ECO-POLITICS AND DEVELOPMENT IMPERATIVES IN INDIA DURING THE 1980s'

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CERTIFICATE

Certified that the dissertation entitled, "**ECO-POLITICS AND DEVELOPMENT IMPERATIVES IN INDIA DURING THE 1980s**", submitted by Ms. Ramadevi in partial fulfillment for the award of the degree of **MASTER OF PHILOSOPHY** has not been previously submitted for any other University. To the best of our knowledge this is a bonafide work.

We recommend that this dissertation may be placed before the examiners for evaluation.

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Rama

CONTENTS

INTRODUCTION

The pace of change, the speed with which we humans are altering our physical environment is without precedent"

'Linda Starke' in 'Signs of Hope'

Man is shaped to a great extent by his surroundings. Alfred Marshall, a well-known economist, had rightly said 'environments grow children.' Environment, in the sense that which surrounds us, means not only conditions that are favourable to the maintenance of physical health, but also certain emotional and aesthetic qualities of the surroundings. We can say that Man is a part of the nature and the nature is a part of our culture.

Man, unmindful of the results of his activities, has inflicted severe environmental degradation mostly by abusing technological power. Environmental degradation is a twentieth century phenomenon. The levels of environmental stresses vary from country to country depending upon the development stages. While the developed countries bother about toxic substances, nuclear hazards, waste products and other forms of chemical solutions, developing countries face poverty, unemployment, deforestation, malnutrition and various types of pollution.

Environmental awareness is not new in the present century but what is new in the decade of 1980s' is the way people are responding and the actions of government in

tackling environmental issues. Media, films, seminars and reports are placing authentic pictures of the natural world and its man-made problems, thus contributing to environmental awareness. The Government is in such a position that now it can neglect environmental issues only at its peril. This new awareness has raised many fundamental questions such as - how can we solve and tackle environmental problems? Can development be possible without destroying environment? Citizens are posing questions about their right to information on environmental matters and measures taken to solve an environmental problem when it exists.

Keeping in view all these things, this study deals with 'Ecopolitics in India during the 1980s'. The fundamental question here is, what is Ecopolitics and how it is different from Green politics. Karl Deutsch defines Ecopolitics as 'it asks about the viability of ecological and social systems, singly and in their ecosocial interplay and about the possibility, desirability and limits of political intervention.' Whether we like it or not, the Government's activities are encompassing the whole life of its citizens thus leaving imprint on every sphere of their individual life. Minimal government action is not preferred especially when people face problems in social and economic sectors.

The most important duty of politics is to decide the question of `who gets what, when, how and why" - we depend on natural resources for our existence like - the food we eat, the water we drink, the air we breath, the materials with which we build and equip our shelters. Thus politics decides about and interferes in all these things. we can say that `politics stands on the ecological foundations of society'.

Ecopolitics emerges from the recognition that to overcome the current ecological crisis, political decisions will have to be made. The response of the government and public officials to environment, people's response to the political decisions and their movements and also the matter of conflicts that exists between environmentalists and politics forms the subject matter of ecopolitics. This study concerns about ecopolitics in India which is mainly in the form of government's attitude towards environmental problems and environmentalists and the policies they adopt towards the same. Environmental politics seeks to identify and conserve critical environmental areas having ecological value. It also deals with peoples' attitude towards environmental problems and their response in conserving and protecting surroundings.

There exists not much difference in the usage of `Ecopolitics' and `Green politics' - except a slender thread

of difference. People indulge in Green politics directly to try to participate in politics with the sole aim of solving ecological crises. The Greens in the Western countries consider themselves the political voice of the citizens' movements. They declare their main principles as ecology, social responsibility, grassroots democracy and non-violence. They consider nature as a holistic concept, believe in preserving nature for the purpose of future generations and believe in the creation of non-exploitable society. Ecopolitics does not comprise political parties devoted to environment. Green politics is the result of expanded activity of ecopolitics. Most of the authors use these words interchangeably.7 This study examines these issues in relation to India especially in the decade 1980s. This decade was earmarked with severe pressures in our political, economic and social sectors. These implications are reverberated in the environment sector such as pollution levels touching the stars, forests and natural resources depleting at faster rates, soil erosion increasing in various forms, floods and droughts becoming common features etc. This environmental degradation has also affected our development efforts, thus forming a vicious circle.

Out of these conditions and also out of global influences to some extent, emerged environmental awareness which is the marked feature in the 80s. In the words of

Khoshoo, 'the striking feature of the decade is that we have begun to unravel and understand the complexity of ecosystems.' This decade has clearly demonstrated that when policy makers fail to understand ecosystems, environmental costs are the resultant consequences. We witnessed the worst environmental disaster - Bhopal episode in 1988, and several gas leakages in various parts of the country that led to loss of lives and worst chemical and industrial pollution . This decade witnessed grass-root ecological movements, public interest litigations and widespread awareness among various sections of the society. Though we could not witness the emergence of a political party entirely for the environment, the politicians are now in a position that they can neglect it only at their peril. Government has been forced to take decisions to abate environmental degradation.)

Environmental problems are very large in scale and are multi-faceted. Hence, either individuals or organizations alone cannot offer solutions. Political institutions, which have access to money, man-power and authority, have the ability to mobilise the large-scale forces necessary to tackle these issues. In India, the nature of the Union government, in terms of power and structure, is such that people look towards it for want of activity and initiative to solve any major problem. Further, inter-dependence of the world is such that it is

the government that has to deal with the global environmental problems. The government, in absence of public participation or support cannot contribute much. This study proposes that the government has to allay the fears of people and prove its genuine concern towards solving these problems. People, through movements and awareness, make the government to focus attention on certain problems.

In the first chapter, 'Development and Environment' an attempt has been made to analyse the developmental needs of the country, implications on the environment and the necessity of conservation - thus stressing the importance of proper environmental management. Whether one likes it or not, politics has a definite say on the environmental factors. The Governmental actions, in turn, reflect upon the styles, attitudes nature and activities of its people. Thus, second chapter titled 'Environment and Politics' will be dealing with various political decisions of the government, its public policies, its bureaucratic machinery, its legislative and executive powers, its problems and on the whole the imprint of politics on environment.

Chapter three examines the responses of people affected by the environmental degradation. It looks at the rise of environmental consciousness due to the environmental movements, efforts of voluntary and non-governmental

organizations and the response of elite section in the society, which is an extension of an individual. It also looks through the objectives, aims and results of the ecological movements and the failures, basic flaws and inactivity of various environmental issues.

Subsequent chapter looks at the major environmental issues. Here, the case studies of Narmada and Himalayan ecology have been undertaken to explain the movement of people, government actions and the involvement of various environmental groups.

The Conclusion briefly sums up all the issues involved in environmental issues in India and an attempt has been made to offer possible solutions towards the same. This study involves gathering data from libraries especially such as the library of the Ministry of Environment and Forests, Nehru Memorial Museum and Library, the British and the American libraries, and libraries of NGO's including Centre for Science and Environment, Lokayan and Development Imperatives. The study is entirely empirical and analytical. Some of the government documents and reports like the Survey of Environment, 1991 and 1992, Survey of the Forestry, etc. are also consulted.

CHAPTER – I

DEVELOPMENT AND ENVIRONMENT

"Civilizations are the result of complex combinations of institutional, cultural, material and environmental characteristics. Where the Underpinnings are removed the civilizations collapse"

Robert S. Gottfried
"The Black Death: Natural and Human Disaster in Medieval Europe"

The most prominent issue in the decade of 1980s is the arousal of environmental awareness especially in the developing countries. This has certainly contributed to the thinking process among those active in the development field who view the environment with a concern, and also changed the ways in which the environmentalists understood the term `development´.

The concept of development is a multi-dimensional one. Initially it was taken in completely economic sense but later the concept of development has undergone many changes. It means differently to different people.

The Oxford English Dictionary defines it as a gradual unfolding, a bringing into fuller view, gradual advancement through progressive stages, growth from within, evolution of

bringing out from a latent or elementary conditions and a developed or well-grown condition.[1]

Todaro opines that development in a society must have three essential characteristics. (1) Availability of basic life-sustaining goods like food, shelter, health and protection. (2) Quality of life, enhancement of material well-being and generation of greater individual and self-esteem. (3) Expansion of the range of economic and social choices available to people.[2] For Courtenay, "development means improvement in the standard of living of a population which include social, cultural and political welfare as well as economic opportunities."[3] Robert Riddel defined development "as a change in favour of general human improvement. This change is of two types, closely linked-expansion in consumption and enhancement of welfare Development is thus both material and an organisational matter.[4] As for Goulet, development comprises three core-values life-sustenance (basic needs), self-esteem, sense of

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1. Ian Erik Lane and Svante Ersson, Comparative Political Economy, (London, 1990), p.47.

2. Michael, P. Todaro, Economic Development in the Third World, (New Delhi. 1985), p. 87.

3. P.P. Courtenay, Geographical Studies of Development (Hongkong, 1985), p.116.

4. Robert Riddell, Ecodevelopment, (England, 1981), p.4.

worth and self-respect and freedom, the expanded range of choices for societies.

The report of the South Commission defines development "as a process that enables human beings to realize their potential, build self-confidence and lead lives of dignity and fulfillment. It also implies growing self-reliance both individual and collective."[5] Bencrow and Mary Thorpe defines development as "increasing the productive capacities of societies, establishing new and better ways of doing things and making things so as to make more wealth available."[6]

In common usage, the term 'economic growth' and 'development' are used interchangeably. Many authors define development purely in economic sense. They equate growth and development. It is now commonly recognised that, there exists a lot of difference. As in the case of 'development', here also exists no universally acceptable definition. For some, it can be measured in terms of national income aggregates and for others it means the increase in the per capita income of a country at constant prices. Misra and Puri defined it as a rate of expansion

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5. The Challenge to the South, The Report of the South Commission, (New York, 1990), p.274.

6. Ben Crow, and Mary Thorpe, Survival and Change in the Third World (Oxford, 1988). p.12.

that can move an underdeveloped country from a near subsistence mode of living to substantially higher levels in a comparatively shorter periods. Jacob Viner equated it with `equitable distribution of wealth´.

Economic growth is indispensable for development. It can exist without `development´ but cannot exist without it. However, it is only a part of development. Development is not a merely economic phenomena. It is sine-qua-non for any society as it encompasses economic, political and social attributes. Growth in all these sectors lead to overall development. Development is the most important challenge facing the human race. Despite good progress over the past years, more than one billion people, the absolute poor, survive on less than one dollar a day. "85 per cent of the world´s income goes to 23 per cent of its people, the affluent consumers, 1.2 billion lack safe drinking water and nearly 3 million children die annually from diseases that could be averted by immunization."[7]

The challenge of development, now-a-days is to improve the quality of life of people. This obviously calls for all round development of various sectors of a nation. The need for development is felt in the Rio Conference, 1992

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7. Indian Express, (New Delhi), 20 June, 1992.

wherein the 'Mantra' of development was chanted many times as a solution of many problems faced by countries. The conference itself is named as 'United Nations Conference for Environment and Development."

'India, today is struggling against its persisting problems such as poverty, unemployment, regional imbalances, illiteracy, rising inequalities, etc. These conditions are obviously raising fundamental issues concerning the appropriateness of economic development strategy adopted by the state and its ability to provide an environment in which the basic minimal needs of its population can be satisfied.

By the end of 1990-91, India has completed the four decades of a grand experiment in development planning but the achievements have been much below expectations./ India has failed to achieve two major objectives that are emphasised by the successive plans 'growth with justice' and 'growth with stability.'

'There are many explanations for our failure to achieve planned objectives, but the most valid explanation acording to Paul R. Brass is:

> the failure is due to the policies of heavy industrialization through centralised economic

> planning have been ill-adapted to India's economic resources, to the basic needs of its peoples, to its social order and to the political values of its educated classes. Secondly, many of the policies adopted either for improving agriculture or other sectors are contradictory or have not been implemented.8

There is no wonder that 'development' has become our main aim and strategy. The Government and the people alike call for development. People are demanding all round development of various sectors of economy. What is new amidst all these things that people are becoming "aware of being poor" and are determined to do "something about it." In this connection Richard T. Gill says that "this awareness and determination, in turn, are largely a product of these countries (developing countries) to the economic achievements or the standards of life in the industrial world."[9]

Need for economic growth and development

The most pressing need for development is the higher levels of 'poverty' in India. According to official

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8. Paul, R. Brass, The Politics of India since Independence (Cambridge, 1990), p.260.

9. Richard, T. Gill, Economic Development: Past and Present, (New Delhi, 1975), p.93.

estimates 28 per cent of people are below the poverty line while unofficial sources quote it at more than 40 per cent. Whatever it may be, it is a well-known fact that, the absolute number of people below the poverty line is high and demands constant attention from the concerned authorities. Though the production of foodgrains tripled, the per capita availability of food grains per day at 475 grams is very less. The per capita consumptions of cloth and milk are 17 meters and 150 grams respectively. These conditions clearly reflect upon the levels of poverty. Another remorseful feature of Indian society is its inability to use its manpower resources. It has failed to provide employment to its capable people. According to the estimates of planning commission, 'the growth rate of employment is declining over the years while the population is increasing.' In 1972-78, the growth rate of employment is 2.82 per cent, in 1978-1983, 2.22 per cent and in 1983-1988, it decreased to 1.55 per cent. The backlog employment in 1990-1991 is 13 million, and the total number of unemployed is 28 million. It is estimated that the total number of people needing employment by 1990-95 is 65 million and by 1990-2000 A.D is 106 million. To employ these people, the current-estimated work force of 300 million should go at a compound rate of at least 3 per cent per annum - that means the present growth rate of 1.55 per cent should be doubled.

The levels of illiteracy - a clear indicator of underdevelopment, are high. The present literacy rate is 52.11 per cent during the 1980s of which female literacy rate is 39.42 per cent and for males, 63.86 per cent. What the irony here is that the absolute number of illiterates have risen up. In 1981, there were 301.93 million illiterates and in 1981-91 it increased to 324.03. The rate of literacy during 1981-91 is increased by 8.55 per cent and the number of illiterates by 7.31 per cent thus drawing a neck to neck fight.

Shelter is the basic human need. In terms of quantity and quality and the gap between supply and demand in the housing sector has been increasing. At the beginning of the 7th plan, housing shortage in the country was established to be of 24.7 million units - 18.8 million units in rural and 5.9 million in urban areas. Between 1985-90, it increased to 12.4 million units in rural and 3.8 million units in rural areas. Total shortage is 40.9 million units.

India is facing population explosion problem which is causing severe stresses on our economy. During the 1980s, nearly 161 million people have been added to our total population of 68 crore.

India has to feed not only humans but also its animal population. Livestock currently requires 932 million of greens and 780 million to of dry fodder annually. The rest

comes from grazing in forest land. Droughts and floods have become a common features. Famines, as witnessed during the British period, vanished from the scene, but starvation deaths in drought-prone areas like Kalahandi in Orissa, Rayalseema in Andhra Pradesh and in many parts in Rajasthan, Bihar and some states.

