

CHAPTER-2

Economic Development and Environmental Degradation

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Introduction

The survival and well being of a nation depend on sustainable development. Sustainable development is a process of development which ensures that it meets the needs of the present without foreclosing future options.¹ To achieve this any developmental strategy and technology associated with it ought to treat the environment as an integral part of the development process.

Global Perspective

There has been a growing awareness of the ramifications of environmental degradation since the 1960's, especially in the fast growing industrialised countries of the world.² The process of development driven by technical innovation had at first appeared to offer limitless growth without taking into account that some of the inputs essential to the production process were limited in supply. But ever-increasing population and technological advancement cannot be accommodated with the earth's limited resources. Hence, environmental pollution intensifies in the fast developing countries of the world.

But environmental awareness was initially confined to industrialised countries only. In the developing economies environmental policies were regarded as unaffordable luxuries over and above a concern for basic necessities. It was until 1972 when the United Nations Conference on the Human Environment held at Stockholm brought together both the industrialised and developing

nations to realise that environment protection is an essential element of social and economic development everywhere. By the 1980's there was a new reorientation in environmental thinking emphasising the possibility of inter-relationship between economic development and environmental improvement. The essence of this new thinking is how to grow in an environmentally benign way thus providing the foundation to the concept of *Sustainable Development*.³

The concept of sustainable development is usually associated with the Bruntland Commission Report in 1987.⁴ The Report recognises the fact that in developing countries there is a greater dependence on natural resources as an input for production and development. Therefore, it calls for alternative development strategies and technologies based on sustaining and expanding the natural resources base. In the words of the Bruntland Commission Report - *Our Common Future* :

"There has been a growing realization in national governments and multilateral institutions that it is impossible to separate economic development issues from environmental issues; many forms of development erode the environmental resources upon which they must be based, and environmental degradation can undermine economic development."⁵

Environmental degradation has now become a more common and pervasive problem. Rapid deforestation, land degradation, soil erosion, air pollution, water contamination, urban congestion etc. are common to developed and developing countries alike. The problems in all their manifestations, dimensions and implications differ depending upon history, geography and level of economic development of a particular country. /

We cannot, however, deny the fact that economic development has brought with it progress. Throughout the world infant mortality rate is falling, human life expectancy is rising, literacy rate is climbing, global food production is increasing faster than the population growth.

But the same processes that have produced these gains have at the same time given rise to trends that the planet earth and its people cannot bear. The failures have arisen because development processes have failed to recognise the fact that the environment is an endogeneous part of the development process and is bound to be affected by the very development that is taking place. Moreover, the short-sighted way in

which economic development have been pursued have led to an unequal distribution of the gains of development signifying the existence of a vicious circle of poverty. Many parts of the world are caught in a vicious downward spiral where poor people are forced to overuse natural resources to survive and their impoverishment of natural resources further impoverishes them making their survival even more difficult and uncertain.

Economic development may have led to improvement in living standards but it has been achieved in ways that can be globally damaging in the long run. Today's environmental challenges arise both from the lack of development and from the unintended consequences of some forms of economic growth. Hence, it is imperative to find a sustainable development path for a renewed search of solutions and the establishment of an international economic system of cooperation. These are challenges that should cut across the divides of national sovereignty, of limited strategies for economic gains and separate disciplines of science.

The Earth Summit organised by the United Nations Commission on Environment and Development on 3-14 June 1992, in Rio-de-Janerio, Brazil was the ecstatic culmination of the growing awareness of environmental degradation. The summit stressed that the right to development must be fulfilled so as to equally meet developmental and environmental needs of the present and future generations. In the path of economic development, all nations must cooperate in the essential task of eradicating poverty as an indispensable requirement of sustainable development. Henceforth to attain sustainable development, environmental protection should constitute an integral part in the development process and the former cannot be considered in isolation from the latter.

Indian Scenario

The unity of all the components of the earth, living and non-living had been a basic feature of Indian thought since ancient times. Even in modern times, conscious efforts have been made for maintaining environmental security along with developmental advances as is evident from the Indian constitutional provisions, environmental policies and planning objectives.

