerating industrialization and putting emphasis on greater value addition. The author also identifies some of the obstacles to industrialization, such as poor physical infrastructure, lack of culture of genuine entrepreneurship, security deficit, and poor governance. He suggests that in order to overcome these hurdles the governments in the region should play a proactive

role along with developmental Non-Governmental Organizations (NGOs) and promote Self Help Groups (SHGs), their movement, and effective participation in development programmes. He also emphasizes the role of civil society, academia, and peer groups towards reorientation in the value-systems for inculcating a culture of entrepreneurship.

Biswambara Panda, in the chapter 'Non-Governmental Organizations and Participatory Development' analyses the approaches of the grassroot NGOs and their role in contributing towards participatory development in addressing issues relating to human development, with special reference to the North-East. The author argues that participatory development can ensure integrated development, where all sections of society would be involved and benefited. This would not only bring about economic growth but would also dissipate social inequality. The micro approaches along with people-centred development objectives can bring considerable dividend by resolving conflicts, avoiding programme uncertainties, and evolving synergy among the key actors of society. He further argues that though participatory development may not ensure development for all the people but it certainly creates confidence among them, and most importantly provides them opportunities to share their ideas and knowledge. He believes that a development plan, armed with indigenous practices and native wisdom, can accelerate the developmental process at the grassroots level. Though NGOs are not the only force within the civil society to work towards inclusive growth, they are certainly a force to reckon with in the development domain. They can inch towards this objective through (various) people-centred approaches and strategies despite so much of apprehensions on their accountability and sustainability.

The chapter 'Inter-District Disparities in Meghalaya: A Human Development Approach' contributed jointly by Purusottam Nayak and Santanu Ray highlights widespread variations in the magnitude of human development across all the seven districts and three hills regions representing three different ethnic tribal groups in the state, between rural and urban areas, and between male and female groups of population. The authors also show that there exists a significant level of disparity, both in income consumption and in non-income attainments, among these districts. The inequality in economic attainment (income, as well as consumption expenditure) happens to be very high. However, both measures of variation and inequality indices suggest that few non-

income indicators, namely intensity of formal education and infant mortality rates, have disparities over economic indicators, which, according to the authors, are indeed a cause of considerable concern. In addition, they observe that economic inequality is much higher than inequality in overall HDI. Keeping in view a huge shortfall in HDI, accompanied by the existing level of variation and disabilities, the authors feel the need for a redesign of public policies that directly affect the welfare of the people. The study also reveals that the improvement of human development in Meghalaya, on account of better performance in respect of some socio-economic indicators, has been neutralized because of its laggardness in respect of some other indicators over time.

The next chapter titled 'Does Micro Finance Bring Human Development?' contributed by A.P. Pati, explains the success stories of micro-finance through SHGs in different parts of the country and abroad. The author suggests ways for economic empowerment of women through micro finance in the region. However, he concludes by stating that micro finance endeavour in Meghalaya is still at the nascent stage to make any visible impact at the macro level, so as to measure its contribution in attaining higher human development.

P.S. Suresh and Biswambhara Mishra, in their chapter 'Public Expenditure and Human Development in North-East India: A Case Study of Meghalaya', point out that Meghalaya, in the last few decades, has been witnessing a paradoxical and explosive economic growth because of the mismatch between growth rates of state domestic product and public expenditure. Disproportionate growth of the social sector over the years has not only eaten up most of the public investment in the state, but also given rise to a weaker linkage among different sectors. The study explores the nature, extent, and the degree of interdependence between the level of public expenditure and human development with the aim of understanding the cause and effect relationship and the extent to which the public expenditure on social services gets transformed to the end result of a better level of human development. The study reveals that at the regional level there is a positive functional relationship between public expenditure on social sectors and human development. The authors conclude that per capita spending on education and health has a relatively stronger impact on human development than per capita income growth.

Kishor Singh Rajput in the chapter 'Antenatal Care, Institutional Delivery, and Human Development in Meghalaya' highlights some

of the facts and figures on mothers' health with special reference to institutional deliveries of the child. Further, using logistic regression, he examines the role of certain background variables of women like her education and the spouse, work status, place of residence, etc., along with the role of antenatal care on institutional delivery.

E. Bijoykumar Singh in 'Human Development in Manipur' states that in spite of having a low per capita income, the HDI of Manipur for 1981 and 1991 has been higher than most of the major Indian states. In his chapter, he makes an attempt to examine the change in HDI for the state in the post (economic) reform period with available indicators of development like Infant Mortality Rate (IMR), sex ratio, life expectancy at birth, and literacy rate. He also examines the quality of development through an analysis of data on structural change, occupational distribution of work force, employment, and productivity of workers. He argues that though performance of Manipur in terms of IMR, sex ratio, literacy rate, and life expectancy at birth has been positive, low per capita income and continued dominance of low productivity activities in the occupational structure has weakened the link between employment creation and poverty reduction.