In India 68.5 per cent energy is used in the form of fuel wood. Unequal demand and supply have surpassed natural regeneration and planning. It has been estimated that there would be a shortage of 137 million of firewood by 2000 which in turn cause several pressures on our scarce natural resources.

The growth in the per capita net product has been slightly more than the population growth. It rose from Rs.1127 in 1950-51 to Rs.2142 in 1989-1990. Thus growth has been much less than what is desired. "Our internal public debt increased from Rs.50,000 crore in 1980-81 to Rs.300,000 crore in 1990-91 and our external debt increased from Rs.60,000 crore to Rs.220,000 crore during the same period."[10] The decade 1980's also witnessed the shooting up of our negative trade balance from Rs.6700 crore to

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10. M.Y. Ghorpade, "Whether Economic Policy and Performance", Mainstream (New Delhi), vol.xxxi, January 30, 1993, p.13.

Rs.10,640 crore in 1990-91. As a result of liberalisation, the country experienced a serious foreign exchange crunch and balance of payments crisis. This decade was also the decade when we relied upon borrowings from World Bank and IMF. Many developments in the economic sectors have been happening like the devaluation of the currency, liberalised policies in industrial and trade sectors etc.

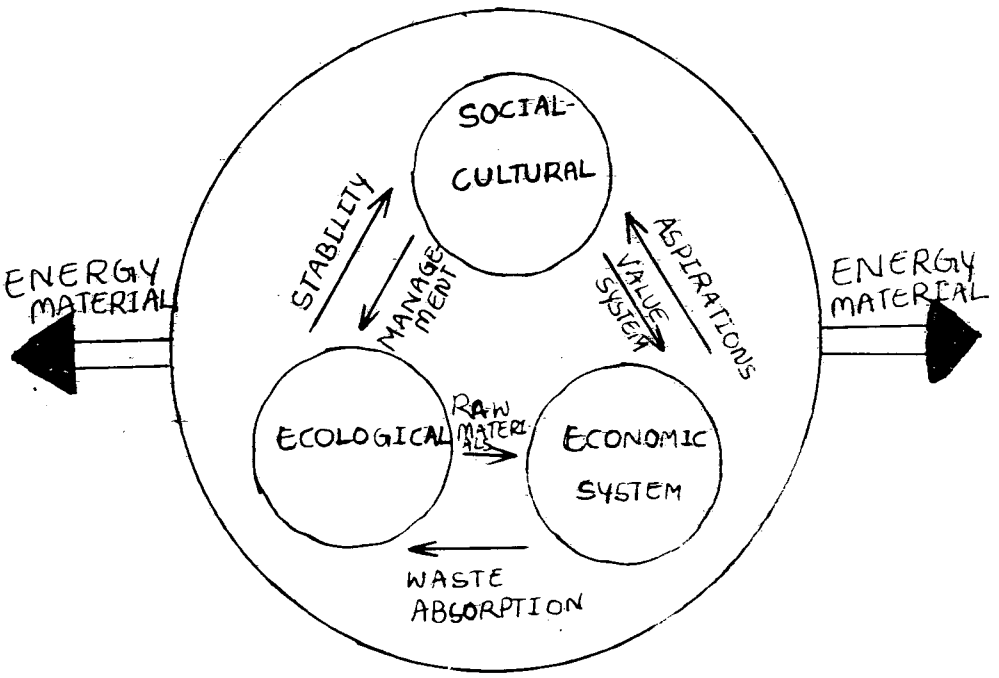
These conditions have brought demands for development. Low growth rates, depletion of resources, poverty, population growth, environmental degradation etc., all are part of the vicious circle thwarting the development of India. The efforts for development have created severe pressures on our natural resources like land, water, mineral and forest leading to environmental degradation. The need to accelerate development of the poor countries, at whatever be the cost (environmentally) remains, to quote the words of the former President of the World Bank, Robert McNamara, "the central historic event of our times."

The relationship between environment and development can be best summarised as:

> environment is nothing but the entire pool of natural resources in which, barring renewable resources like sunlight and air, the supply of all other resources

is fixed for all time. Development results from consumption of these resources either directly or after value adding.[11]

Man is transforming the earth on an ever larger scale by using all its resources through tremendous technological power. He is disturbing the ecological, socio-cultural and economic systems which are inter-linked and inter-dependent. Diagrammatically, the relationship can be simplified.



Broad Linkages between ecological, social and economic systems

11. The Hindu (New Delhi), 29 September 29, 1992.

The years after Stockholm Conference in 1972 have been witnessing the debate over the interconnection of environment and development. It is true that the environmental aspects of development is not by any means new but what is new here is "the scope and sophistication of environmentalist critique of development in practice and the focus by some development thinkers on the environment in the context of social and economic change."[12]

Although the strive for development has not been reduced, recently there emerged concern over whether environmental factors will limit development and whether development will cause serious environmental damage. It is true that development activities in one form or another and in lesser or higher degrees cause harm to environment. The most important and immediate environmental problems facing developing countries - unsafe water, inadequate sanitation, soil depletion, poverty, indoor smoke from cooking fires, pollution in various forms - water, air and industrial and deforestation. These problems have raised doubts and concerns among people and policy makers regarding the development strategy itself.

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12. W.M. Adams, Green Development: Environment and Sustainability in the Third World (London, 1990), p.153

Environmental degradation has three damaging effects. "It harms human health, reduces economic productivity and leads to the loss of amenities - in the sense that people benefit from the existence of an unspoiled environment."[13] There are close and reciprocal links between development, poverty and environment. Poor have become the worst sufferers and still sink in poverty. Poverty also leads to environmental degradation and low levels of development. Thus, development and environmental degradation often form a deadly trap for the poor.

Till recently, the developing countries used to denounce environmental crisis as a mere phenomenon of developed countries. They felt that a country must first develop and industrialise and in these countries pollution problems cannot exist as they have low level of industrial development compared to the western countries. For them, poverty is the biggest polluter. The need of the hour is rapid industrialization, notwithstanding side-effects. The goal is growth at all costs. This theory is fast fading away because of the stark realities of life. Depletion of resource crunch, poverty, deforestation, erosion of land, side-effects of various development projects, pollution of

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13. Development and the Environment, World Developement Report, 1992 (New York, 1992), p.44.

water resources, famine, malnutrition and ill health of their people, etc., caused them to ponder about development and environment.

Most of the extreme environmentalists are completely denouncing modern way of developmental activities while the staunch developmentalists are blaming environmentalists for halting development. Among these has come a wider sense of recognition of proper relationship between environment and development.

Environment and development are interlinked. One can achieve development by ignoring environment only upto a certain level. Experience shows that "development which takes place at the cost of environment can only be a short-term development and in the long-run it can be anti-development."[14] Development cannot be achieved without proper care for environment. Damyl D'Monte has rightly pointed out that "old Shibbolith of 'environment versus development' has given way to a new understanding of mutual dependence and interaction between the two."[15] New awareness and perception of various developmental issues

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14. Madan Mohan, "Ecology and Development", Third Concept: An International Journal of Ideas (New Delhi), vol.4, no.89, p.41.

15. Darryl D'Monte, "Temples or Tombs? Industry versus Environment: Three Controversies (New Delhi, 1985), p.10.

like economic growth and objectives and environmental protection etc., lead to the emergence of new concept 'eco-development', as it is called by Maurice Strong - the then General Secretary of United Nations Environmental Programme.

Now coming to examine the impact of development activities in India on the environment, it is rightly pointed out that 'our forests, soils, fisheries, rivers and flora and fauna have been affected because of development effects./ In fact, the decade of 1980s had witnessed severe stresses on environment as a result of pressing needs of the ever growing pollution. The Planning Commission has rightly pointed out 'development policies have caused environmental degradation. The most important environmental problems that India is facing arises from a number of causes:

1) The growing human and animal population are making demands on natural resources causing the exploitation of resources;
2) Apathy of industrial sector towards environmental safety and protection thereby causing air, water and soil pollution;
3) Economic pressures on energy;
4) Low environmental illiteracy leading to gross undervaluation of the ecological and economic aspects of biodiversity;

5) Miscalculating policies of the Centre and State governments unmindful of long-term ecological and social impact;

6) Public apathy and inaction; and

7) Indifference of professionals and institutions concerned with technology, development and dissemination.

During the post-independence era, India had to face several challenges in the economic as well as the social fronts. Food shortage, famines, unemployment, backward economy, illiteracy, foreign debt etc., were major problems. So "the concern of the Government after freedom was centered round generating more jobs, tapping indigenous resources, establishing our own industries and self-sufficiency."[16] The Government, in its attempt to raise economic development of the country through various schemes, simply neglected environment. It blindly followed the western mode of development. It adopted the same growth syndrome, the same attitude of maximising exports, revenues, western values, products and technology and exploration of the present for the immediate present. Economic growth is a prime objective of the economy. The irony here is that development efforts

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16. Murli S. Deora, 'National Seminar on Environment' in India's Present Status & Action Plan, BRCC, National Seminar on Environment, October 4-5, 1986, Bombay, p.1.

have not led to reduction of poverty levels while many other problems remained. It is the poor people who have become the victims of development. Development efforts lately resulted in severe environmental crisis - resource base is being destroyed by industries, water resources are becoming centres of polluted bodies, plants are being turned into deserts and sands. Lately, the penetration of western technology is also resulting in the overthrowing of indigenous skills and products. The common people are also loosing fishery resources.

Modernization, especially in its forms of industrialization and technology is causing severe environmental degradation. Our primary natural resource is land. Let us see how development efforts inflicted environmental consequences on it. According to a report of the Union Environment Ministry, 'out of the country's total geographical area of 322 mha, 175 million hectares have been badly degraded and 90 million hectares have started loosing their biological productivity. Rapidly rising population, food problems, Government encouragement to agriculture sector, industrial needs, hydro-electric projects, railways , roads and urban expansion - these led to cutting of forests and jungles. Of the country's total geographic area, only 22.867 per cent has forest cover of which only 11.5 per cent area is under good forest cover. The country is

loosing forest cover at a rate of 47,500 crore per annum, says Forest Survey of India./

Soil erosion is one of the major environmental problems facing India. Of 328 million hectare of land, 175 mha of land is threatened by soil erosion. On an average, every hectare losses 20 tonnes of top soil every year, 4 mha. have already been swallowed up by revenues."[17] Soil salinity and water logging are other problems causing soil degradation. The value of this loss of soil in the market terms would be Rs.10,000 crore annually. India's Department of Agriculture estimated that the country is losing 30 to 50 million tonnes of food grains through loss of top soil. Floods and droughts too have increased, mostly through developmental activities, in frequency, severity and extent leading to losses in monetary, environmental and social losses.

The Government's efforts to increase agricultural productivity through the introduction of high technology also resulted in environmental degradation. The 'green revolution' which was introduced in 60s' pulls out more nutrients than it puts back to land. The use of chemical fertilisers and pesticides is affecting our agricultural

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17. M.M. Jana, Environmental Degradation and Development Strategies in India (New Delhi), p.22.

fields and human health. India has become the fourth largest consumer and producer of fertiliser Nitrogen in the world, while the consumption of pesticides has increased over eight times. The use of excessive chemicals and toxic substances drastically kills soil nutrients and pests have become resistant to pesticides. Insecticides kill birds, fish and useful insects. Food become polluted leading to many diseases. Epidemic diseases like malaria, kalazar, filariasos, diarhoea etc., are still surviving.

Pollution levels are rising. Industries are releasing toxic substances into water bodies causing them to be polluted. They destroy forests, exploit natural resources, occupy valuable land and cause degradable conditions in its surroundings. The Indian paper industry has ruthlessly destroyed the forest. For instance, paper companies in Karnataka having destroyed all the bamboo forests, are now getting their raw materials from the Nicobar Islands (the last major forested frontier of India). The Andhra Pradesh government has also set it eyes on the forests of Andaman and Nicobar Islands for a paper mill to be set up in Kakinada.

Industrialization contributes to the rising levels of air-pollution. The gas leakage at Bhopal on 23rd December, 1984 led to environmental crisis - where about 2500 people have died and more than one lakh persons were affected by

he toxic gas. There are several cases of gas leakages in Delhi, Calcutta and several other places. In fact, Delhi has become the third largest polluter with its two thermal power stations and several industries around it. According to World Health Organization (WHO), these two thermal power stations spew some 25,000 tons of sulfur dioxide and an equivalent quantity of fly ash into the atmosphere every year.[18] WHO study also says that heavy industries created most of the pollution in Bombay and in Calcutta, industrial burning of coal pollutes the air with large emissions of suspended particulate matter. This situation is same in many cities. There are also other reasons for air pollution like domestic fire, discharges from different industries and automobile engines and also from domestic cooking.

Water pollution results from inorganic and morganic affluents discharged by industries, community discharges, wastes and mining activities. More than 70 per cent of our water bodies are polluted. The river Ganga is getting too much polluted due to industrial plants, sewage and garbage, consumption of water by humans etc. The launching of Ganga Action Plan has "turned out to be a damp squib, despite

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18. The Statesman, (New Delhi), 26 April 1993.

colossal expenditure. It mainly involved the installation of expensive sewage treatment plants for organic and largely bio-degradable wastes."[19] It failed to contain pollution levels.

People are awakened to the dangers of polluted levels of our great water bodies like Dal Lake in Kashmir, Lake Loktak in Manipur and Chilka in Orissa when these are reported to have contained eutrophicated levels. The fertilisers used for the crop and the minerals from domestic sewage which wash away into the lakes are the major sources of eutophobia. Most of our water bodies are polluted.

Noise pollution is the result of industrial expansion, urbanisation process and vehicular traffic. These levels ae increasing beyond the stipulated levels causing irreparable damages to human health. The threat posed by oil slicks is a recent environmental crisis. In India, Bombay High, Arabian Sea and Bay of Bengal have experienced oil slicks mostly by human failure. So far the environmental threat posed by oil slicks is confined to prevent light and air from reaching the depths they covered and to some extent marine life was hit. Indoor pollution has resulted from the use of cooking gases, fodder and fuel

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19. The Statesman, (New Delhi) 1 December 1992.

wood. Scientists are gradually paying attention to this form of pollution.