But development strategies followed in the country have so far tended to plunder the earth's natural resource base particularly the non-

renewable ones resulting in severe depletion of natural resources and increasing environmental degradation. Such strategies diminish the gains of development and worsen the standards of living of the poor who are directly dependent on natural resources for their basic sustenance. We will, therefore, attempt to analyse the various environmental problems and issues in the country which have arisen through the process of economic development.

Environmental Issues in India

Some issues in India which highlight the environmental challenges in the path of economic development are briefly presented below:

(A) Development and Population

Population is an important resource for development. But the effects of population growth on the environment cannot be ignored. The critical issues are the balance between population size and the available resources and the rate of population growth in relation to the capacity to provide for the basic needs of the population not only for the present but also for the future.

A study of the growth of population in India during 1981-1991 revealed that population in India grew from 683 million in 1981 to 844 million in 1991 signifying a record growth of population by 161 million in a period of 10 years with a compound annual growth rate of 2.11 per cent. The 1991 Census had revealed a marginal decline in the rate of growth of population from 2.2 per cent in 1971-81 to 2.1 per cent in 1981-91. Even then, the current growth rate which is about 2.05 per cent is still very high and if population growth continues at the current rate the country will cross the alarming one billion mark by the turn of the century.

Therefore, as the country strives for higher economic development, a vital question arises: Can development be sustained in the face of such an alarming increasing in population? This brings into sharp focus the question of whether India's 'carrying capacity'⁶ can support such a large and growing population. 'Carrying capacity' is defined as 'the number of people and animal that an area of land can support on a sustainable basis'. But so far no expert has even attempted to quantify the 'carrying capacity' of any country in the world. It is indeed an extremely complicated and uncertain task to quantify the 'carrying capacity' of any country big or small.

In view of the difficulties to quantify the 'carrying capacity' of any area the Food and Agriculture Organisation (FAO) made an attempt of finding out the 'Population-Supporting Capacity' of lands in developing countries in 1983 instead of quantifying their 'carrying capacity'. In its Report entitled *Potential Population Supporting Capacities of Lands in the Developing world*,⁷ the FAO had reflected a very exhilarating and sobering picture of India. It was reported that India has enormous problems but has an equally enormous resource base to solve them with. Assuming a *low level of inputs*, the study reported that the 'Population-Supporting Capacity' of the irrigated and rainfed areas together was 1.56 persons per hectare in 1975 compared to 1.93 that existed in reality. In other words, in 1975 India had 119 million or 19 per cent of the population — more people than its lands could support.

But assuming *high and intermediate levels of inputs* the 'Potential Population Supporting Capacity' of India's lands shot upto 6.84 persons and 3.53 persons per hectare respectively. Thus India's land could have fed as much as three and a half times her existing population in 1975.

By the year 2000 A.D. the picture changes for the better because of the country's massive irrigation development plans. By that year India is expected to have a population of 1036.7 million and a population density of 3.23 persons per hectare. Because of the increased output from irrigated lands even with low level of inputs, India's lands can support a population density of 3.24. At intermediate and high levels of inputs the corresponding figure would be 5.62 and 8.18. If India can achieve its irrigation targets and manage its lands properly by the year 2000 A.D. it can feed a population of upto 2.621 million, i.e. two and a half times the projected population by that year. The above position of India can be reflected in the Table 1 below:

The Table reveals that India can feed 2.5 times the projected population by the turn of the century. The key factors for this future success will depend on proper management of the land and natural resources. Although technological progress will enable the country to sustain a large number of population, there is an urgency to resolve the problem of population growth in the country because the linkage between population growth, poverty and the environment could hardly be over-emphasised.

Table 1
Potential Population Supporting Capacity of
India's Lands

Particulars	Year	
	1975	2000
Population (million)	618.70 (Actual)	1036.60 (Projected)
Low Inputs		
(a) Potential Supportable Population (million)	499.70	1298.10
(b) Contribution of Irrigated Lands (%)	56.00	87.00
(c) Population Supporting Capacity of Irrigated Lands (Persons per hectare)	1.56	3.24
Intermediate Inputs		
(a) Potential Supportable Population (million)	1130.20	1800.10
(b) Contribution of Irrigated Lands (%)	25.00	63.00
(c) Population Supporting Capacity of Irrigated Lands (Persons per hectare)	3.53	5.62
High Inputs		
(a) Potential Supportable Population (million)	2191.00	2619.90
(b) Contribution of Irrigated Lands (%)	13.00	43.00
(c) Population Supporting Capacity of Irrigated Lands (Persons per hectare)	6.84	8.18

Source : Compiled and adopted from 'Potential Population Supporting Capacities of Lands in the Developing World'. FAO/IIASA/UNFPA, Rome, 1982 as quoted in the *State of India's Environment 1984-85: The Second Citizens'* Centre for Science and Environment, New Delhi, 1985, p. 158.