A.K. Agarwal in the chapter 'Human Development in Mizoram: An Overview' not only analyses the status of human development in Mizoram, its strengths and weaknesses, but also suggests a strategy for improvement. Through empirical analysis he claims that Mizoram has shown excellent performance not only in the field of education and health but also on Gross State Domestic Product (GSDP) in which the tertiary sector has been playing a dominant role. He also states that one might not notice the relative inadequacy of the state in terms of HDI, Human Poverty Index (HPI), and gender disparity as compared to other states in the region and the country as a whole, but in-depth analysis points towards the need for better services and for evolving an appropriate delivery mechanism with close interaction of various components of human development in the state.

The chapter 'Facets and Factors of Human Development in Tripura', contributed jointly by Sudhanshu K. Mishra and Purusottam Nayak, synoptically presents an account of different facets and factors relating to human development in Tripura which suffered a brutal blow during partition of the country in the form of maimed infrastructure, severed connectivity, and a debilitating burden of immigrants, with all the needs and no resources. They have also systematically presented the geographical and historical forces that have shaped the resource

base, infrastructure, connectivity, socio-economic milieu, and, consequently, the economy of the state, determining the level of human development. Their study reveals that in spite of a great population burden on her fragile economy, the state has secured an appreciable score in matters of education and health. The authors opine that human development of the state needs to be harnessed to promote economic growth in terms of increased productivity and higher per capita income.

The next chapter, 'Human Development in Assam: An Analysis', is jointly contributed by Hiranmoy Roy and Kingshuk Adhikari. The authors report that the state is lagging far behind other major Indian states in terms of various socio-economic indicators, including the measures of HDI, HPI, and poverty. Their findings also reveal an inverse relationship between human development and poverty on the one hand, and widespread variation of human development across districts, on the other.

Debasis Neogi, in 'Development and Deprivations in Arunachal Pradesh', highlights the extent of development and deprivations in the state of Arunachal Pradesh. While presenting his findings, he states that while some parts of the state are well ahead in terms of socio-economic development, the other parts are lagging behind. He opines that uneven development, across districts and among tribal groups, has given rise to inter-tribe disputes. The large chunk of Net State Domestic Product (NSDP) in the state is observed to be contributed by the tertiary sector, of which public administration constitutes the major component. This type of development trend, as observed by the author, seems to be untenable in the long run. The author also analyses the role of basic education in bringing empowerment to the society and explains how such capacity building can lead to redressal of deprivation of human beings. Besides, he investigates the aspect of gender discrimination and prescribes mass education in order to remove such discrimination from the society.

The last chapter of the book, 'Human Development and its Correlates in Nagaland', has been contributed by Sudhanshu K. Mishra and Purusottam Nayak. The authors have presented a large amount of data relating to human development in Nagaland, and made an attempt to observe regularities in the same that may be meaningful for devising development policies. Their findings indicate that PCI, HDI, and gender-related development index are poorly correlated with health indicators, but appreciably correlate with educational

attainment. The authors conclude that the reliability of data reported by a socio-economic system is dependent on the level of development of the system. Underdeveloped socio-economic systems report highly unreliable data. This is not only regarding the figures of income but also the measures of attainment in matters of health and education. Official data on these variables is thrown up by a system that is administratively motivated and unsupervised with regard to their economic and developmental meaning. Use of such data, whether it pertains to income or any other measure of development, is not dependable for policy decisions meaningful to fostering development.

An overall analysis of various issues discussed in the present volume reveal the following:

1. There is a need to rethink, not only the choice of variables but also the method of construction of HDI. The proposed alternative method, by maximizing the sum of absolute correlation between the composite index and the indicator variables, might be of some use while overcoming the problems associated with construction of composite indices by PCA.
2. In the recent past, the entire region has been experiencing good human development but poor economic growth. There exist widespread variations in the levels of human development across states, regions (rural-urban), among ethnic and other social groups, and between genders. This mismatch probably has given rise to increased disputes among various social groups and tribal populations leading to social tensions reflected in the form of extortions and other secessionist activities. To overcome this, a determined effort is required to harness human development towards achievement of higher economic growth through increased productivity. There is also a need for specific intervention strategies on the basis of sector/group/class/gender/region/state.
3. Human development is positively associated with the quality of governance. Governance, from the human development perspective, demands greater transparency, accountability, participation, and stringent rules and laws. Judged on these parameters, the quality of governance in the region is not satisfactory and, hence, requires improvement. Besides, local democratic institutions like Autonomous District Councils need to be strengthened and their functioning be made more effective.