Urbanisation also causes environmental problems. Slums, sewages, garbage wastes, pollution in all forms, etc., are the major features of our urbanization. A World Bank-United Nations Study calls the developing world's cities as "Killers of the Poor."[20]

Another development activity that results into severe environmental degradation is mining. It causes loss of fertile land, opening up of fragile system for the creation of infrastructure facilities and indiscriminate quarrying and mining both by lease holders and public sector miners. The ill management of mines also results in shrinking of water-table, evaporation of water bodies and loss of fertile nutrients in the soil. A classic example of this is the Doon Valley. Ill-management and indiscriminate quarrying resulted in ecological damage. Against the recommended area of 60 per cent for hilly areas, to day this region has a tree cover of only 12 per cent. Numerous streams have dried up. Water table shrunk and water logging activities have become constant features. Mining in other areas like Saviska in Ravanlam, Singbhum in Bihar, etc., poses severe

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20. The Statesman, (New Delhi), 27 October 1992.

environmental problems, construction of dams displaced many people and caused irreparable damage to soil fertility, human health, loss of forests and wildlife and also our architectural wealth. For example, the construction of Narmada Dam displaces as many as one lakh people. Singrauli, an isolated area, locs between the districts of Mirzapur in Uttar Pradesh and Sidhi in Madhya Pradesh. H.R. Chaturvedi opines that, `the process of displacement and disintegration of social life in Singrauli began with the construction of Ritand Dam."[21]

Coal fields and National Thermal power Corporation (NTPC) also became promising economic progress centres. However, local people could not get compensation and not even employment facilities. Further, they faced severe environmental losses. This process can be seen also in Bhakranangal or Nagarjunasagar or Pong dams. Further, the construction of oil refineries and nuclear power plants are being opposed by people on the ground of environmental destruction.

Environmental degradation, which i turn accentuated by developmental activities, leaves a definite imprint on human population. According to Food and Agriculture

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21. H.R. Chaturvedi, "The Price of Development: A Case Study of Singrauli", Social Action" (New Delhi) April, 1986), p.49.

Organisation (FAO), a UN Organisation, India has the largest number of under-nourished people in the world - 201 million citizens. About four out of every ten people live in one room. Nearly 607 of urban people live in slums and squatters. Presently, India is self-sufficient in food-grains, but it cannot supply when its population grows and its purchasing power rises. Environmental degradation also effects the health and mental status of its people. Epidemic diseases like Malaria, Kalazar, filariasos, diarrhea. cancer. dengue, Japanese encephalitis, hypertension and heart attacks have become common with the fall in the quality of its surroundings. In our country, more than 80 per cent of water diseases are due to eutrophication of water.

Thus, environmental degradation affects man's health and his mental state. In fact, this is a vicious circle. Developmental efforts, unmindful of environment, cause destruction in terms of natural resources - land, water, air, mineral and forestry and flora and fauna. Many of the valuable species have vanished due to these developments. Environmental degradation, in its turn affects development. The only way out of this vicious path is the perfect balance between development and environment.

Here comes the question of conservation. Are we conserving our valuable natural resources? If so, to what

extent we are giving preference to this? Have the people recognised the need and value of conservation? What are the government activities in this regard? First of all we should know what is conservation?

The world conservation strategy (1980), defines conservation as "the management of human use of the biosphere so that it may yield the greatest sustainable benefit to present generations while maintaining its potential to meet the needs and aspirations of future generations. Thus conservation is positive, encompassing preservation, maintenance, sustainable utilization, restoration and enhancement of the natural environment.

Dassmann R.F. defined it as `the rational use of the environment to provide a high quality of living for mankind.' `Conservation" came to mean the planned use of functioning natural system in the nineteenth century England. It is a dynamic process to effectively safeguard the living resources of the biosphere and their habitat and engender their optimum development. Conservation emerged as an issue of popular concern only recently. With the establishment of World Conservation strategy" prepared by IUCN in 1980, it has reached its peak. Initially,

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conservation was confined to the preserving flora and fauna. All other issues were dismissed as useless for conservation. But this attitude has changed with the alarming rise of environmental crises.

India is richly endowed with more than 500 species of animals and 2000 species birds and an innumerably large number of reptiles, amphibians and fishes and the largest land mammals. The wild life has faced extinction with the invention of gun powder and now it is due to highly toxic and lethal pesticides, Industrial activities, disappearance of forests and construction of dams and nuclear power plants. Thus, India had lost most of its wild life. Cheetah disappeared, lion confined to the Gir forest, and many other valuable species of flora and fauna are completely lost. In 1970, an expert committee constituted by the Indian Board of wildlife submitted its report which listed 52 animals, birds and reptiles as highly threatened and some extinct.

Our rain forests completely disappeared except in Andaman and Nicobar islands. Here too, the efforts at strengthening tourism and launching of industrial activities are causing threats to fragile ecosystem. Mineral resources are on the verge of extinction due to rapid exploitation, ill-management of mines and resources and the absence of a sound plan for their preservation. The same situation is to be seen in the position of other natural resources.

In India, we have the tradition of conserving resources. Our religious-Hinduism, Buddhism and Jainism set forth that 'all living things deserved man's respect and it was the bounden duty of him to support it.' Asokan edicts speak about protection of trees and animals. The Duke of Edinburgh, President of WWF has rightly pointed out that, 'In India, the conservation of nature, runs like a distinctive thread through the whole rich tapestry of its religious philosophy and legend.'[22] It does not mean that we practiced conservation so well. The previous discussion shows that how we have destroyed our natural resources.

The Government of India has taken several measures in this regard such as - passage of wild life Act-1972, biosphere reserves, establishment of national parks and zoos, and special attention on wetlands and mangroves. It launched project tiger, project elephant and other programmes. It became a signatory to the convention on International Trade in Endangered species of wild Fauna and Flora. It took special steps to check illegal trade on ivory, rhino horns, furs, skins, must and peacock feathers, launched save the Barasingha campaign, established Botanical gardens, and central zoo authority to coordinate various zoos in the country, etc. There are many flaws in these

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22. The Hindu, 8 November 1992.

programmes. The Government has not succeeded in getting local people's cooperation in its efforts as these threatened the basic sustenance of their lives. Further, bureaucratic failures, huge costs, loopholes in the law, failure of administrative machinery, etc. contributed to the failure of conservation programmes.

Thus our experience shows that development that takes place at the destruction of environment can only be a short-term development. There exists no conflict between environment and development. The attitude of "development at whatever may be the cost" should go. There is no doubt that we need development. We have to raise the standards of living for our people. We have to satisfy their basic needs -food, shelter and clothing. But there is a flaw in our development thinking. The years when we used to think development in terms of huge dams, huge industries, huge power plants - everything in big size - have gone. People were prepared to sacrifice everything when they felt that developmental efforts would benefit them. The theory of 'trickling down' of the benefits proved to be a failure. Here, the worst sufferers of development are poor, tribals, down-trodden people, people living in slums and people living below the poverty line. Technological developments also contributed to widen the gap between rich and poor. For instance, the much talked about green-revolution resulted in the rich becoming richer while the poor becoming

poorer. Technology also failed to provide electricity to our remotest villages.

The prime objective of development in the country still remains the harnessing and utilisation of its natural resources without paying attention to ecological systems. Development has been largely sectoral in nature and stress is on infrastructure facilities, foreign technology, exploitation of forest and other natural resources for its industry and agricultural needs. Thus, the developmental objectives are still bypassing the local people and local ecology.

There is a need to recognise that environmental stresses and uneven development increase social tension for which our society provides a classic example. Inequalities breed tensions, and violence, degradation of moral values, terrorism etc. are indirectly related to the low quality of living. The relationship of man and nature should be based on "Man as a natural being and nature as a human reality' The environment in turn delimits developmental activities which vary from society to society and region to region depending on the availability of natural resources and technology.

In the opinion of Michael J. Eden,

> whatever the steps taken to achieve adequate development there are two basic considerations - firstly, development needs to be undertaken in relation to the qualities and limitations of the environment if environmental potential is to be realised and its deterioration avoided and secondly, technological exploitation must be naturally appropriate if ordered progress is to be made.23

Environmental planning and management should be part and parcel of development programmes. The most important thing here is to take local people's support and participation in the developmental efforts. They should be taken into confidence. As the main aim of our development strategy is to address 'poverty' our development programmes should be aimed at poorer sections of society. The World Development Report, 1989, opines that 'the links among poverty, environmental degradation and population growth are often direct." Our population is growing at a rate of over 2 per cent per year causing stresses on our environment. The strategy and policy statement on environment and development tabled in parliament, admitted that, 'environmental problems in India emanate from the very process of development and from conditions of poverty and under-development.'

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23. Michael J. Eden, "Environmental Hazards in the Third World", in Allan B. Mountjoy, ed., The Third World: Problems and Perspectives (London, 1981), p.31.

The need of the hour is to change our development strategy. So far we are blindly following the western methods and modes of development without even considering whether these suit the conditions of India. We are following the dictum of the west `smoke is the sign of progress.' Our development plans proved their uselessness and failed. We should construct `Indian model of development' that suits to our conditions, and that addresses our spatial problems. Then only we will be able to achieve harmony between environment and development. The World Development Report, 1992 pointed out this relationship in such terms as, `the protection of the environment is an essential part of development. Without adequate environmental protection, development is undermined, without-development resources will be inadequate for needed investments and environmental protection will fail. A country is said to be developed whenever its people mostly poor, find opportunities to fulfill and reach their potential.

Engels, a close associate of Karl Marx, displayed a remarkable foresight when he wrote, `let us not, flatter ourselves over much on account of our human victories over nature. For such victory, nature has taken its revenge on us. Each victory, it is true, in the first brings about the results we expected,but in the second and third places it

has quite different, unforeseen effects which only too often cancel the first."

Here comes the question of what type of developmental strategy we have to adopt, what should be our attitude towards environment and what will be the condition of our future generations. Will the increase in the economic activity be sustainable in the face of increasing pressure on natural resources? The global community found answer to all these questions in 'Sustainable Development' which has become a buzzword. The Brundtland Commission Report (1987) 'our common future' defines it as that 'current generations meet their needs without compromising the ability of future generations to meet their own needs.' It is a development that lasts long. It takes into account both benefits and costs of development policies. There exists no difference between the goals of development policy and appropriate environmental protection. It suggests developmental and environmental policies based on comparison of benefits and costs and on careful microeconomic analysis which in turn strengthen environmental protection and lead to raising sustainable levels of welfare.

Our policy makers are emphasising this and the Eighth Five Year Plan gives a lot of importance to Sustainable Development. The government of India has introduced Environmental Impact Assessment (EIA) method to evaluate

costs and benefit analysis of certain projects. It is also paying attention towards conserving resources and environmental aspects of development.

There is a long way to go. Genuine will and concern on the part of the government and enthusiastic public participation at least in major issues would alone solve these problems that India face.

CHAPTER – II

ENVIRONMENT AND POLITICS

"The environment does not exist as a sphere separate from human actions, ambitions and needs and attempts to defend it in isolation from human concerns have given the very word 'environment' as a connotation of naivete in some political circles"

- Brundtland, "our Common Future."

Mutations in the society and native system predispose both the material and spiritual life of mankind and influence its economic, political and cultural life. Thus the importance of environmental crisis extends far beyond the mere problems of the utilisation of nature. That is why environmental problems prompt quite definite reactions from the political circles. It would be no exaggeration to say that both political and environmental factors influence each other at national as well as international levels.

Politics concerns with the study of state and government and their role in decision making. It encompasses the role of various agencies in deciding common interest. Karl Q. Deutsch opines, "politics is the making of decisions by public means thus it primarily concerns with the government that is with the direction and self-direction of large communities of the people."[1] As for J.C. Johari the term politics has three connotations - 'political

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1. A.C. Kapur, Principles of Political Science (New Delhi, 1992), p.4.

activity, political process and political power."[2] Man is the centre of politics which unequivocally influences every aspect of human life.

In today's modern world, the state and the government are said to belong to the people. True to the words of M.P. Jain, "from birth to death, from morning to evening, a citizen is overshadowed by the government and public service of the state."[3]

In nominal sense, the terms 'state' and 'government' are used interchangeably, not withstanding minor differences. The Government is one of the constituents of the state apart from territory, population and sovereignty. It is a body of some citizens while state comprises all citizens. However, it is through the government that the state is formulated, expressed and realised. The ends and purposes of the state are implemented through it.

In modern day politics, the Government is expected to pay attention to welfare activities. The modern government

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2. Political activity comprises conflicts created and resolved pertaining to common interest. Political Process mainly relate to decision-making process by the concerned authorities. Political power concerns the role of power in the decision-making. For further details see J.C. Johari, Comparative Politics (New Delhi, 1979), edn.4, p.3.

3. M.P. Jain, Political Theory - Liberal and Marxian (New Delhi, 1989), p.18.

has emerged as an active and positive agent in the direction of affairs of all communities. Through making rules, regulations, enforcing them and in using power, government leaves an imprint on the society. The conditions are such that people are not accepting minimal government actions or activities but are looking forward to it when they are facing problems. Be it economic, social, communal, religious or recently the environmental issues, the Government has to show its concern and throw itself in finding solutions. It is not surprising when the governments transgress the limits and the state activity encompasses the life of the common man. Dennis Clark Pirages in this connection said "contemporary political institutions have been shaped in environments of growth."[4]

This discussion brings us to examine the relationship between politics and environment. Political Geography deals with the study of the influence of physical environment on the political activities of man and how man's political organization modifies the landscape of the area upon which his given political organisation impinges. Initially, politics had been defined mostly as a matter of who gets what, when and how. With the expansion of state activity and the dimensions of problems faced by people, the nature

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4. Dennis Clark Pirages, "Introduction", in Dennis Clark Pirages, ed., The Sustainable Society, (New York, 1977), p.153.

of politics has undergone too many changes to give validity and to examine and to solve the problems. Thus, politics has to examine and pay attention to environmental issues which are demanding constant attention. Deruent Whittlesay unequivocally emphasised the relation between politics and environment by saying, "political activities leave their impress upon the landscape, just as the economic pursuits do and deep and widely ramified impress upon the landscape is stamped by the functioning of effective central authority."[5] Walt Anderson opines that "politics is the making of decisions by human beings about the Manipulation and Utilisation of natural environment, it is an interaction among life forms which directly or indirectly affects other life forms. Increasingly and inevitably, politics is ecology."[6]

People's interest in the impact of environmental factors upon politics goes back to the ancient world. As early as 3rd C.B.C, Aristotle felt that "people and their environments are inseparable and that they are affected by both geographical circumstances and political

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5. Derwent Whittlesay, "The Impress of Effective Control Authority upon the Landscape", Annals of the Association of American Geographers, vol.25, p.87.

6. Walt Anderson, Politics and Environment, A Reader in Ecological Crisis (California, 1970), p.9.

institutions."[7] Many scholars in later day periods paid attention to the influence of geographic factors upon politics. For example, Jean Bodin maintained that climatic circumstances influence national characteristics as well as foreign policies of the states. Arnold Toynbee held that civilizations are born in environments that pose difficult challenges. Recent years have witnessed major focus on this issue. The United Nations conference at Stockholm in 1972, not only recognised the crisis in environment but focussed and affirmed that these problems could be solved politically and not by specialists and experts or private individuals alone. Ten years after the Stockholm conference, there was a growing recognition that "many of the great problems of the world environment have political roots."[8] Thus, the decade of 1980's has witnessed growing awareness of environmental crisis among political circles. In this decade scholars from different backgrounds began to examine the links between environmental and political activities of the developing countries.