(B) Development and Poverty

The eradication of poverty and inequality have always been one of the major objectives of economic development processes and planning in the country. But this objective continues to remain elusive and the progress towards it is rather halting.

The failure to harness population growth has aggravated the problem of poverty in India. A significant section of the people are deprived of the minimum basic needs which have created formidable

environmental problems in the country. The vast majority of the poor constituting 51.7 per cent, is concentrated in the rural areas while 48.3 per cent is in urban areas.

The high incidence of rural poverty is ultimately linked to landlessness. This is corroborated by the fact that the number of marginal holdings in the country has increased from 36 million in 1970-71 to about 64 million in 1990-91 and is expected to reach a staggering figure of 77 million by the turn of the century.⁸ These figures indicate that there is an inexorable process of marginalisation in rural India in which the percentage of rural households owning 0-1 acre of land which was over 51 per cent in 1970-71 increased to 59 per cent in 1990-91.⁹ This brings out the implication of a growing alienation of the poorer communities from land. Pushed into marginal areas the poor have no option but to over-exploit natural resources in order to survive. Survival takes precedent over concern for future availability and productivity of land and natural resources.

Lack of opportunities for gainful employment and ecological stress have led to an ever-increasing migration from rural to urban areas in search of employment and a better life. India's urban population increased from 156 million in 1981 to 218 million in 1991.¹⁰ This has resulted in urban congestion and squatter settlements with millions of people having no access to the basic amenities of life. It has been estimated that over 30 million i.e. one-fifth of the urban population lives in slums.¹¹ Child labour and illiteracy are persisting. Even today 250 million children, women and men suffer from undernutrition.¹² Growing income disparities also marks the Indian economy. The presence of such rampant poverty brings into sharp focus the fact that a country in which poverty and inequity are endemic will always be prone to ecological disaster.

(C) Development and Agriculture

Economic development in India depends to a large extent on the progress and prosperity of agriculture. A majority of the population of over 70 per cent depends upon this sector for their basic sustenance.

As we have mentioned already, India's lands with proper management and technological advancement can no doubt sustained a large number of population. But the deteriorating condition of India's lands as a result of mindless and ruthless exploitation for essential and commercial needs besides accelerated and poorly planned developmental activities are raising doubts on the capability of India's

land to sustain the needs of a growing population not only for the present but also for the future.

Land degradation has assumed serious proportion in India. Out of the total geographical area of 329 million hectares, 176 million hectares of the total land area in India is seriously degraded and require special treatment to restore it to productive and profitable use.¹³ The main factor for land degradation in India is deforestation. The recorded forest area in the country was only 64 million hectares or 19 per cent of the total land area against the broad national policy of 66 per cent for hilly regions and 33 per cent for the plain areas.¹⁴ Even within this area only 11 per cent of the total forest area is under adequate forest cover.¹⁵

The progressive depletion of the country's forest wealth is literally driving the country towards an ecological disaster. Soil erosion, heavy siltation of dams, increasing floods, famines, etc. are the disastrous consequence of deforestation.

Even though there has been an increasing mis-application of yield increasing inputs like water, chemical fertilizers and pesticides in Indian agriculture, soil erosion and deforestation constitute a greater threat to the rural economy in the country. This is because Indian agriculture is still practised at the extensive margin and is far from reaching the intensive margin even under present technology. Thus, economic development strategies in the agricultural sector should not only focus on increasing agricultural productivity, but it should also address itself to the growing problems of land degradation which could well be considered as the single and most important form of environmental degradation in India.

(D) Development and Industry

Industrialization is no doubt a pre-requisite for economic development as has been amply demonstrated by developed nations of the world. A striking feature of India's economic development has been the rate and progress of industrialization in the country since 1951.