4. Revolution of SHGs has not made much headway in the region. SHG as a movement and institution ensures, at the micro level, both economic growth and human development. Further, both these objectives are realized through the method of participation, especially of the poor and the marginalized. There is a need to make this movement more widespread in the region.
5. Besides increased inequality, the quality of public services on the basis of access, use, reliability, and satisfaction are worst in the poverty stricken states in the region. To overcome this, the extremely poor households need up-front intervention through measures such as TPDS.
6. Reproductive health care happens to be an important component of human development. The goal to attain satisfactory human development will remain unfulfilled if the reproductive health needs of married women and children are not properly attended. The situation of reproductive health care in some states of the region is worse than many other in the country. Therefore, immediate efforts are to be made to improve this situation.
7. Higher level of human development is a product of the accumulated benefits that accrue to the society from public investments on social service. Per capita spending on education and health has a relatively stronger impact on human development than growth in per capita income. Hence, public expenditure on social services needs to be continued till the time economic growth itself takes care of it substantially.
8. The country, in general, and the north-eastern region in particular, suffer from the politics of human development. The approach of development theory and practice to poverty has been mechanical. It never goes into the question of the mechanism of generation of poverty. Hence, it is suggested that institutions engaged in development practice should analyse the mechanism of generation of poverty, and based on such analysis should come up with programmes to overcome it.

PURUSOTTAM NAYAK

I

Concept and Measurement Issues

1

Human Development Concept and Measurement

PURUSOTTAM NAYAK

INTRODUCTION

The development experience of many fast-growing developing countries reveals that their high Gross National Product (GNP) growth rates failed to reduce the socio-economic deprivation of substantial sections of their population. Even developed industrial nations realized that high income is no protection against the rapid spread of problems such as drugs, alcoholism, AIDS, homelessness, violence, and the breakdown of family relations. At the same time, some low-income countries demonstrated that it is possible to achieve high levels of human development if they skilfully use available means to expand basic human capabilities. This establishes the fact that expansion of output and wealth is only a means to development. The end of development is the welfare of human beings. Therefore, the central focus of development analysis and planning must be directed towards people's needs, and oriented towards achievement of this ultimate end. As a first step towards achievement of this end, there is a need to create a database on improved social statistics and new development measures. To cater to this need the concept of human development and its measurement through a measure called Human Development Index (HDI) was introduced by United Nations Development Programme (UNDP) in 1990, in its first *Human Development Report (HDR)*.

The human development approach to development, as is commonly understood, differs from the conventional approaches to economic growth, human capital formation, human resource development,

human welfare, and basic human needs. The following arguments help us in understanding the same:

1. Gross National Product growth is treated as being necessary, but not sufficient for human development. Human progress may be lacking in some societies despite rapid GNP growth or high per capita income levels unless some additional steps are undertaken to improve the same.
2. Theories of human capital formation and human resource development view human beings primarily as means, rather than as ends. They are concerned only with the supply side, with human beings as instruments for furthering commodity production. It is true that human beings are the active agents of all production and wealth creation, but they are also the ultimate end and beneficiaries of this process. Thus, the concept of human capital formation (or, human resource development) captures only one side of human development, but not in its entirety.
3. Human welfare approaches look at human beings more as the beneficiaries of the development process, rather than as participants in it. They emphasize only the distributive policies, rather than production structures.
4. The basic needs approach usually concentrates on the bundle of goods and services such as food, shelter, clothing, healthcare, and water that the deprived population group needs. It focuses on the provision of these goods and services, rather than on the issue of human choices.

CONCEPT OF HUMAN DEVELOPMENT

Human development is a process of enlarging people's choices. In principle, these choices can be infinite and can change over time. But at all levels of development, the three essential choices are for the people to lead a healthy and long life, to acquire knowledge, and to have access to needed resources for a decent standard of living. If these essential choices are not available, many other opportunities remain inaccessible. But human development does not end there. Additional choices, highly valued by many people, range from political, economic, and social freedom to opportunities for being creative and productive, and enjoying self respect and guaranteed human rights.

Human development has two sides:

1. the formation of human capabilities such as improved health, knowledge, and skills; and
2. the use of their acquired capabilities for productive purposes and leisure, or for being active in cultural, social, and political affairs.

Considerable human frustration results if the scale of human development does not finely balance the two sides. In this sense, income is clearly one of the options that people would like to have, albeit an important one. But it is not the sum total of lives. Development must, therefore, be more than just the expansion of income and wealth. Its focus must be on people (UNDP 1990). The *HDR 1991* elaborates the concept of human development along the following lines:

- (i) People must be at the centre of human development.
- (ii) Development has to be woven around people, not people around development. It has to be development of the people, by the people, and for the people.

Previous concepts of development have often given exclusive attention to economic growth, on the assumption that the benefits of growth would trickle down to various sections of the society. But the past experience does not support this hypothesis much. Higher growth does not necessarily bring higher degree of welfare for every section of the society. Growth needs to be translated into improvements in people's lives.

Human development also encompasses elements that constitute the critical issues of gender and development. There are four major elements in the concept of human development—productivity, equity, sustainability, and empowerment. As far as productivity is concerned, people must be enabled to increase their productivity, and to participate fully in the process of income generation and remunerative employment, to achieve higher economic growth, which is a subset of human development models. Productivity is not the only means to achieve welfare in a society. People must have access to equal opportunities. All barriers to economic and political opportunities must be eliminated so that people can participate in, and benefit from these opportunities. These benefits also need to be distributed over generations. Access to opportunities must be ensured not only for the present generation, but for future generations as well. All forms of capital, such as physical, human, and environmental, should be replenished.