The magnitude of environmental crisis has caused environmental awareness among the developed and the

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7. James E. Dougherty and Robert L. Pfaltzgraff, Jr., eds., Contending Theories of International Relations: A Comprehensive Study, (New York, 1990), edn.3, p.58.

8. Dunnu Roy, "Politics of Environment-1", in State of India's Environment 1984-85, Centre for Science and Environment (New Delhi, 1984), p.355.

developing countries alike. The most striking feature of this awareness is the increasing involvement of governments at all levels in environmental protection and the environmental issues are thoroughly politicised. Every major environmental issue, whatever may be the outcome, is debated and discussed at every level. The levels of environmental awareness vary from country to country. Most of the governments have established national environmental policies and official agencies to deal with these problems.

The peculiar nature of the environmental crises forces the modern governments to took for solution of these problems. These special features of the environmental crises are -

(1) The unprecedented expansion sometimes of environmental problems would not pertain to a specific geographic extent and often cross geographical boundaries. For example, soil waste, chemical pollution, resource depletion, etc.

(2) Maintenance - Environmental maintenance involves a colossal involvement of money, time, expertise, manpower, and co-ordination. Hence, national authority becomes imperative.

(3) Priority - It is the government that decides 'who gets what, how and why' among its citizens. It is the government that gives priority to certain issues or problems that dominate the society.

(4) The last but the most important factor is the 'wholeness' of the ecosystem. In the ecosystem, units influence each other. The interdependence of all there factors reflects on the whole ecosystem.

The modern day government is expected to take all these issues in its developmental policies. True to the words of Vanda Asthana, "in the context of environment, all modern systems of government, irrespective of their nature and form own primary responsibility in this regard as people first legitimately look to their governments for initiative."[9] It is the government which has to decide the priority of ecological issues, to form public policy and to take other relevant steps in its action to solve problems.

This chapter mainly focusses attention on the environmental politics in India during the 1980s. Here, the government's form or structure, its public policy, environmental policy, government machinery, legislative

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9. Vandana Asthana, The Politics of Environment: A Profile (New Delhi, 1992), p.59.

measures, executive orders, political parties and their policies etc. have been analysed.

A brief discussion about the government form or structure is requisite as on it depends every form of governmental activity. R.D. Dikshit emphasises this by saying, "it is not the government per se but rather the form or structure of government that is of fundamental importance in determining its effectiveness as a vocational agent."[10] India, having adopted the parliamentary form of government, is in all terms a open society. The executive body formulates policies while the legislative body enacts such policies. Judicial activism is its other hallmark.

Public policy is nothing but the activity of the government. The government takes and follows decisions regarding certain cores of activities that concern its citizens. These decisions, besides causing prodigious costs, produce important and wide-ranging consequences in the society. Here we are concerned with the governments public policy in relation to environmental sphere. Environmental policy is commonly defined as "public policy with governing the relationship between people and their natural environment. The emphasis here is on people as part

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10. R.D. Dikshit, Political Geography: A Contemporary Perspective (New Delhi, 1988), p.179.

of natural system."[11] The goal of environmental policy should be proper management of natural resources, better environmental quality and life for its citizens and overall sustainable development.

Constitutional provisions relating to environment in India -- under the constitutional provisions, now it is obligatory duty of the state and its citizens to protect and improve the environment. Article-21 of the fundamental rights guarantees the right to life, a life of dignity. Article 48.A of the Directive Principles declares, "State shall endeavour to protect and improve the environment and to safeguard forests and wild life of the country. Article 51-A declares that 'it shall be the duty of every citizen to protect and improve the natural environment.'

Article 31-A provides certain immunities for environmental laws from judicial scrutiny. It provides that state is securing all or any of the principles laid down in part IV, cannot be challenged in the courts.

Article 246 provides a three fold distribution of environmental legislative powers between the Union and the States. The Union list includes regulation and development of oil fields and mineral resources, petroleum and petroleum

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11. John M.C. Cormick, British Politics and the Environment, (London, 1991), p.7.

products, control over mines and mineral development, regulation and development of inter-state rivers and river valleys, control over fisheries, and industries of public interest. The State list has conclusive power over public health, sanitation, agriculture, water, pests and prevention of plant diseases, land, fisheries, mines etc. Union government exercises power over the matters incorporated in the concurrent list on the following lines— matters concerning protection and improvement of environment.

It is evident that, in many respects, the Government has failed to fulfill the obligation of providing a life of dignity to its citizens. Pollution levels in the Metropolitan cities are growing out of proportions. For example, in Bombay, 2300 tonnes of air pollutants are discharged in the environment every day. Calcutta has the highest count of suspended particle matter in the world - at 5-6 ug per cubic meters and Delhi has the highest level of air pollutants in the world. These air pollutants have been responsible for the spread of diseases like lung cancer, tuberculosis, brochettes etc. According to estimates every 10th person in Delhi has some or other problems related to lung. In India nearly 10% of the water sources are polluted by human and industrial wastes. The level of quality of drinking water provided in cities as well as in villages is not up to the mark. It is estimated that 2133 of all

illnesses in India are related to water-borne diseases such as typhoid and infective-hepatitis. Another area where the government has failed miserably is in supplying drinking water to both rural and urban areas. It is acute in rural areas. The 7th Plan has identified nearly 1,61,722 villages as problem areas. There are another 1.5 lakh partially covered villages which have also spilled over to the Eight Plan requiring augmentation for full coverage.

Percentage of population with drinking water and sanitation facilities

	By the end of Sixth Plan (1980-85)	By the end of Seventh Plan (1985-90)
1) Rural water supply	54	About 87
2) Rural sanitation	About 1	About 3
3) Urban water supply	72	8419
4) Urban sanitation	28.40	4719

Source: Economic Survey 1990-91

Slums, poor housing conditions and poor sanitation facilities are the major features in our present day urbanisation. According to an estimate, about 20% of the country's urban population lives in the slums. The ratio is high in cities like Delhi - 30.19%, Lucknow - 38.83%, Kanpur - 40%, Bombay - 38.30%. Sanitation facilities are very much below the standards. Vehicular noise levels at certain urban places often average between 92-97 decibles while the

optimum noise level for humanbeings is between 70-80 decibles. Which in turn leads to side-effects like loss of hearing power, mental tension and strain. In rural areas, measures taken for pest control also lead to environmental degradation. Other social sectors like low nutritional standards, high infant mortality rates, low literacy levels etc., show the level of development we achieved.

Legislation concerning environment

Legislation is one of the most direct means available for regulation or development of the physical environment. It is one of the ways to bring changes in the society. "There are about 30 major enactments related to the protection of environment now being administered by the Central and State Governments."[12] Gopesh Nath Khanna, in his article quoted the Government of India Report 1980 as saying, "there are more than 200 Central and State laws today that can be interpreted in one way or the other to protect the environment."[13] The government has passed several laws concerning conservation, deforestation, pollution and other aspects of environment.

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12. India-1992 - A Reference Manual, compiled and edited by Research and Reference Division, Ministry of Information and Broadcasting, Government of India, p.177.

13. Gopesh Nath Khanna, "Problems of Human Environment: People's participation and legal solutions", Social Action (New Delhi), vol.239, July-September 1989, p.282.

Legislation Concerning Environment

1) Pollution	2) Deforestation	3) Conservation	4) Others
a) The water (prevention and control of pollution) Act, 1974	a) The Forest (Conservation) Act, 1980	a) The Wildlife (protection) Act, 1992	a) The Prevention of Food Adulteration Act, 1954
b) The water (prevention and control of pollution) Cases Act, 1977	b) The Indian Forest Act, 1927	b) The Indian Fisheries Act, 1927	b) The Urban and (Ceiling & Regulation) Act, 1976
c) The Air (prevention and control of Pollution) Act, 1981		c) The Water Act, 1974	
d) The Mines and Minerals (Regulation and Development) Act, 1947			
e) The Insecticides Act, 1968			
f) Radiation Protection Act, 1971			
g) The Environment Protection Act, 1986.			

Besides these laws the Penal Code considers disobedience of an order by a public authority causing danger to life, health or safety, water and air as offense. Under Criminal Procedure Code, Advocate General can make an order to install public nuisance.

Most of the environmental laws are punitive in nature but not preventive. Though we have multitude laws concerning the environment in one way or the other, the decade of 1980's especially witnessed severe environmental crises, the causes being the government and legislative incompetence. The loopholes in the legislation certainly give advantages to vested interests. Multinationals and corporate sector are the beneficiaries of this. Another major lacuna is the perceptible links between industry and government which leads to passive attitudes towards the environment. Further, overlapping powers of authorities/departments involved in supervising the safety mechanism of various companies and rejection of no objection certificate (NOC) hinders the effective implementation of environmental laws. For example, municipality may grant license to an industrial unit irrespective of the cancellation of NOC by the Pollution Board. The Comptroller and Auditor-General has recently flayed the working of the Central Pollution Control Board (CPCB) - an apex institution in the country. While pointing out that CPCB was to lay

down standards for quality of water and air and quality of pollutants discharged were to be regulated by the State Boards, it said, "CPCB has not yet evolved any mandatory standards for water and air quality. It directed its efforts towards development of minimal national standards for trade effluents and sewage discharge."[14] If the condition of an apex national institution is like that, one cannot imagine the work of the State Boards. The last, but not the least point. is that environmental laws exclude people's participation in their implementation. The environmental laws facilitate certain interests like industry that are likely to be affected by the decisions of the implementing agencies but the individual is excluded by the law which is not giving any representation or allowing one to move any court as a matter of course. He has the only recourse to the provisions available in the Indian Penal Code and other Acts, where criminal prosecution is provided.

Environment Under the Plans

Environment had not received planners attention until the launching of Fourth Five Year Plan in 1968. With the establishment of National Committee on Environmental

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14. Statesman (New Delhi), 25 May, 1993

Planning and Co-ordination (NCEPC) the government initiated some action towards this. It also passed Wildlife Act 1972.

The Fifth Five Year Plan stated that, 'ensure so that the pursuit of developmental goals does not lead to reduction in the quality of life through deterioration in environmental conditions.' It laid emphasis on the close connection of NCEPC with all important industrial decisions so that environmental goals could be achieved. Co-ordination of various efforts to develop standards for the emissions of pollutants, promotion of research and development in the field of environment and priority for the construction of embankments and other connected flood protection works were emphasised under this Plan.

The Government of India appointed a committee under the Chairmanship of N.D. Tiwari in 1980 for recommending Legislative measures and Administrative machinery for ensuring the environmental protection. It formulated a draft national environment policy whose objectives are - to conserve and develop healthy environment, to upgrade the quality of life, to conserve biotic diversity, to develop environment, etc. It called upon the government to create "a quick, responsive, independent and innovative national

organization with sufficient funds and manpower to implement national environmental policy."[15]

The Sixth Plan devoted a separate chapter on environment and it considered environmental conservation as the very basis of all development. It also highlighted the causes of environmental crises. The year 1980 witnessed the creation of Department of Environment which co-ordinates all other governmental machinery.

The Seventh Plan gave emphasis on 'sustainable development in harmony with the environment.' So all development programmes, in all sectors, are to take environmental consideration fully into account. It agreed that there was a progressive strengthening of official involvement in environmental management in India, with increased scientific, technical, administrative and legislative back-up at the State and Central levels. It pointed out the side-effects of development like mismanagement of natural resources, large scale deforestation, discharge of soiled water, indiscriminate construction and expansion of settlements. The tools and methodologies of environmental planning are primarily addressed to these problems. It felt that initiatives for

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15. Hoshiar Singh, Environmental Policy and Administration, (Jaipur, 1992), p.15.

tackling environmental issues must emerge from official as well as non-official agencies and individuals operating at different levels.

The Eighth Plan drafted 'national perspective on the environment', to ensure the people 1) equitable and continued access to the natural resources vital for their survival, 2) decentralize governmental control over natural resources to reverse the trend of people's alienation from nature, 3) change the prevailing unjust and unsustainable model of development and the wasteful pattern of resource use and consumption inherent in it and 4) internally integrate and coordinate governmental action to protect and regenerate nature.

This Plan also listed out the major tasks before the government and the planning process. These are - protection of environment, regeneration and restoration of degraded eco- systems decentralization of control over nature and natural resources, formulation of national policy on nature and natural resources, monitoring of the environment, accountability of the government and personnel to the people for their actions and inactions, development of environmentally sustainable development models, coordination of governmental action aimed at conserving and regenerating nature and natural resources, and presentation of annual natural resources budget before the Parliament.

Governmental machinery for Environment Management - Implementation of the government's policy and actions, in fact, takes the real cake. The decades 197Øs and 198Øs have witnessed the evolution of governmental machinery for environment management. The Department of Environment, which was established in 198Ø, is now known as the Department of Environment and Forests (DOE&F). It is the apex agency that coordinates and integrates the activities of various environmental institutions. It is a focal point for planning, promotion and coordination of environmental programmes. By the end of198Øs, almost every state had established its own Department of Environment. The Central Pollution Control Board (CPCB) is the apex body for assessment, monitoring and control of water, air and chemical pollution. Except Manipur, Nagaland, Sikkim, Arunachal Pradesh and Mizoram, all other states have constituted their boards.

Other agencies were established for specific purposes. The Central Ganga Authority (CGA) was set up in 1985 to oversee the implementation of the action plan drawn up for clearing polluted stretches of Ganga. National Mission on Wastelands Development (NWDB) was established in 1985 with the aim to develop waste lands. The Government rechristened it as National Technology Mission on Wastelands Development in 1985. Its main aims - check land

degradation, sustainable use of waste lands, regeneration of degraded forests, promotion of farm forestry and restoration of ecological balance.

The Government had also established three sub-groups to work for effective utilisation of wastes. These will identify the waste, suggest technological measures, recycling, reduction and reuse of waste and to formulate action points as a basis for executive orders to be issued by the government.

The Environmental Monitoring Committee is established to ensure effective implementation of environmental safeguards in irrigation, multi-purpose and flood-control projects. The government has also established Environmental Information System (ENVIS) in 1982 to supply information to policy makers, decision makers, research workers and general public. It publishes a magazine 'Paryavaran'. It also acts as National Focal Point as well as Regional Service Centre for South Asian Sub region of INFOTERRA (a global information network of United Nations Environment programme). The government of India also follows Environmental Impact Assessment (EIA) method. The DOE & F with the help of inter-ministerial appraisal committees comprising experts from related disciplines assess all the projects and feasibility of plans and assess environmental impact of those projects. This system is based on the

premise that the environmental issues are anticipated and incorporated in the development project at the project formulation stage itself on various aspects like siting, choke of technology, minimization of environmental damage etc.

New schemes like 'eco-task force, Paryavaran' Vahini and eco-label were launched in 1990s. The government is planning to formulate national policies on natural resources, conservation and environment.

Despite this institutional machinery, there exists many loopholes in this system. Lack of coordination, expertise and finances, prevailing corruption and usual bureaucratic delays hamper the measures taken towards environmental problems, thus causing redundance of the government machinery. Contributing to these is the absence of people's participation.