As the country strives for higher economic development through industrialization, scant attention is paid to the hazards posed by industrial activities on the environment. India's uncontrolled industries are a major source of atmospheric and water pollution, degradation and destruction of natural resources and increasing hazard, in industrial occupations.

India's water resources, constituting as much as 70 per cent, have been severely polluted by human and industrial wastes.¹⁶ Rivers in the country are increasingly used as cheap dump-yards for industrial wastes. The problems of disposal of highly toxic industrial and nuclear wastes are getting worse day by day, posing a severe threat to the environment in the form of pollution.

Environmental degradation as a negative impact of industrialisation continues to grow day by day bringing into sharp focus that the dangers and risks are borne by the weaker sections of the population who get the most hazardous jobs and are forced to live in the dirtiest environment. The Bhopal disaster in December 1984 has highlighted the fact that industrialisation is creating a high-risk environment for everyone.

(E) Development and Economic Overheads

Economic and social overheads or infrastructural facilities are the vital sectors on which the whole process of economic development depends. Development of these vital sectors have been accorded the highest priority and investment in the country.

Energy generation programmes have been increasingly emphasized and expanded in the country. Out of the total energy production in the country, 69 per cent comes from coal or thermal power, 25 per cent from hydel power, 2 per cent from nuclear power, 4 per cent from diesel and gas and less than 1 per cent from non-conventional sources of energy (solar, wind, biogas, etc).¹⁷ Besides the conventional sources of energy noted above, nearly 50 per cent of the total energy requirements particularly in the rural areas and a significant section in urban areas is met by fuel wood which continues to remain the largest source of energy in the country.¹⁸

The emphasis laid on conventional sources of energy is steadily leading the country towards an ecological disaster. Thermal power stations are a major cause of land degradation through large scale mining activities. In the vast tracks of coal mining district of Eastern India, big crater-like depressions have been formed making the land unsafe for habitation, cultivation and grazing.¹⁹ Mineral dust from mines are polluting the air while residues from waste-dumps are adversely affecting the land and water resources.

The construction of large dams for hydro-power and irrigation facilities have been increasingly undertaken in the country. These are

a major source of forest destruction, adverse changes in riverine ecology and massive displacement of human communities.

The development of transport and communication has been responsible for faster development of large area in the country. But at the same time this has been achieved in most cases at the cost of increasing degradation and denudation of the land and forest resources.

Science and technology are the very essence of development since they are responsible for the creation of vast knowledge and power in any country in the world. But access to this knowledge and power is confined to only a small section of the privileged in the society. Hence the major result of scientific and technological knowledge has given a few people tremendous power to exploit natural resources without taking into account the growing impoverishment of a large section of the population.

The development of infrastructural facilities are no doubt vital for economic development. But the fact remains that there are environmental costs associated with each and every developmental activity. These have to be taken into account since sustainable development and not technical efficiency which should be the primary criterion for the choice of technologies for the future.

(F) Development and Animal Husbandry

Animal husbandry is another source of livelihood of a vast section of population in rural India. Cattle and livestock are the basic needs of millions of small farms in India as the main source of manure, draught power and income.

There has been a drastic decline in the size of grazing lands in the country in the last forty years or so. As a result of growing population, there has been an increased pressure to raise agricultural production. Accordingly, permanent pastures and village commons have been converted to crop land and irrigation needs. This has led to haphazard grazing. Hardly 3.5 per cent of India's geographical area is under grassland, while the country's domesticated animal population accounts for nearly 500 million.²⁰

The consequence of over-grazing on the environment is alarming. Land degradation as a result of over-grazing has led to desert-like conditions. Besides depletion of forest cover overgrazing is hardening the soil and causing accelerated soil erosion in many parts of the country.

The Northeastern Region and Meghalaya

Thus there has been a continuous degradation of the environment in the whole country but it has been more accentuated in the Northeastern region including Meghalaya. The single major cause has been the well-known practice of *Jhum* cultivation. *Jhum* cultivation has mainly been held responsible for the alarming depletion of forest cover in the entire Northeastern region. The extent of forest that has been affected can be appreciated from the Table 2.