Besides, empowerment is a necessity as regards human development is concerned. People must participate fully in the decision-making process that can shape their lives. Human development is impossible without gender equality. As long as women are excluded from the development process, development will remain weak and lopsided (UNDP 1995).

Development should increase people's choices with two caveats. First, while enhancing the choices of one individual or a section of society, it should not restrict the choices of another. This calls for equity in human relationships. Second, while improving the lives of the present generation, it should not mortgage the choices of future generations (UNDP 1991). In other words, the development process must be sustainable. The concept of human development has gone beyond its basic premises to emphasize the sustainability of the development process. It not only puts people at the centre of the development process but also advocates protection of the opportunities of future generations while respecting the natural systems on which all life systems depend. Sustainable human development addresses equity, both within the generation and among generations, enabling all generations, present and future, to make the best use of their capabilities.

The issue of sustainability has three dimensions: capacity, environment, and institutions. If the development process does not create institutions fully supportive of people's rights, it cannot be sustainable in the long run. Human development, thus, emphasizes on strengthening institutions of both the government and civil society so that the entire development process becomes internally sustainable (UNDP 1995). Human development is not a concept separated from sustainable development, but it can help to rescue sustainable development from the misconception that it involves only the environmental dimension of development. All these approaches have emphasized the need for people centred development with concerns for human empowerment, participation, gender equality, equitable growth, poverty reduction, and long-term sustainability (UNDP 1998). According to Haq (1976), 'the defining difference between the economic growth and the human development schools is that the first focuses exclusively on the expansion of only one choice, that is, income, while the second embraces the enlargement of all human choices, whether economic, social, cultural or political'.

There are at least six reasons for which we talk about and aspire for human development and poverty eradication. First, it is an end in itself; indeed it is the whole purpose of development. Second, it contributes to higher productivity. Third, it lowers reproductivity and, therefore, controls population growth. Fourth, poverty reduction minimizes degradation of environment from soil erosion, deforestation, and desertification. Fifth, the growth of a civil society and democracy leads to greater social stability. Lastly, its political appeal is that it not only reduces civil disturbances but also acts as a means to political stability (Streeten 1995).

MEASUREMENT OF HUMAN DEVELOPMENT: UNDP METHODOLOGY

What does the HDI include? How is it measured? These are some of the few questions which need to be addressed first. HDI is a composite index of three basic components of human development, that is, longevity, knowledge, and standard of living. Longevity is measured by life expectancy. Knowledge is measured by a combination of adult literacy having two-thirds weight and mean years of schooling with one-third weight. Standard of living is measured by purchasing power parity, based on real GDP per capita adjusted for the local cost of living.

The question then arises: Why do we take only these three components to measure human development? In any system of measuring and monitoring human development, the ideal should have been to reflect all aspects of human development, to obtain as comprehensive a picture as possible. In support of the choice of three components of HDI, the following arguments are made in *HDR 1990*: One of the probable reasons is lack of data that imposes some limits on its measurements. Second, comprehensiveness is not always and entirely desirable. Too many indicators may produce a perplexing picture, perhaps distracting policy makers from its thrust. Moreover, some indicators may overlap with existing indicators. Infant mortality, for example, is already reflected in life expectancy. Thus, arbitrary inclusion of more indicator variables may not solve the purpose for which the index is constructed. The crucial issue has, therefore, been emphasis on policy variables.

The next question then arises: How to combine these three indicators measured in three different units? The breakthrough for the HDI,

however, is to find a common measuring rod for the socio-economic distance travelled. For each of these three dimensions, the report identified minimum achievements, namely, the lowest national life expectancy, the lowest national level of adult literacy, and the lowest national level of per capita income. It also established a maximum, or a desirable level of attainment for each of these dimensions, and then showed where each country stood in relation to these scales. It was expressed in terms of a numerical value between 0 and 1. Income above the average world income was adjusted using a progressively higher discount rate. The scores for the three dimensions were then averaged in an overall index.

The HDI was constructed in three steps. In the first step, the measure of deprivation of a country was made for each of the three basic indicators using the following formula:

$$I_{ij} = \frac{\text{Max}(X_{ij}) - X_{ij}}{\text{Max}(X_{ij}) - \text{Min}(X_{ij})} \quad (1.1)$$