Political parties and their attitude towards the environment

It is often said that 'of all the instruments designated by man to achieve his political aims, only political parties proved endurance.' Maurice Duverger opines that the "primary goal of political parties is the

environment related issues along with many other issues in the subsequent elections held in 1984 and 1989. In these elections, political parties paid much attention to the issues racking the country such as economy, social justice and development. Environment related issues like energy, exploitation and management of natural resources, renewable resources, wildlife, establishment of national parks and land management were figured, but not environment *per se*.

The 1991 elections definitely reversed this trend. Every national party - except CPI and CPI (M), allocated at least one page on discussing the environmental problems faced by India and thereby evolved their strategy. These parties paid attention to sustainable development and environmental management.

Thus the political parties, in tune with global awareness, started paying attention to ecological problems. The side-effects of developmental effort and impact of severe environmental degradation are responsible for these. This in turn shows the marked trend that is going on since the 1980s in our social circles, since the political parties do not show any interest in those issues wherein the electorate is unconcerned. Their manifestoes should reflect

the issues that concern citizen. It is said that, "election manifestoes are a potpourri to please all sections, to be taken not with a pinch but a handful of salt."[18] These election manifestoes are in turn addressed to literate citizens and just to appease few sections of society. Any party that comes to power is not expected that it will implement manifestoes in letter and spirit. Often, parties flout their promises or sometimes those programmes are unworkable.

Parliament

It is a forum for discussion and debate of various issues of national interest thereby contributing to the awareness of people regarding these issues. Environmental Forum was launched in 1981 comprising the members of both Lok Sabha and Rajya Sabha. This Forum subsequently organized the First National Conference of Legislators on Environment in 1982. The goals of the Forum were to raise environmental issues in the Parliament, interact collectively with the government and work for environment in their respective constituencies. Legislators' Environmental Forum was launched in many States by 1984 to raise awareness among representatives.

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18. Times of India (New Delhi), 1 May 1991.

On the whole, environmental issues have figured very rarely in the Parliament as most of the pressing problems related to economy received representatives' attention. Further, most of the leaders are either completely ignorant of environmental matters or simply neglected them. However, we can say that the decade of 1980's witnessed much awareness among Parliamentarians about environmental matters as compared to previous decades.

Leaders' attitude towards environment

The Prime Minister of this country often exercises unlimited power and dominates and influences the decisions of the government. Mrs. Indira Gandhi, who came to power through 1980 general elections, exhibited at least to some extent, concern towards environment. She attended the Stockholm Conference, 1972 and said 'Poverty is the worst polluter.' She created the DOE in 1980 and stopped the Silent Valley on account of pressures from both international organizations and the agitation from environmentalists in India. She inserted Articles 48-A and 52-A to the fundamental duties which give special responsibility for both the state and the citizen towards environmental management. She took special interest in conservation programmes. Establishment of National Parks and Biosphere Reserves received special attention.

Mr. Rajiv Gandhi who came to power in 1984, also showed concern towards environmental problems. He was instrumental in launching New Environmental Policy in 1986, Policies for Energy and Power, Action plan for cleaning the Ganga Plan for Aforestation and wasteland development, establishment of Island Development Authority and series of technological missions for drinking water, universal immunization of children, flood control, etc.

During the Prime Ministership of Vishwanath Pratap Singh, Mrs. Maneka Gandhi as the Environment Minister earned applauds from various circles. She took special care in conservation and pollution. Mr. Chandra Shekhar's Ministry which followed V.P. Singh's Ministry, could not take much action as it was short-lived.

The attitudes of leaders are not at all sufficient to take care of environment, as it is evident from the fact that the decade 1980s witnessed severe environmental degradation. Leaders' concern remained on papers, plans and methods but not in accomplishment. In spite of the success of programmes like Project Tiger and Project Rhino which received applauds from the world, the wildlife conservation measures proved to be futile as India's biotic diversity is on the decline. The same thing is reflected in other spheres of environment.

The Environmental Lobby

S.E. Finer, combining interest and pressure groups in Lobby, says, "Environmental Lobby comprises the sum of organizations in so far as they are occupied at any point of time in trying to influence the policy of public bodies in their own chosen direction."[19] In India, apart from corporate elements, local authorities, government departments and research associations, non-governmental organisations (NGOs) try to influence the decisions of the government and work for the environmental awareness among people.

We can trace the origin of environmental movement to the 1970's. Within months of the Stockholm Conference, Chipko Movement was launched against the deforestation and the consequent environmental degradation in the Himalayan Region. From then, there existed many NGOs which worked for the betterment of environment. Some of these organisations receive financial support and project works from the government.

International Agreements

Since the nature of environmental problems is such that globalization of ecological issues has become

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19. Cormick, no.11, p.28-29.

inevitable, the governments of various countries are forced to come forward, hold discussions and agree to provisions for common interest. Indian government, in this spirit, signed many international agreements on open space, Marine Wealth, air pollution etc.; It became a signatory to Montreal Protocol, Biodiversity Convention, Antarctica Treaty, and Climatic convention. It is a signatory to some other minor treaties. India also used international conferences to raise environmental awareness. At the NAM Conference in September 1989 at Belgrade, the Prime Minister of India asserted the need for crating a 'Planet Protection Fund'. Even SAARC countries are also paying attention on environmental maters.

Conclusion

The Government of India owns, controls and develops India's forests, dams, power stations, roads, mines and a large part of its industry, thus becoming not only the Protector of the environment but also the foremost destroyer of the environment. In India, everything that is required for the protection of environment such as political machinery, enforcement officers, plans of action oriented projects, non-governmental organizations, exist but the

outcome of these is negligible. Political unwillingness to act and strike a bow at the root cause leads to nothing in outcome. One can easily count the number of politicians who throw themselves for environmental safeguards. Mrs. Maneka Gandhi in 1988-89, and Presently Mr. Kamal Nath - Minister of Environment - are in the forefront of environmental sphere. Mrs. Maneka Gandhi earned the wrath of some businessmen and interested groups for her concern towards environment. She came to be know as 'green minister'. Mr. Kamal Nath is also taking much interest and has been able to earn goodwill from environmentalists. He recently dared to stop the work of Chilka Aquatic Farm Project though tentatively, which shows his genuine concern towards environment. Mrs. Maneka Gandhi recently launched 'Green Political Forum'. A minor party called 'Green Party of India' was also launched. Some other politicians are paying lip service towards environment.

Thus, it shows that politicians pay attention on environment occasionally here and there. They only take interest when the so-called problem fetches them vote bank.

Further, the nexus between politicians and predators of environment makes the matters worse. Adams has rightly pointed out that

> the consistent failure of government machinery and development agency bureaucracies and their expert employees to take adequate account of the environmental impacts of their actions is matched by their frequent blindness to the needs and capacities of those they develop.[20]

The public sector in India, which should have lead the private sector by setting norms in taking precautions for environmental safeguards, instead is involved in destroying the environmental quality by its activities. For example, indiscriminate stripping of resources, though under the supervision of public agencies is causing environmental degradation. Limestone mining in Mussorie has threatened the existence of that town itself. Jharia coal stripping also causes soil erosion, water pollution, floods etc. Thus the national policy to control the damage of surface mining is a sham. This can be seen in other spheres of environment also.

Vandana Asthana opines that "there is almost no public policy of environmental regulations and officials maintain a silence in the political battle of economic gains

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20. W.M. Adams, Green Development: Environment and Sustainability in the Third World, (London, 1990), p.127.

versus environmental hazards."[21] Many environmental regulations are only on paper and never come into force. Pollution boards are also helpless whenever a report on certain industry causing environmental hazards either by dumping hazardous wastes into water or causing noise or air pollution comes to it. Another major drawback is the failure on the part of government to consider relevant data thoughtfully and solve ecological problems. There also exists a major gap between intentions and achievements leading to escapist tendency among political circles.

Though India has an extensive body of environmental legislation dating back to Shore nuisance case 1853 (Bombay and Lolba), such legislation has become very difficult to enforce or to implement. The Tiwari Committee (1980) noted four basic flaws relating to environmental legislation. These are (1) Many promoted development and resource use for specific economic benefits without careful analysis of potential adverse environmental effects (2) Several state laws had potential implications for neighbouring states (3) Many laws were clearly inadequate (4) Environment as such was still widely ignored and overlooked within government departments. Thus, in spite of the existence of extensive

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21. Vandana Asthana, no.9, p.75.

CHAPTER – III

ENVIRONMENTAL MOVEMENTS

body of pollution legislation, Indian industry has remained either reluctant to control pollution or beyond.

The DOE is overburdened and under-staffed with only 237 staff and an annual budget of $16 million. On the basis of its powers, "it cannot initiate any enquiry on its own and is thus content with only passing judgements whenever asked to do so."[22] It passed Narmada Dam project in 1987, in spite of its earlier refusals to do.

Politicians and their regionalistic interests and favour, sometimes dominate in deciding the establishment of environmental projects like refineries, dams etc. regional politics have a definite say over environment and in this process also comes the negligence of scientific opinion. Further secrecy regarding environmental matters also aggravates the situation. For example, Menon's report on silent valley was not made public.

Further, as Ajit Kamalakar opines "as the government does not work closely with NGO's it lacks the kind of access

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22. Danny/D'Monte, Temples or Tombs Industry Versus Environment: Three Controversies (New Delhi, 1985), p.219.

to policy making that would give it the influence it seeks."[23] It also ignores the rural based NGOs and works with only urban-based NGOs.

We cannot say that the government failed at every account. It did achieve in framing environmental policy, arousing environmental awareness, achieving some success in conservation field and voicing its interests over the international forums. But there is a long way to go. Our economic interests, in turn development, are tied up with environment. So, the ultimate responsibility lies with government.

It is a well-known fact that government can bring the desired social change. Its action is a crucial component towards successful solution of environmental problems. It is for the government to decide the priority of ecological issues in its public policy. It implies that political responsibility of each country is paramount for environment protection. Genuine concern, will and responsibility on the part of politicians would be the welcoming trends.

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23. J. Ajit Kamalakar,"Environmental Policy in India", Third World Impact (New Delhi), vol.III, no.28-29, April-May 1992, p.19.

CHAPTER – III

ENVIRONMENTAL MOVEMENTS

"An appreciation of the situation marked by the loss of resource potential and human disruption of natural process is well expressed in numerous national and environmental movements and scientific programmes".

Capra, F., The Turning point

Oxford dictionary defines 'movement' as an instance of moving of a body of persons with a common object and a campaign undertaken by such body. Movements can be social, political, economic, cultural etc. The goal of a movement is to bring about some desired change in the respective fields. These can be understood within the context of the societies they seek to change. Environmental movement is not an exception.

As Cotgrove S. says, "There is nothing new, ofcourse about environmental concern".[1] Ecological crisis was not unknown in ancient societies. Plato, author of 'Republic,' was already complaining in the crito about how deforestation and over-grazing had degraded the environment and reduced Attica "to the bones of a wasted body" Environmental degradation is one of the causes for the extinction of earlier human civilizations from the pages of history. There is now a growing support for the view that

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1. Stephen Cotgrove, Catastropheor Cornucopia: The Environment, Politics and the Future, (New York, 1982), p.9.

"Mohenjodaro and Harappa extincted due to environmental degradation.".[2]

With the increase of ecological crisis, occurs environmental awareness. As Vandana Asthana notes, "environmental concerns started seedling in the 1960's and then gained epoch-making prominence in the form of a so-called environmental revolution".[3] The awareness is not confined to one place but the entire globe. A new age seems to have dawned ever since the beginning of the 1970's.[4] Within the last two and half decades a new perception towards the global environment has developed. Environmental awakening and movements to protect the environment began in the Third World since the 1970s.

Environmental movement believes in the conservation of nature as every form of manifestation has evolved through the ages and as a part of ecosystem has every right to a continued existence as man has. This movement in its incipient stages believed in protecting and preserving certain natural forms. In its evolutionary stage it

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2. S.R. Rao, "New Frontiers in Archaeology", Heras Memorial Lectures (Bombay, 1990), p.5

3. Vandana Asthana, "The Politics of Environment: A Profile", (New Delhi 1992), p.47.

4. Nagchaudhari, B.D. and Bhatt S., eds., "The Global Environment Movement", (New Delhi, 1987), p.22.

comprises the equality of life and the long survival of humanity.

Environmental movement is more radical and progressive than any other movement. It focuses attention on relationship with nautre, democratization of resources, achievement of social Justice and quality of surroundings. People are stressing their right to be heard and are expressing of their opinion before any development policy is excuted. These movements are mostly non-violent in nature and believe in passive resistance.

India has a heritage of ecological consciousness endowed and endeared by its religion and culture. Its civilization has been marked by its sensitivity to the natural ecosystems. According to 'Isa Vasyopanished', 'Dharma consists in restricting the use of resources to satisfaction of basic needs, because using resources beyond one's needs would be appropriating the resources of others'. Indians worship every form of nature-land, trees, animals, water (Indians accorded beautiful names for their rivers - Ganga, Godavari etc.) and air. In this process, they evolved certain social norms to beget ecological balance.

This is not to say that Indians never harmed their environment. In fact, man's activities harm the environment. The Environmental degradation gained momentum with the exploitation of natural resources by the colonial

rulers. After Independence, developmental activities replaced colonial exploitation in causing unprecedented damage to our environment. The expression of people against the exploitation of nature is not new. There are many instances of people who carried out struggles.

People, during the colonial era, responded to the damage of their environs. Indigo movement in eastern India-1860, Deccan Movement for land rights - 1815, forest movements in the forest areas of the country-the Western Ghats', the central Indian hills and the Himalayas-these were the expressions of people who had suffered due to ecological degradation. These protests in turn became part and parcel of the national struggle for independence. India has a tradition of sacrifice for the protection of her trees. About two hundred and fifty years ago 363 men and women led by Amrita Devi sacrificed their lives by hugging the trees around their village.[5] This tradition has been survived. People are unequivocal in terms of evaluating the environs around them. As the intensity and range of

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5. INTACH, "Richard St. Barbe Baker: Man of the Trees, A Centenary Tribute, 1989, (Uttar Pradesh).

ecological degradation increases, the intensity and range of environmental movements have kept on increasing.

"It looks as if environmentalism is an idea whose time has come,"[6] writes Anil Agarwal. Public, media, politicians and professionals are obviously turning their attention towards the grave environmental problems. Many organizations-Volunteer and Non-Governmental organisations are focussing their attention on environmental issues. "The number of Voluntary groups in India, actively interested or involved in environmental issues today is much larger than any other Third World Country."[7] According to the Directory of Environmental NGOs in India, the list crosses 900.

The Government of India, partly due to the pressure of the public, established the Department of Environment in 1980 and passed many laws relating to air, water and industrial pollution. It also passed laws relating to forest resources.