The Table given below might have shown the decline in the total extent of forest affected by *jhumming* in the region from 28.8 per cent in 1975 to 24.6 per cent in 1984. But the fact remains that repeated deforestation for *jhumming* have left hill areas barren and unproductive.

Table 2
Forest Areas Affected by Jhum Cultivation in the Northeast Region

States	Geographical Area	Extent of Forest: Affected by Jhum Cultivation	
		1975	1984
Arunachal Pradesh	83,590	7,940	8,521
Assam	78,520	4,160	7,276
Manipur	22,360	17,770	13,846
Meghalaya	22,500	10,240	6,812
Mizoram	21,090	16,110	12,442
Nagaland	16,520	10,970	10,641
Tripura	10,490	6,220	3,315
Total	2,55,050	73,410 (28.8)	62,854 (24.6)

Note: Figur in brackets indicate percentage to geographical area.

Source: Forest Survey of India, 'The State Forest Report', 1989, Meghalaya, Shillong.

Besides *jhumming*, commercial exploitation and felling of trees for other purposes have also been responsible for the alarming depletion of forest cover in the region. The indiscriminate destruction of forest resources has led to heavy soil erosion and consequent siltation of major rivers in the region. This has in turn been responsible

for heavy floods in the lower reaches of the main river systems — the Brahmaputra and the Barak — causing enormous damage to large tracts of land every year. The heavy loss of the topsoil has been confirmed by the ICAR studies showing the soil loss under different systems of cultivation as revealed by the Table 3.

Table 3
Runoff and Soil Loss Under Different Systems of Land Management

Paticulars	Jhuming	1/3Terracing	Complete Terracing
Runoff(mm)	114.00	81.40	32.80
RunoffPercentage of Rainfall	5.30	3.90	1.50
Soil Loss (T/ha.)	40.90	5.80	5.00

Source: ICAR - Research Complex, Bulletin, 1978 Shillong.

It may be observed from the Table 3 that the soil loss due to *jhumming* was much more than due to the other two systems of cultivation.

Looking at Meghalaya, it may be mentioned that the state had lost heavily in terms of its forest products due to wanton destruction of forest. This is corroborated by the Table 4.

Table 4
Forest Cover in Meghalaya (1972-75 to 1987-89)

(in sq. km.)

State	Geographical Area	Dense Primary Forest Cover (over 40 per cent density)		
		1972-75	1980-82	1987-89
Meghalaya	22,490	10,083	7,448	3,427

Source: Forest Survey of India, 1979.

The above Table reveals that Meghalaya had lost as much as 65 per cent of its forest cover during the period from 1972-75 to 1987-89.

Thus ruthless exploitation of forest has also affected the rich flora and fauna of the state. The sale of wild flowers, rare orchids,

butterflies, animals and birds are now increasingly witnessed in many places including the urban areas of Shillong. Such is the callous attitude of man that forests are now simply treated as a store-house of treasure to be depleted and used for short term gains.

Conclusion

The foregoing text has shown that several factors including unsuitable developmental strategies pursued so far, have tended to plunder the earth's natural resource base resulting in severe depletion, on the one hand and serious ecological imbalance, on the other. Environmental problems in developing countries like India have become more acute and they deserve immediate attention. This is so because India is a country with an extremely high level of poverty although having a high potential of 'Population Supporting Capacity'. Until this potential is successfully tapped with the introduction of higher levels of inputs, India has to attend to the high incidence of rural poverty with suitable development strategies.

So far as the Northeastern region is concerned particularly the hill area, our finding suggests that it is high time that the region's economy should no longer be treated in isolation from the rest of India. The country should urgently evolve a strategy by which the economic development of the region proceed along a path of sustainable development. (An integrated approach to the problem of *jhumming* is urgently needed. In order to wean away the *jhum* cultivators with a view to stop *jhumming*, the cropping pattern in the hill areas has to be reviewed along with the 'improvement in the transport and communication system in the region for the fast movement of food items from the rest of the country.) The study suggests that *jhumming* has to be stopped and the hill cultivators have to be motivated and encouraged to discontinue the cultivation of food crops and to take cash crops cultivation and horticultural plantation in view of the fact that the rest of India has a high potential of 'Population Supporting Capacity'. The introduction of cash crop cultivation and horticultural plantation on a large scale, however, needs the provision of adequate marketing organisation.

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