The indicator variable (I_{ij}) used in (1.1) refers to the deprivation indicator for the j^{th} country with respect to the i^{th} variable. In the second step, an average deprivation indicator (I_j) was defined by taking a simple average of the three indicators as given below:

$$I_j = \frac{1}{3} \sum_{i=1}^3 I_{ij} \quad (1.2)$$

In the third step, HDI was measured as one minus the average deprivation index as follows:

$$\text{HDI}_j = 1 - I_j \quad (1.3)$$

The human development index attracted a lot of attention among policy makers, development professionals, academics, the press, and the people. Many criticisms were raised against the construction and robustness of the index. As a result of these criticisms, two improvements were brought about in its construction in the subsequent (UNDP 1991). First, knowledge variables, such as adult literacy and years of schooling, were combined to produce a synthetic measure of educational achievement by assigning weights to the two components as follows:

$$E = a_1 (\text{Literacy}) + a_2 (\text{Years of Schooling}) \quad (1.4)$$

The symbols used, that is, E , a_1 , and a_2 in equation (1.4), respectively,

refer to educational achievement, respective weights of literacy, and mean years of schooling. These weights were assumed as $a_1 = 2/3$ and $a_2 = 1/3$ in the 1991 report, whereas the same were taken as $a_1 = 1$ and $a_2 = 0$ in the 1990 report. Second, modification was made in the treatment of income. As we know, HDI in the 1990 report was based on the premise of diminishing returns from income which was reflected through the use of logarithm of income and assignment of zero weight to income above the poverty line. However, in 1991 the method was revised by using the well-known and frequently used Atkinson formula for measuring utility of income as follows:

$$W(Y) = \frac{1}{1-\epsilon} (Y^{1-\epsilon}) \quad (1.5)$$

where $W(Y)$ is the utility or well-being derived from income, and the parameter ϵ measures the extent of diminishing returns. It is the elasticity of the marginal utility of income with respect to income. If $\epsilon = 0$, there are no diminishing returns. If ϵ approaches 1, the equation becomes:

$$W(Y) = \log(Y) \quad (1.6)$$

The modification adopted in the HDI (1991) was to let the value of ϵ to rise slowly with rise in income. For this purpose, the full range of income was divided into multiples of the poverty line income (Y^*). Thus, most countries were falling in the income range between 0 to Y^* , some between Y^* to $2Y^*$, even fewer between $2Y^*$ to $3Y^*$ and so on. For all countries for which $Y < Y^*$ (the poor countries), ϵ was set equal to 0, meaning thereby that there were no diminishing returns. For income between Y^* and $2Y^*$, ϵ was set equal to $1/2$. For income between $2Y^*$ and $3Y^*$, it was set at $2/3$ and so on. In general, when $\alpha Y^* \leq (\alpha + 1)Y^*$, it implied that $\epsilon = \frac{\alpha}{\alpha + 1}$ (where α representing constants such as 1, 2, 3, 4, etc., to be multiplied with poverty line income to determine various ranges of income in which a country falls according to its level of income. Thus, we have:

$$\begin{aligned} W(Y) &= \log(Y) \text{ for } 0 < Y \leq Y^* \\ &= Y^* + 2(Y - Y^*)^{1/2} \text{ for } Y^* \leq Y \leq 2Y^* \\ &= Y^* + 2(Y^*)^{1/2} + 3(Y - 2Y^*)^{1/3} \text{ for } 2Y^* \leq Y \leq 3Y^* \\ &= Y^* + 2(Y^*)^{1/2} + 3(Y^*)^{1/3} + 4(Y - 3Y^*)^{1/4} \text{ for } 3Y^* \leq Y \leq 4Y^* \text{ etc.} \end{aligned} \quad (1.7)$$

So, the higher the income relative to the poverty level, the more sharply the diminishing returns affect the contribution of income to human development. Income above the poverty line, thus, has a marginal effect, but not a full dollar-for-dollar effect. This marginal effect is enough, however, to differentiate significantly among industrial countries. The original HDI formulation (UNDP 1990), by comparison, was:

$$W(Y) = \log(Y) \text{ for } 0 < Y \leq Y^* \\ = \log(Y^*) \text{ for } Y > Y^*$$

The revision, thus, does not take $\varepsilon = 1$, but allows it to vary between 0 and 1 (UNDP 1991).

The calculation of *HDR* for 1994 was again made different from that of the previous years. Maximum and minimum values were fixed for the four basic variables, that is, life expectancy (85.0 and 25.0 years), adult literacy (100 and 0 per cent), mean years of schooling (15.0 and 0 years), and income (PPP \$ 40,000 and 200). For income, the threshold value was taken to be the global average real GDP per capita of Purchasing Power Parity (PPP) \$ 5,120. Multiples of income beyond the threshold was discounted using a progressively higher rate (UNDP 1994).