Awareness among people related to conditions like

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6. Anil Agarwal, "The Politics of Environment-II, in Anil Agarwal and Sunita Narain, eds., The State of India's Environment, 1984-85 (New Delhi, CFSE, 1985), p.362.

7. Harsh Sethi, "Environmentalism, Ecology and Voluntary Movement," Indian Journal of Public Administration (New Delhi), July-September 1987, p.569.

poverty, land degradation, pollution problems, unhygienic sanitation, lack of drinking water etc., efforts of voluntary organisations and influences of environmental organizations outside the world led people to launch environmental movements especially from the 70's onwards.

Every movement has specific objectives to achieve. Success or failure of a movement can be assessed through the achievement of objectives in situ. Likewise, environmental movements in India have their own objectives and ideals.

This study focuses attention on the people's response towards the environmental degradation. These environmental responses to the existence of conflict, are in the words of Holling 'protective and reactive responses.' The environmental movements in the developing countries are marked by two important characteristics - 1) these are supported by people engaged in livelihood struggle 2) these struggle are linked to sustainable objectives. Further, these movements have also incorporated conservation objectives when peoples' livelihood is at stake. India, being a developing country is not an exception to this general phenomenon.

Environmental problems such as deforestation, declining water availability, floods and droughts, soil erosion water logging, decline in land fertility and air and water pollution, all affect the livelihood and survival of

millions of poor peasants, tribals, fishermen, slum dwellers and women. These are the people who are poorly represented in the decision-making process Gall Omvedt opines that " the affects of deforestation, dam eviction, desertification and drought have fallen hardest on the tribals,nomadic communities, ex-untouchables, dispossessed artisan and poor peasants who are the lowest section of the village community and most of all on the women".[8] It is these people who have constituted the task force of ecological movements in India. Vandana Shiva has rightly asserted "environmental movements in India are the struggles of the dispossessed, the marginalised and the victims of discrimination"[9].

People are mostly concerned about the issues of common property resources (CPR) such as forests, mines, seas or oceans, grazing land, wild life etc. Bandopadhyay argues, that more than 50 per cent of India's tribal and rural population is dependent on CPR for its energy and housing requirements: he also says that 70 per cent of the resources were common at the beginning of the century while

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8. Gall Omvedt, "India's Green Movements", Race and Class (New York), 1987, vol.xxviii, p.38.

9. Vandana Shiva, "People's Ecology: The Chipko movement", in Saul H. Mendbuitz and R.B.J. Walker, eds., Towards a Just World Peace: Perspectives from Social Movements, (London, 1987), p.257.

less than 30 per cent are now common".[10] Adoption of the western mode of production and diversion of resources from common people's basic needs to industrial raw material led to ecological disruption and economic exploitation. Further, it is the government that owns, controls and develops our natural resources thus becoming both exploiter and predator. These realities led people to fight against environmental disruption. Thus it is the government that faces the antagonism of people. They are also against the linkages of business or corporate elements and government which in many cases led to the exploitation of nature. While considering the fact that environmental movements have to fight against the big organisations like government, they have so far, achieved a lot.

Some people trace the origin of ecological movements to the United Nations Conference at Stockholm in 1972 when the late Prime Minister of India, Mrs. Indira Gandhi participated and thundered, 'Poverty is the biggest polluter'. Some others trace it to the chipko movement. Whatever may be the case, there exists no time lag as chipko movement bursted out within two months later of the Stockholm conference. Gall omvedt opines, that", the story

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10. J. Bandyopadhyay, India's Environment, Crises and Responses (Dehradun, 1985), p.128.

of India's green movements began with the chipko movement".[11]

The chipko movement emerged when peasants from Mandal, a village in the upper Alakananda Valley, in their attempt to stop commercial felling threatened to hug the trees if the saws came near them. It soon spread through out the Himalayas. From the late 19th Century the Himalayan forests which are rich in soft wood and pine resin, have been subject to rapid exploitation. This whole scale destruction has led to severe ecological problems. Rapid soil erosion, growing intensity of floods, restrictions, towards CPR, reduction in the availability of firewood and fodder, landslides and disappearance of water table, caused concern among people. They also resented the conversion of natural forests into mono-culture plantations.

People's movement against environmental degradation in this region was not traced to chipko movement. But as has R. Guha rightly said, " Chipko lies in a direct Path of continuity with an earlier history of social protest, as an organized and sustained social movement and at the same time it represents an expansion in the scale of popular mobilisation and the development of popular

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11. Omvedt, n.8.P.29.

consciousness."[12] People protested against the destruction of environment in the 19th century itself. The intensity of this led the people to decide to take direct action. R. Guha opines." The continuation by the government of independent India of forestry practices inimical to local needs generated a certain amount of discontent.[13]

Voluntary organisations like the Gangotri Gramswarajya Sangh (GGSS) in Uttarkashi and Dasholi Gram Swarajya Mandal (DGSM) in Gopeshwar have become the focal points of the movement. Environmentalists like Chandi Prasad Bhatt and Sunderlal Bahuguna were the main leaders.

Chipko means hug-the tree. Its activists popularised the movement through folk songs, street plays and widespread campaign. Its slogan was - 'What do the forests bear? - Soil, water and pure air. Soil, water and pure air are the basis of life.'

As a result of this struggle, the Government replaced the contractor system and formed Uttar Pradesh Forest Department Corporation (UPFDC) and the exaction was encouraged through local cooperatives. In 1981, as a response to Sunderlal Bahugunas' indefinite fast, the

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12. Ramachandra Guha, The Unquiet Woods: Ecological Change and Peasant Resistance in the Himalaya", (Delhi, 1989), p.153.

13. ibid.

Government constituted an eight member expert committee to prepare a comprehensive report on the Himalayan forest policy. The government later put a fifteen year moratorium on commercial felling in the Uttarakhand Himalayas.

It is said that "the chipko movement is the foundation event of the Indian environmental movement having the same status here as Rachel Carson's Silent spring' has for the western environmental movement".[14] Gall Omvedt calls it as the 'Third World's first Grass-root ecological movement.[15] It followed the ancient traditional form of protest non-violent non-cooperation method. Women took part in large scale and contributed to its success. This movement succeeded in slowing down the pace of commercial forestry and also formed a basis for India"s forest policy " "Chipko's influence is always visible in the continuing debates on forest policy and environmentally sound development."[16]

The reverberations of the chipko movement have been felt when the Chipko movement emerged in the southern part of India. The people of Uttara Kanara of Karnataka in Western Ghats launched Chipko movement on 8th September

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14. Indian Express (New Delhi) 21 March 1993.

15. Omvedt, n.11. P.29.

16. ibid., n.14.

1983. They opposed the felling of natural forests on the ground that this will adversely affect their farms. This soon spread to other parts of Uttara Kanara. They were against the policy of the government to plant eucalyptus and teak plantations. Their main strategies were conducting or organizing folk dances like Yaksha Gana, street plays and protest marches. This movement had three objectives, "to conserve, to grow and to nationalize the use of resources."[17]

The movement had achieved success when the government announced its forest policy, abandonment of rising monoculture plantations and stopping of felling of trees.

Two other environmental movements that are going on in the peninsula against the destruction of forest. Their resultant affects are "Save western Ghats" and "Save Eastern Ghats". In 1985 and 1986 individuals (environmental activists) made efforts to address the deteriorating conditions in the western Ghats. They led padayatras to save the western Ghats' in 1987., "In the history of ecological movements' perhaps this is one of its kind where 160 NGOS took active part not only in the sub-continent but

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17. Panduranga Hegde, "Striking roots in the South", in The Hindu Survey of Environment (Madras, 1991), p.23.

also over the world," says priyahari a noted environmentalist.[18]

The much acclaimed 'Social forestry schemes funded by international organisations' also caused stresses and conflicts as it was oriented towards mono cultural plant actions of teak, eucalyptus etc. People in South Bihar responded against the government's attempt to plant teak after cutting-down local forests in 1979. Tribals in Singhbhum raised a slogan 'Sal is ours, teak is the exporters' and more than 60 tribals died in ensu ed clashes with the police. This had happened mainly due to the attempts of big farmers to plant tress such as eucalyptus or teak which are not at all suitable to the basic needs of common people.

The Jharkhand movement which is struggling for separate states comprising parts of Orissa, Bihar and west Bengal is also the result of environmental degradation and the resultant poverty. The entire region of north-east India is also under the grip of environmental degradation causing dissatisfaction and disrupt among people. This has led to thriving of terrorist organisations.

People are protesting against the plantation of

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18. Priyahari, "Save the Western Ghats March: Voice to Preserve the Future," Gandhi Marg, (New Delhi), May 1988, p.112.

eucalyptus, accacia, pines and poplars which result into mono cultivation. Small farmers in Karnataka launched a movement against the eucalyptus plantations raised by the big farmers in their farms adjoining to their small holdings which adversely affected their rabi crops. Here people uprooted 10 million saplings. -- and 600 farmers were arrested in this process. Sehunta Farmers in Himachal Pradesh also took the same action in February 1988. In Tamilnadu and Karnataka, Prakriti-Samrakshna Samiti - a grass root activist organisation launched action against the plantation of Australian accacia in the grassland and shola forests of the hill catchments of the rivers. Thus there exists numerous examples of this kind of movements.

The Silent Valley Movement is one of the most important ecological movement in India. Silent Valley is the narrow valley of the Kunthi river in the state of Kerala in the South West of India at an elevation between 2400 and 100 meters. Its 8950 hectares of rain forest is rich with valuable plants and animals. In 1973, the then state government of Kerala decided to build a dam across the gorge in order to generate hydro-electricity. It would have drowned valuable forest and threatened the loss of wild life. Even the government's ecological task-force expressed its dissatisfaction over the loss of forest and wild life. By 1979, students, voluntary organisations like Kerala

Sastra Sahitya Parishad (KSSP), science forums, teachers, progressive minded citizens and Journalists began to work against the project. In 1979 Save Silent Valley Committee emerged. Lobbyists like Variva also worked for it. This hue and cry among all circles led the government, headed by the then Prime Minister Mrs.Indira Gandhi, to stop the ongoing of the project. Avjit Gupta in this context opines that ", Silent Valley has become a land mark in the ecological movements where a Third World Group of Conservationists prevented the State government from destroying a valuable rain forest.[19] According to Darryl D'Monte, "it is the most fiercely contested environmental dispute in the country and quickly symbolized the quest for a new paradigm - development without destruction."[20]

Massive deforestation and the resultant poverty in the Aravali hills led to `Save Aravali' campaigns. People who were mostly affected by these developments pleaded attention of authorities in stopping the organized illicit felling for providing employment to the poor. The government authorities failed to take any action. `Lokayan' took up this issue which was raised at a Sarvodaya Sammelan in Sevagram in 1983. Sunderlal Bahuguna also participated

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19. Avjit Gupta, Ecology and Development in the Third World, (London, 1988), p.29.

20. Darryl D'Monte, Temples of Tombs: Industry Versus Environment; Three Controversies (New Delhi, 1985), p.59.

in this struggle. By 1984 save Aravali Campaign was launched and the Aravali Abhiyan Samiti was formed. This movement is still in the process. Recently, Delhi Ridge received attention from environmentalists. Here, nearly 40 per cent of the forest was destroyed by the government itself. Environmentalists are holding consultation with the government on how to prevent ecological destruction in this area.

The construction of dams has been the central feature of our developmental strategy. The side effects due to the construction of large dams such as displacement and resettlement of people, water logging and salinity, soil erosion, loss of wildlife and induced seismicity have become the focal points of attention. Many movements have been launched in India against this.

Protests against the construction of Tehri dam on the Bhagirathi river at a height of 260 metres began in 1977. People are resenting the displacement of 80,000 inhabitants from Tehri and surrounding Villages and also fear earthquake hazards. It involves enormous cost of Rs.4000Cr. Environmentalists are fighting against the construction of this project. They have put forward their views in support of its prevention on the grounds that this region is earthquake prone zone. This region has a long history of landslides. Further deforestation is another cause for the

destabilisation of the slugs. The recent earthquake, 20 October 1991 again posed many questions over the Tehri dam project. While on the one hand the government authorities are stressing its safety and their decision to go further, people are still carrying agitations against it.

In 1974, about 15,000 Munda tribal families in the Ranchi district of Bihar resisted the confiscation of their lands for the huge Koel Karo dam in Bihar. Koel-Karo People's Organisation demanded 'land for land'. People were completely dissatisfied with replacement measures. When the project was started in 1978, people resisted it. This struggle is still on; blockading the construction of the project.

People protested against the government's proposal to construct Bedti Valley Hydel project in 1977. In 1981, an expert committee, appointed by the government, was divided in its opinion over the feasibility of it. In 1990 the question again came up and people revolted against the decision. "Politicians like Ramakrishna Hedge - former chief Minister of Karnataka, and leaders from other political parties are supporting the anti-dam movement."[21] This project is still awaiting environmental clearance.

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21. Pioneer (New Delhi), 13 May 1993.

People are protesting against the construction of Icchampalli and Bhopalapattnam on the Godavari and Indravati rivers in Madhya Pradesh and Maharashtra respectively. The well-known social leader, Baba Amte has been leading the movement.

The environmental movement against the construction of Narmada valley development project is the most important one. The movement is led by Narmada Bachao Andolan (NBA). Besides acting as a pressure group, it tries to arouse public awareness through demonstrations, published material, non-violent struggle, organising fasts, etc. Presently talks are going on between the government and the agitators.

People are raising their voices against the widespread water-logging, sanitation, soil erosion, drought and desertification in many parts of the country. People in Kerala started agitation against the pollution of Chaliyar river due to pulp factories. In Karnataka, people started a movement against the pollution of Tungabhadra river and in Madhya Pradesh against the pollution of the Chambal. Environmentalists are raising their voice against the slow death of Dal lake in Kashmir.

In Karnataka, recently, a major movement `Mannu Rakshna Koota' or `Save the soil campaign' has emerged. It is due to popular reaction against the government policy to

plant Eucalyptus on farmlands and pastures which they argue depletes soil fertility and destroys water resources. In many areas of Haryana and Punjab, the soil has become water logged and saline. People are protesting against this situation. Farmers in Hoshangabad district of Madya Pradesh have launched 'Mitti bachao' - save the soil movement.

Many parts of the southern and western India between 1983 and 1986 monsoons were drought hit. In 1985, the state of Maharashtra had witnessed anti-drought demonstrations, public rallies and conferences and road blockades. The issue of water distribution became central. Mukti Sangharsh in Khanapur taluqa in Maharashtra has been leading a movement against drought for the past eight years. They successfully got Baliraja dam. Now Takri peasants' struggle is going on in these villages. They are agitating against the government project Krishna-Koyana Lift Irrigation Project which they are arguing will make a few villages prosperous and leaving the rest untouched. Mukhti Sangharsh in its turn put forward its own scheme to solve drought problem in this area. The movement is still going on . It is said, " Takari struggle directly challenges the existing irrigation policies and practices of the state and it is the

first struggle in India to directly pose such a challenge and Present an alternate path of development."[22]

People in the traditional fishing zone areas-all along the coasts of the country are protesting against the ecological ruin. Introduction of mechanised trawling and industries coming up to exploit marine-wealth and pollution of rivers are all resulting in the destruction of fisheries, thus causing loss to the livelihood of fishermen. In Goa, for example, the ramponkars fishermen who mainly depend on manual haul in their nets from the shore, have been badly hit by mechanised craft. The demand for shrimps mainly for export, led to commercial exploitation of this region. Many fishermen lost their livelihood. Fishermen were most hit when the Birla owned Gwaliar Rayon factory was releasing its chemical affluents. Local people led by KSSP succeeded in closing the mill till proper anti-pollution measures were taken.