Since the publication of the *HDR 1994*, two changes have been brought out in the construction of HDI relating to variables and minimum and maximum values. First, the variable of mean years of schooling has been replaced by the combined primary, secondary, and tertiary enrolment ratios, mainly because the formula for calculating mean years of schooling is complex and has enormous data requirement. Second, the minimum value of income has been revised from PPP \$ 200 to \$ 100. This revision has been made because in the construction of the Gender-related Development Index (GDI) for different countries, the minimum observed value of female income of PPP \$ 100 has been used as a lower goal post. It is necessary to use this fixed minimum for construction of the overall HDI to maintain consistency between the construction of HDI and that of GDI, and to ensure comparability between the two indices. For HDI, the revision is only marginal, and it has little effect on HDI values. For any component of the HDI, individual indices are computed according to the general formula:

$$\text{Index} = \frac{X_i - \text{Min}(X_i)}{\text{Max}(X_i) - \text{Min}(X_i)} \quad (1.8)$$

For the construction of the dimension indices, maximum and minimum values have been fixed as shown in Table 1.1:

Table 1.1: Dimension Indices of HDI in UNDP Report

Indicators	Scaling Norms for HDI	
	Maximum	Minimum
Life expectancy at birth (years)	85	25
Adult literacy rate (per cent)	100	0
Combined gross enrolment ratio (per cent)	100	0
GDP per capita (PPP US \$)	40,000	100

Source: UNDP (2005).

Upto 1999, the Atkinson formula was used to construct the income GDP index in the *HDR*. The basic approach in the treatment of income was driven by the fact that achieving a respectable level of human development does not require unlimited income. To reflect this, income was always discounted in calculating the HDI. To calculate the discounted value of the maximum income of PPP \$ 40,000 which falls between the income range of $6Y^*$ and $7Y^*$, the following formula (constructed before 1999) was used:

$$W(Y) = Y^* + 2(Y^*)^{1/2} + 3(Y^*)^{1/3} + 4(Y^*)^{1/4} + 5(Y^*)^{1/5} \\ + 6(Y^*)^{1/6} + 7(40000 - 6Y^*)^{1/7} \\ = 6311 \text{ (PPP US\$)} \quad (1.9)$$

The main problem with this formula is that it discounts the income above the threshold level very heavily, penalizing the countries in which income exceeds the threshold level. It reduces the PPP \$ 34,000 between the threshold and maximum level of income to a mere PPP \$ 321. In many cases, income loses its relevance as a proxy for all dimensions of human development other than a long and healthy life and knowledge. To overcome this problem, the UNDP (1999) brought out a thorough review of the treatment of income and suggested its improvement. Putting the methodology on a more solid analytical foundation by introducing the formula as shown below made the refinement:

$$W(Y) = \frac{\log(Y) - \log\{\text{Min}(Y)\}}{\log\{\text{Max}(Y)\} - \log\{\text{Min}(Y)\}} \quad (1.10)$$

There are several advantages to this formula. First, it does not discount income as severely as the formula used earlier. Second, it discounts all income, not just the income above a certain level. Third, the asymptote starts quite late, so middle-income countries are not penalized unduly;

moreover, as income rises further in these countries, they continue to receive recognition for their increasing income as a potential means for further human development (UNDP 1999).

Subsequently, Anand and Sen (1993, 1995, and 2000) and Chaubey (2002) suggested further modifications to the UNDP formula, but these are yet to be popularized (Nayak and Thomas 2007). Anand and Sen suggested the following two forms for rectification of the transformation adopted by UNDP:

$$= -e^{-\gamma y} \text{ where } \gamma = 0 \tag{1.11}$$

$$= -\gamma^{-\beta} e^{\gamma y} \text{ where } \beta \geq 0 \text{ and } \gamma \geq 0$$

In the first part of function (1.11), γy is the elasticity of the function which is a positive function of income and, therefore, increases linearly with the increase in income. The second part is a more general class which combines the constant absolute inequality aversion and constant relative inequality aversion forms.

Chaubey provided an alternative to these formulations which made the use of the idea of the poverty line and followed the principle of diminishing marginal returns to income:

$$W = Y \text{ for } Y \leq Y^* \tag{1.12}$$

$$= Y^* + Y^* \left\{ \log \left(\frac{Y}{Y^*} \right) \right\} \text{ for } Y \geq Y^*$$

Figure 1.1 below offers a clear overview of how the HDI is constructed:

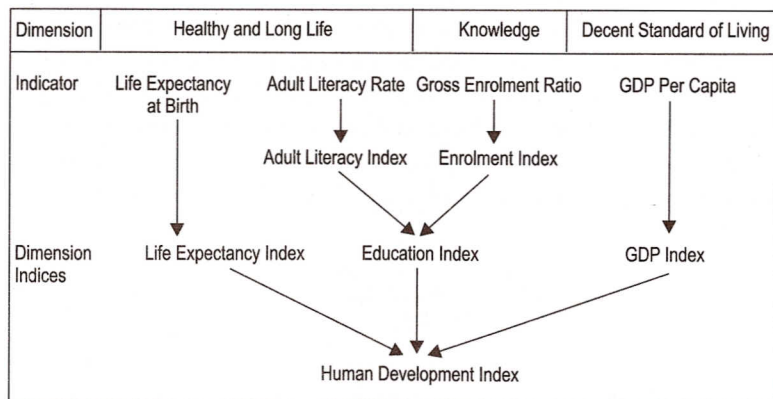


Figure 1.1 : Variables of HDI

Construction of Indices in UNDP Report 2007-08

Life Expectancy Index (LEI): The life expectancy index measures the relative achievement of a country in life expectancy at birth. The life expectancy index of India, having life expectancy of 63.7 years at birth for the year 2005, is calculated to be 0.645 as shown below:

$$LEI = \frac{63.7 - 25}{85 - 25} = 0.645 \tag{i}$$

Education Index (EI): The education index measures a country's relative achievement in both adult literacy and combined primary, secondary, and tertiary gross enrolment. First, an Adult Literacy Index (ALI) and Gross Enrolment Index (GEI) are calculated. Then these two indices are combined to create the EI, with two-thirds weight given to adult literacy and one-third weight to combined gross enrolment. For India, with an adult literacy rate of 61.0 per cent and a combined enrolment ratio of 63.8 per cent in 2005, the education index is calculated to be 0.620 as shown below:

$$ALI = \frac{61.0 - 0}{100 - 0} = 0.610 \tag{ii a}$$

$$GEI = \frac{63.8 - 0}{100 - 0} = 0.638 \tag{ii b}$$

$$EI = \frac{2}{3}(ALI) + \frac{1}{3}(GEI) = \frac{2}{3}(0.610) + \frac{1}{3}(0.638) = 0.620 \tag{ii c}$$

GDP Index (GDPI): It is calculated using adjusted GDP per capita (PPP US \$). In the HDI, income serves as a surrogate for all the dimensions of human development not reflected in a long and healthy life, and in knowledge. Income is adjusted because achieving a respectable level of human development does not require unlimited income. Accordingly, the logarithm of income is used. For India with a GDP per capita of PPP \$ 3452 in 2005, the GDPI works out to be 0.591 as shown below:

$$GDPI = \frac{\log(3452) - \log(100)}{\log(40000) - \log(100)} = 0.591 \tag{iii}$$

Human Development Index (HDI): Once the individual indices are calculated determining the HDI is straightforward, it is a simple average of LEI, EI, and GDPI:

$$\begin{aligned} \text{HDI} &= \frac{1}{3}(\text{LEI} + \text{EI} + \text{GDPI}) && \text{(iv)} \\ &= \frac{1}{3}(0.645 + 0.620 + 0.591) = 0.619 \end{aligned}$$

MEASUREMENT OF HUMAN DEVELOPMENT: PLANNING COMMISSION METHODOLOGY

The *National Human Development Report (NHDR)* prepared by the Planning Commission of India is an attempt to map the state of HDI in India (Planning Commission 2002). A major objective of the *NHDR* is to bring about a certain conceptual and methodological consensus on the use of human development approach in the country in general, and the framework for identifying indicators and building composite human development indices at the state level, in particular. The work is expected to guide similar initiatives at the sub-state level in future. It seeks to put together indicators and composite indices to evaluate development process in terms of 'ex-post incomes' rather than only in terms of available means of inputs. The report, recognizing the broad-based consensus that exists on the three critical dimensions of well-being, focuses on identifying the various contextually relevant indicators on each of them. These dimensions of well-being are related to the following:

1. *Longevity*: the ability to live a long and healthy life;
2. *Education*: the ability to read, write, and acquire knowledge; and
3. *Command over resources*: the ability to enjoy a decent standard of living and have a socially meaningful life.

The various indicators of these attainments and composite indices capture the process of development and well-being of the people from two perspectives. The first is the conglomerate perspective, which captures advances, made by the society as a whole, and the second is the deprivation perspective that assesses the status of the deprived in a society. Both these perspectives are needed to adequately understand the process of development in any society (Planning Commission 2002: 10).

A composite index of diverse indicators, though it is conceptually and methodologically difficult to put together, has been considered as a useful tool in policy planning in India. It is believed to help in facilitating comparisons with other composite measures. It is expected to help in a meaningful comparison of the human development status

across the states. It is, therefore, felt necessary to have core indices that are functionally decomposable at the state and sub-state levels. Keeping these points in view, the *NHDR* included a core set of indices from among the identified indicators that reflect, in some sense, the common concerns, social values, and development priorities of all the states in India, which permitted a meaningful comparison of the human development status across the states. The other concerns that were considered to be reflected in the indices related to their amenability to inter-temporal and inter-spatial analyses, as well as their sensitivity to tracking developmental changes at more frequent intervals of time. The latter implies making use of such indicators that are sensitive to capturing changes, for instance, on an annual basis, as against using only those indicators that primarily capture the accumulated attainments on each of the identified dimensions of well-being that is included in the summary measure. Such a consideration is important when the objective is to have composite human development indices where frequent, or yearly changes, are not on account of changes only in the income variable. This is not the case with the HDI of UNDP, which is presented annually in the human development reports. In their case, the yearly changes in the value of the index is mostly on account of changes in the indicators, that are sensitive to tracking gradual but continuous changes in such aspects of well-being that have conventionally been captured largely through the slow moving indicators, like life expectancy at birth, or even literacy rates.