Recently, environmentalists, jurists, social activists and politicians are strongly protesting against the coming up of Chilka Aquatic Farms ltd. a joint sector Project of the Government of Orissa and the Tatas to set up Prawn Culture farm to earn foreign exchange near chilika

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22. Gall Omvedt and Bharat Patankar, "Movement for Water: Takari Peasants' struggle for water", Economic and Political Weekly (Bombay), 13 April 1991, p.956.

lake. It is threatening the source of livelihood and dwindling resources of nearly 2.1 lakh people. The claim of Tatas that " the project would generate employment to local people is contracted by its project report itself according to which only 630 jobs, of which 361 are of technical nature would be created."[23] Save the Chilika Movement emerged. Recently, the government tentatively postponed the project.

People are raising concern over chemical projects and nuclear sites. Balco project in Orissa which is an alluminium plant is opposed by environmental activists led by Gandhamardan Suraksha Yuva Parishad (GSYP) Environmentalists are also protesting against the location of Mathura oil refinery on the ground that is is causing severe damage to the Taj Mahal. Bombay environmentalists carried unprecedented struggle against the location of that Thal-Vaishet in Bombay. The Kaiga atomic power plant in Karnataka also received popular reaction. By 1987-88 the anti-Kaiga movement took firm roots and people protested against the site in the ecologically fragile Western Ghats. People took recourse to legal remedies. Parisara Samrakshna Samiti led this movement.

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23. Hindustan Times (New Delhi), 11 September 1992.

Mining is another area which witnessed peoples movements. Tarun Bharat Singh - a local voluntary organisation is fighting against mining in and around Sariska national park in Alwar district in Rajasthan. The supreme court indicted the state government by pointing out that while professing to protect the environment it is permitting degradation of environment by authorizing mining operations in the protected area.

In 1986, people of Nahi Kala along with chipko activists launched a non-violent resistance against the ecological havoc created by limestone quarrying. Tribals in Orissa in Western Ghats are organising to stop a bauxite mining project from destroying the region. Their slogan is, "Gandamardan is our mother, bauxite is our heart. How can we tolerate our mother's chest being blasted and her heart bleeding?"[24]

People have taken to courts whenever they face severe environmental degradation either through government projects or through corporate elements. The number of environmental

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24. Sunday Observer (New Delhi) 22-28 March 1992.

cases coming up before the courts under various laws is increasing. The supreme court of India, when a public interest suit was brought up against the continuing discharge of untreated and toxic tannery wastes into the Ganga at Jajmau, Kanpur despite efforts by the Utter Pradesh Pollution Board under the Ganga Action plan, delivered a landmark judgment, in 1987 ordering the closure of 30 tanneries and gave six months time for another group of tanneries to install primary effluent treatment plants.

The Doon valley quarrying cases-the first major public interest case in the Supreme court on environment, has come up from the point of view of environment as a human right. The Bhopal gas tragedy case also came up before the court. In 1985, a supreme court bench headed by P.N. Bhagavati issued a trend-setting judgment stressing the need for conservation in the broader social interest of development. There are many cases lying in various courts. The popular Narmada project, Chilka farm projects etc. are now before the courts.

Many grass-root organisations are not only involved in protesting against the ecological degradation, but also throw themselves in conservation measures. For example,

Pani Panchayat movement and Mukti Sangharsh movement are involved in conserving water, which followed certain ecological principles applicable to local needs. Pani Panchayat movement was launched by the Gram Gaurav Pratisthan in Pune district of Maharashtra in 1972. Pani Panchayats treat water as a community resource and try to prevent the waste of scarce water resources. Mukti Sangharsh movement was launched in 82-83. It was the response of people in the villages near Bombay against the problems of drought, water-shortages and crop failure. They followed sound ecological principles to conserve water.

In Radegan Siddhi - a village in Maharashtra a silent environmental revolution took place in this drought prone village of the backward Ahmedabad district. Anna Hazara who got Indira Gandhi Vriksha Mitra Award in 1991, took to co-generation methods and turned the village into a green wonder with numerous small dams.

Priya Ratna Mishra transformed Sukhomajri lying amidst the degraded Shivalik hills. Eco-regeneration attempts by individuals in other villages like Bemru and patched in the Himalayan zone, Seed and Gopalpura in the Aravalies and Nanda in Shivaliks brought life back to these villages. They are wholly dependent upon the existing water

and other natural resources of these areas and wisely used ecological principles. One more conservationist, Mohan Advani has recently demonstrated that fresh branches of many species-bhendi, pipal, teak, banyan etc. can be used to grow full trees, in the same fraction of the time the saplings require. He believes that his techniques have great value for humanity. He boasts, 'I am the one man on this earth who can stop floods overnights.' He is an intrepid protector of trees in Bombay.

/The role of women in contributing to the success of ecological movements is exemplary. Women, being one of the worst sufferers of environmental degradation, participated in these struggles with vigour and strength. It is woman who has to meet basic requirements like collecting water, fodder and cooking. She has to walk miles and miles to get a pot of drinking water. Lack of fodder and cooking materials have aggravated their problems. It is said that if Indian women can save time in collecting these basic requirements, she would easily contribute to the productivity of national economy.

In any ecological movement, right from the Chipko to Narmada, it is the women who are providing basic support and

strength. They participated in large numbers in the Chipko movement. One environmentalist has gone to the extent of calling chipko as the "feminist movement".[25] Vandana Shiva opines that "Women in India have led on ecological issues for decades".[26] Mira Ben articulated ecology way back in the 1940s. Sarla Behin was an early ecological activist who nurtured many organizations and inspired some of our late environmental activists like Shah Suresha Devi. Many women are in the limelight of present day environmental scenario. Ms. Medha Patkar who is leading the Narmada Bachao Andolan and received Right livelihood Award along with others, is in the forefront among women.

Majority of Women's organizations, although they do not directly involve in the environmental field, do invariably address the environmental problems. For example, working Women's forum in their dealings with fisherwomen and milk-maids and Mandals (women's groups) in the Himalayas. Thus, we can say that women are contributing their part to the environmental movements.

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25. Anil Agarwal, "The State of Environment", A Citizen's Report (Delhi 1982), p.12.

26. Vandana Shiva, "Interview", in Irehe Dankelman and Joan Davidson, eds., Women and Environment in the Third World: Alliance for the Future", (London, 1988), p.118.

In India, there is a development of ecological sciences which are ecological, epistemologically and methodologically. Scientific organizations are also gradually taking interest in the ecological problems. Certain organizations, like Development Imperatives are trying to develop low-price technology with less environmental hazards. But there is a long way to go in this respect as long as the government policy patronizes high level of technology without any regard for environment and suitable technology.

India has a long history of voluntary groups working in various fields-economic, social and environmental. These non-governmental organizations (NGOS) are often concerned with the immediate survival issues. By the end of the decade of 1980s, in the words of Rajashekara ," scores of new NGOS comprising voluntary agencies, registered societies, workers cooperatives, etc.- have come up all over the country whose objectives focus on environmental protection and improvement."[27] Their activities range from education and advocacy related to environment to activities directly aimed at solving environmental problems. There also occur differences between them in their place of work -

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27. C.V. Rajashekara, Global Environment Series : Critical Issues in Environmental Management (New Delhi), 1992), vol.V, p.325.

some of whom work in urban areas and some of them entirely involved in rural development. C.V. Rajashekara opines that NGOs differ from one another in many counts including size structure, objectives, work styles and source of funds.[28]

Some of these organizations believe in creating environmental awareness through education like Centre for Science and Environment, Delhi Science Forum, some in protesting against environmental degradation and conserving the same like Dasholi Gram Swaraya Mandal, and some in developing suitable technologies and opposing public or private sector projects that could be harmful to environment like Appropriate Technology Group, Lucknow, Magan Sangrahalaya, Wardha, etc.

So far, the interaction between the government and NGOs is limited to functional matters like clearances, advice, information etc. Recently, the government has opened its channels by framing up eco-development projects and environmental education and research programmes. But still NGOs are ineffective in instilling spirit among our politicians.

These organizations are facing many limitations such

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28. ibid., n.27, p.325.

as (i) lack of expertise and understanding (2) Limited finances (3) secrecy of government records (4) size and scattered nature of these groups - most of these groups are very small and relatively excluded from each other (5) lack of statutory support and judicial sympathy.,

It is crystal clear that environmental movements encompass different perceptions, views, ideas and objectives Its underlying theme is their non-violent struggle. In fact, "India has an ancient tradition of a democratic response to unjust governance through non-violent non-cooperation."[29] Our freedom struggle also adopted the traditional mode of struggle against the colonial imperialism. Non-violent non-cooperation is the embodiment of our civilization.

The basic strategy of these movements comprise peaceful demonstrations, padayatras, fastings, signature campaigns, popularization of movement through folk songs, drama or street plays, awakening of people through education, publication of materials in support of their claims, moving the courts, etc.

The environmentalist attempts to halt the

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29. Vandana Shiva, "Ecological Movements in India", Development (London), no.3, 1985, p.64.

construction of large river valley projects have led to a debate of big dams vis-a-vis small dams. While environmentalists are arguing in favour of the construction of small dams which are ecologically suitable, others especially the government, scientists and engineers favour large dams in the name of development. Environmentalists also successfully raised the question of the construction of atomic power plants, establishment of military sites and chemical industries in the areas of ecological fragility and population concentration.

These movements have exposed the fact that ecology is not at all a 'luxury' concern in India. People through defending forests and hills especially prefer to lay down their lives. Though most of the eco-movements are local in origin, sometimes movements like Chipko, Narmada Bachao Andolan received concern both in the national as well as International circles. Environmental groups are also trying to get support from international environmental groups as in the case of NBA. Their organising forms are mostly in the form of independent local communities. Activists come from various political, economic and social trends. Their ideals range from Gandhian and tribal autonomist to socialist and communist. But the underlying theme in all the ecological movements is that peasants, landless women and men, or in other words, people the worst

affected, have formed their backbone. Scientists, students and other professionals are also participating enthusiastically in these movements thus giving ideological background.

"The major stumbling block to the success of any movement is the lack of access to information. None of the existing environmental laws in the country recognise this."[30] The Government has withheld information related to many projects like Thal Vaishet gas based fertilizer plant, documents relating to forest and water policies, and many other projects.

Other drawbacks of the movements are - most of the environmental movements in India are the responses of the people to the unmindful exploitation of common resources and against the threat to their livelihood. They are not considering environment *per se*. The quality of environment is not of much matter to the people who suffer from abject poverty. When the threat comes to their door, then they realise the effects of environmental degradation and vehemently protest against it.

Non Governmental organizations are also suffering from many loopholes as 'anti-development measures' since

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30. Gopesh Nath Khanna, "Problems of Human Environment: People's participation and Legal solutions", Social Action, July-September 1989, vol.39, p.276.

they are protesting mainly against the construction of dams, atomic power plants etc. These organizations are unable to pay much attention on basic needs like sanitation facilities, drinking water, cleaner environment, air, indoor pollution and noise pollution-which will lead to better quality of life. As per a criticism, 'the environmental movements are mostly limited to seminars, workshops and at the most to discussions by the elite.' Though India claims largest number of NGOs in the Third World most of the organizations are non-effective in the environmental field. Some organizations even tried to appease the government for they are dependent on the government's funds and also like to exercise power.

Many of the protest efforts are labeled as anti-development and anti-progress. Political circles often blame environmentalists as CID agents. Once the editorial of the Sunday Observer branded environmentalists like Sundarlal Bahuguna as 'environmental terrorists'.[31] The state government of Gujarat blamed those who are protesting against Sardar Sarovar Project as 'Cranky Environmentalists.' and the state had come down heavily on the protesters.

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31. Sunday Observer (New Delhi), 22-28 March 1992.

Another weak point of environmentalism is as Shiv Visvanathan forcefully asserts, " a stalest strategy which views nature or commodity, justifying the preservation of nature for reasons of trade, tourism or leisure."[32] The attitude of the government reinforces this point of view. Most of the rich people also support the preservation of environment on these grounds.

Plethora of NGOs without commitment, lack of awareness among people, insufficient press attention, lack of coordination among environmental groups, government's attitude towards development and ineffective judicial activism are the stumbling blocks for the progress of environmentalism in India.

Despite these loopholes, the environmental movement has registered some victories - like stalling the Silent valley project and work on many projects. The most important achievement of the movement is to focus on the state of ecological crisis, the threats to it and the corrective action to be taken. Many recognize the fact that environment is not just petty trees, tigers, threatened plants and ecosystem and it has to be viewed in its entirety on which we all subsist for our entire development process.

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32. Shiv Visvanathan, "Our Ancestors and Epigones", Seminar, (New Delhi), February 1987.

The movement also strengthens the democratic process by claiming for democratization of resources and resorting the right to information. Many grass-root level movements are performing their role in exemplary terms.

Max Nicholson's words are applicable to Indian situation when he says,

> the environmental movement will need to broaden and deepen its efforts over the coming decades. Its ultimate goal must be to see a world in which its values and aims are so completely integrated in a revitalized and reoriented civilization that its mission will have been successfully discharged."33

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33. Max Nicholson, The New Environmental Age, (Cambridge, 1987) p.16.

CHAPTER – IV

MAJOR ENVIRONMENTAL ISSUES: CASE STUDIES OF THE HIMALAYAN ECOLOGY AND THE NARMADA PROJECT

"The faster rate of degradation is attributable both to overse of the resources and to lack of understanding basic ecological procss"

S.G. Bruman
Intgrated Reosurce Management and Development

Man's interaction with nature is so intensive that it has given rise to what we know as 'environmental crisis, thereby affecting the societal development. Environmental deterioration in India is mainly attributed to a certain group of factors - poverty, population growth, modern forces like industrialization and urbanization, the depletion of natural resources without any attention, and the disruption of natural ecological balances.

Here, the case studies of the Himalayan ecology and the Narmada dam are taken to exemplify the present major environmental issues in India and thereby reflecting the basic flaws in our developmentalistic thinking.

Until recently, mountains and mountain environment have not attracted the administrator's as well as the people's attention. Over the last two decades, there has been a rapid growth on awareness about mountain environment. Their natural resources, scenic beauty, recreation and flood control etc. have acted as main themes for this attraction. In this process, people have come to know that all is not well with the mountains which are fragile ecosystems.