While taking note of the social valuation and development priorities of India, the scaling and weighting of diverse indicators into a composite index has been done keeping in view the objectives for which the composite indices are being built. In scaling the diverse indicators, the main consideration has been to make attainments on each of them comparable, and at the same time ensuring that the selection of end points, that is, the maximum and the minimum values on the scale for each indicator, are such that they support inter-temporal comparison for a reasonable period of time starting from 1980. The scaling norms that have been selected are expected to remain valid at least till 2020, at a reasonably improved pace of human development. While selecting the norms, the attainments of the best performing state on the concerned indicators and the comparable international norms are also kept in mind.

The issue of weights to combine the identified indicators on each of the three dimensions of well-being is, of course, debatable. The

report has adopted a predominantly normative approach as against a purely empirical basis of deriving weights to club different indicators. Conceptually, there are good reasons to suggest that different aspects of well-being have to be co-realizable for an individual to have a meaningful sense of well-being in today's context. It follows that attainments on each aspect of well-being are equally important and, hence, should be equally weighted. Thus, both in HDI as well as in HPI, composite measures reflecting health, educational, and economic attainments/deprivations have been equally weighted as shown in Table 1.2. However, within the composite measure on educational and health attainment, based on a sensitivity analysis, indicators with somewhat distinct attributes have been clubbed using unequal weights so as to reflect appropriately the country's context, development priorities, and the desired policy focus. Accordingly, in case of the composite index on health attainment, life expectancy has been given a 65 per cent weight as against only 35 per cent for infant mortality rate. Similarly, in case of the composite index on educational attainment, while literacy rate has been given a weight of 35 per cent, the indicator capturing intensity of formal education (based on current enrolment rates in successive classes at school level) has been assigned 65 per cent. In case of indicator on economic attainment, namely, inequality adjusted per capita consumption expenditure, an adjustment for inflation over the period had been made to make it amenable to inter-temporal and inter-spatial comparisons. As a result, the composite indices are capable of tracking development across the states and over a period of time for which they have been estimated.

Table 1.2: Indicators of HDI in UNDP and National Human Development Reports

Attainments	UNDP Indicators	NHDR Indicators
Health	Life expectancy at birth	(1) Life Expectancy at Age 1 (2) Infant Mortality Rate
Educational	Adult literacy rate combined with enrolment ratio	(1) Literacy Rate 7 + (2) Intensity of Formal Education
Economic	Real GDP per capita in PPP \$	Per capita real consumption expenditure adjusted for inequality

The formula used for constructing HDI in the NHDR is as follows:

$$HDI_j = \frac{1}{3} \sum_{i=1}^3 X_i \text{ where } X_i = \frac{X_{ij} - X_i^*}{X_i^{**} - X_i^*} \quad (1.13)$$

In the above equation (1.13), HDI is measured for the j^{th} state, where X_{ij} refers to attainment of the j^{th} state on the i^{th} indicator, X_i^{**} and X_i^* are the scaling maximum and minimum norms, $X1$ refers to expenditure index based on inflation and inequality adjusted per capita consumption expenditure, $X2$ is the composite index on educational attainment ($X2 = 0.35E1 + 0.65E2$), where $E1$ is literacy index based on literacy rate for the age group of seven years and above, $E2$ is formal education index based on adjusted intensity of formal education, and $X3$ refers to composite index on health attainment ($X3 = 0.65H1 + 0.35H2$) where $H1$ is life expectancy index based on life expectancy at age one and $H2$ is infant mortality index based on infant mortality rate. In case of IMR, the reciprocal of the indicator is used.

The different indicators included in the development radars have been scaled and normalized to take a value on a scale ranging from 0 to 5 as shown in Table 1.3. 'As a result, on each indicator including the IMR and poverty ratio, where the reciprocal of the indicator has been used, and the scaled least achievement corresponds to 0 whereas the best achievement is closer to 5. In undertaking the said scaling procedure, desirable norms had to be adopted for the chosen indicators' (Planning Commission 2002: 133). In some cases, the norms are self-selecting, as for instance is the case with access to safe drinking water, or literacy rate, and in some others like per capita consumption expenditure or even infant mortality rate, there is an element of value judgement. In case of the inflation adjusted per capita consumption expenditure (at 1983 prices), the maximum has been pegged at Rs 500 per capita per month. For poverty the minimum has been kept at 5 per cent such that it corresponds to a value of 5 on a scale of 0.5 on the radar. In all other cases, the scaling norms are as follows:

Table 1.3: Dimension Indices of HDI in National Human Development Report

Indicators	Scaling Norms for HDI	
	Maximum	Minimum
Life expectancy at age 1 (years)	80	50
Infant mortality rate	-	20 per 1000
Literacy rate for 7+ years	100	0
Adjusted intensity of formal education (estimated)	7	0
Inflation adjusted per capita monthly consumption expenditure at 1983 prices (Rs)	325	65

Source: Planning Commission (2002).

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