The Himalaya-Ganges-Brahmaputra system which is regarded as one of the world's largest highland-lowland interactive system, dominates the entire Northern, Eastern and to some extent Western regions of India. The Himalayas are endowed with a variety of natural resources. With the penetration of modernized forces and in creating demands on its natural wealth, its fragile ecology is in danger leading to widespread environmental degradation. Now-a-days, conservationists, ecologists, scientists, administrators, media and people are expressing their concern over the rapid deterioration of the Himalayas. Thus, the Himalayas naturally fall as a case study of one of our major environmental issues.

Water bodies, especially the rivers, are India's lifelines. Vagaries of monsoon and imbalances in the distribution of water resources necessitate the wise management of water bodies. According to an estimate, 89 pre cent of the water used in India would be for withdrawal use (i.e. removal of water from its natural resources). By the turn of the twentieth century, on the basis of current estimates of water availability and use, there will be a short-fall of it in meeting agricultural needs. Presently, India is not able to provide drinking water in many areas. Thus, India cannot afford to allow water to run waste. Hence, the Government of India, immediately after

Independence, had taken up several multi-purpose dams. People had welcomed this initially, but the side-effects like displacement of people, deforestation, siltation, and salinity and reduction of the span of dam and floods, led to popular protests against these developments.

Although, the controversy between large dams verses small dams dates back to 1950s with the side-effects of Bhakranangal dam, it has received impetus in the 1980s. To illustrate all these issues, the choice obviously falls on the Narmada dam controversy, which at present, is on the cards. It is said that never has a protest been debated so extensively and intensively as the Narmada controversy. This case study examines major environmental issues that are involved in this.

A Case Study of the Himalayan Ecology

The Himalayas - abode of snow - have been one of the dominant features of India. They are the youngest and the highest folded mountains on the earth, rising to over 8,000 metres from the sea level and stretching over 22 degrees of longitudes. The Himalayas and the associated mountain girdling the sub-continent on the North stretch in a consistent North-west and south-east direction for about 2400 kilometers. between the gorges of the Indus and the Tsango-Brahmaputra. Its width varies, being broadest in

Kashmir and narrowest in Sikkim, approximately 400 km and 160 km respectively.

The Himalayan mountains are of tectonic in origin which took seven million years to achieve their present height. They originated from the sediments deposited in the great Midland Sea of Tethys. These were uplifted due to the collision of Gondwana land plate with that of the stable European plate on the north. The boundary of these two plates is known as Indus-Tsango Suture Zone along which subduction took place. This movement of Gondwana plate is still going on, which can be perceived whenever some deformation or instability occurs in the Himalayan zone.

The Himalayas are a series of parallel or converging ranges, intersected by numerous valleys. Longitudinally, these can be divided into five parallel belts - "Siwalik range or the Lesser Himalaya at 1800-3000m, the zone of spurs with a deeply dissected plantation surface at 4570m, Great Himalayas with many peaks over 6000m, the Outer Himalayas at 3660-4300m and the edge of the Tibetan plateau - 5790m."[1]● Regionwise, it consist of 1) Kashmir Himalaya - 3000m - mostly in Jammu and Kashmir (2) Punjab Himalaya - stretches North-westwards from the Sutlej for about 570 km (3) Kumaon Himalaya extends from Sutlej to Kali for about

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1. A Social and Economic Atlas of India (New Delhi, 1987), p.2
●See the Map No.1 (p.177).

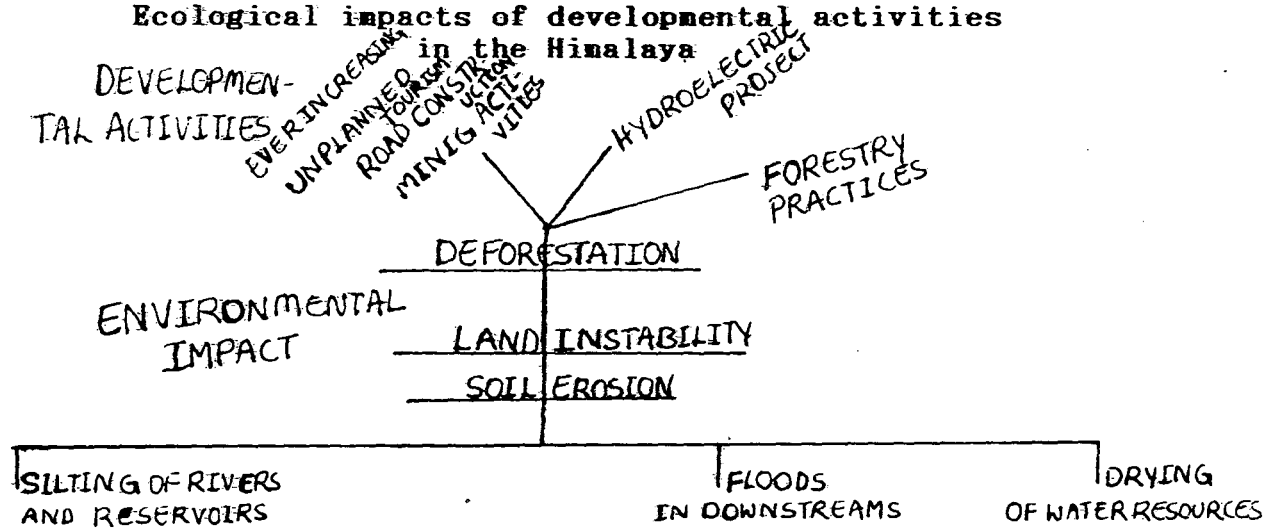
The Himalayas have contributed towards Indian cultural, economic, social and geographical fields. It exercises dominating influence on the meteorological conditions. It protects India from the warm air that comes from the South of Asia and from cold blizzards of Central Asia. The eroded material of Himalayan ranges finally deposit in the plains thus contracting to the fertility of the soil. It is rich in flora and fauna and in forest resources. It also consists of valuable mineral resources - like copper, lead, zinc, nickel, tungsten cobalt etc. It is the abode for tourists owing to its scenic beauty and hill stations. As the Himalayas isolated India from its neighbouring countries, Indian people evolved their own culture and social fields. It is very important for them religiously as the house of Gods. Thus, the Himalayas are part and parcel of our culture, geography, social and economic field.

The Himalayas is one of the truly outstanding but fragile eco-system of our Indian sub-continent. Its environment is under threat, caused by our development effort and penetration of man's activities leading to deforestation, floods, soil erosion, heavy silation and eutrophication of lakes, disappearance of flora and fauna and the rise of pollution levels. As the threats to mountain environment are becoming visible and perceptible,

planners are focusing their attention towards it. People are paying attention towards it because of the effects posed by severe environmental degradation on their subsistence system.

A look at the environmental degradation in the Himalayas - The whole complex system can be diagramaticaly explained as it is given below:

Ecological impacts of developmental activities in the Himalaya



Source: The New Environmental Age, R.K. Sapru & Shyama Bharduqi), p.67.

The most important environmental crisis that erupted in the Himalayas is deforestation. "It is estimated that 37.45per cent of the geographical area of the Himalayas is under vegetal cover and about half of this is degraded."[2]

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2. P.C. Tiwari, "Human Interference and Environmental Degradation in the Himalaya", in Krishna Murthi Gupta, ed., Himalaya Man and Nature, (New Delhi, 1990), p.22.

The rate of regeneration is very much below than the rate of deforestation. The most affected areas are upper slopes which are getting bereft of vegetal cover. Region-wise, Siwalik zone of the western Himalayas in the Jammu region, Eastern Himalayan zone of Sikkim, Western Sector of the High Himalayas - have large bare areas. According to Dewan, deforestation is "increasing at a fast rate."[3] Studies have revealed that the Bhabari and Terai belt - which was covered with dense forests till recently, has been devoid of vegetal cover except a few areas in the eastern Himalayas.

Table - 2

Year	Population in millions	Forest Stock in million cubic metres	Cattle Units in millions	Grass Stock dry matter in million tonnes
1981	4.781	66.0	3.40	8.86
1991	5.995	36.30	3.46	5.30
2001	7.508	19.96	3.52	3.17
2011	9.404	10.98	3.58	1.90
2021	11.777	6.04	3.65	1.14
2031	14.750	3.32	3.71	0.68
2041	18.472	1.77	3.78	0.41

Source: Task Force Report; Eco-development, Planning Commission of India (New Delhi), 1982, p.9.

3. M.L. Dewan, People's Participation in the Himalayan Eco-system Development (A Plan for Action) (New Delhi, 1990), p.27.

According to Richard P. Tucker, 'three-major factors are responsible for forest depletion in the Himalayas - 1) the intrusion of modern political and economic systems into the mountains 2) the growth of modern resource management agencies, especially the Indian Forest Service 3) the pressures of rural subsistence and population migration. Extension of agricultural and other developmental activities, like mining, road construction etc., penetration of modern systems of property rights, traditional system of cultivation and government policy are responsible for depletion of forests.

There exists no systematic study about soil erosion in the Himalayas. Soil erosion is rampant in many areas. A study based on the satellite imagery of the Uttar Pradesh Himalayas reveals that about 64.3 per cent of the total land suffers from same degree of erosion. It can be seen in Central and Middle Himalayan zones. Erosion and sediment load is common in the Himalayan rivers. For example, erosion and sedimentation in Bagirathi is high. The Sukhna lake is an example for lake sedimentation. Absence of vegetal cover, slope failure, floods, over-grazing and natural geological processes contribute to soil erosion.

Landslides and other mass movements also cause environmental hazards in Himalayas. Initially these were regarded as the result of natural calamities but the

incidents of Belakouchi and Bhatali landslides have thrown light on the activities of man like felling of trees on, the steep slopes etc., causing landslides. From Kashmir to Arunachal Pradesh, there is no area in the Himalayas which is free from landslides. A study estimated that in Uttar Pradesh. Himalayas about ten small to medium landslides occur in every km. length road and the cost of removing debris is also very high. The Darjeeling Himalays recorded more than 20,000 landslides in a day. These are caused by heavy rainfall, cutting and deep excavations on slopes by road construction and mining activities and earthquakes. According to Shailendra Nath Ghosh, 'landslides have escalated by leaps and bounds since the road-building process started.'[4]

Evidence shows that destabilization of Mussorie has taken place because of the removal of limestone by mining the base. It can be seen in Shimla which is the result of saturation of underground loose material because of the drainage resulting from construction across natural drainage lines and in Sikkim, because of the movement of highly weathered chemicals out from under the road bed. This is mainly due to the loss of support from below.

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4. Sailendra Nath Ghosh, "Highly Vulnerable", Seminar (New Delhi) no.378, February 1991, p.42.

Urbanization, industrialization, transportation, loss of forest cover etc. contribute to pollution. Air pollution is noticeable in regions of traffic and industries. Water pollution can be seen in mining areas, for example Nainital lake and lakes of Darjeeling.

The occurrence of floods has increased recently. For example, the number of floods in the river increased from none in the decade 1901-1911 to five in the decade of 1971-80. This can be seen in Bagirathi, Ganga, Chambal, Indus etc. Simultaneously, the rates of silting and run-off have increased. Eutrophication of water-bodies has become a common feature in many lakes. Eutrophication in Dal Lake has led to the reduction of water surface area atleast by 60 per cent in the past two decades.

Now, let us have a glance through the developmental activities which in turn caused this eco-crisis in the Himalayas.

Mining in the fragile eco-system affects the environment. Indiscriminate mineral extraction leads to environmental degradation in the form of land misuse and pollution of air and water. Mining activities encompass one per cent of geographical area, however the effects are many. It is estimated that "more than 4820 ha. of land in Kumaon Himalaya, 11171 ha. in Darjeeling hills, 1138 ha. in

HImachal Pradesh and 886 ha. in Jammu and Kashmir have been seriously affected by mining."[5]●

It is estimated that on an average three blasts per day per quarry occur in Mussorie which is on eco-disaster. The extraction of limestone in Mussorie, Phosphorite in Doon valley, magnesite in Jhiroli and heavy metals in Sikkim is seriously affecting these regions. This mining activity results in land subsidence, pollution, solid waste disposal, land misuse and occupational health hazards.

Pilgrimage centers, recreation facilities, hill stations and their scenic beauty, adventurism like mountaineering and trekking etc., add to a boost in tourism in this region. Popular access to Garhwal Himalayas especially the valley of Flowers and Nanda Devi, lead to environmental pressures in this region. Shiwaliks are the most affected area. Demands for food, facilities, recreation activities lead to pressures on the existing resources, threat to local forest, scarcity of water etc.

It is estimated that each km. of road causes between 110,000 to 80,000 cu.m. of rock and soil to slide upon the fields and rivers below. Over 45,000 kms of road is constructed in the Himalayas. The maintenance of roads also

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5. R.K. Sapru and Shyama Bharadwaj, The New Environmental Age (New Delhi, 1990), p.169.
● See Map No.2 (p.178).

requires huge cost. Road construction lead to increase in landslides incidence, damage to forests, and environment.

Other important factor that very much contributes to environmental degradation is population growth. Man as an agent of change inflicts damages on environment through his sheer numbers and demands on resources. The most important cause for population growth here is natural and the insignificant cause is migration. The population is growing fast beyond the carrying capacity of the mountain ecosystem. Eric Eckholm (1975) opined that population growth among traditional and tourists and their increasing demands for fuelwood and cultivable fields lead to deforestation and consequent erosion and create a threat to the environment. The population growth has affected man-land ratio and severe stresses on the natural resources. The most important thing is that population has increased in the higher Himalayan zone during the last three decades.

Table -3

Man - Land Rations in Different Himalayan Zones

Zone	1961	1971	1981
High Himalayas	94.46	76.62	50.2
Mid Himalayas	4.98	4.35	4.1
Siwaliks	2.70	1.99	1.4

Source: Study conducted by the Deparmtent of Geography, University of Delhi, India (1987).

Another problem which contributes to environmental degradation is over-grazing. The population growth necessitates the growth in cattle population to meet human demands. In the Himalayan environment, an average 15 to20 acres of land is necessary to support a single cattle, whereas the per cattle grazing area available is only 0.8 to 1.5 acres. Over grazing leads to the loss of soil fertility, loss to agricultural land and degradation of soils.

Sudhirendra Sharma opines that, "the complex relationship between man and nature and the chain of events lead to eco-crisis in the Himalayas " [6] Ecological crisis

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6. Sudhirendra Sharma, "The Himalayan Eco-crisis and the People of the Himalayas", in N.K. Rustomji and Charles, Ramble, eds., Himalayan Environment and Culture (Shimla, 1990), p.61.

is visible in this region. This environmental degradation is not a modern phenomenon here. It is the area where the roots of urbanization goes back to thousand years ago. Here, Man extracted resources for the benefits of civilization. This process of exploitation accentuated with the colonial role, and is continuing till today. As early as 1952, Mira Ben-notable Gandhian worker, had stated that " there was something wrong in the Himalayas" These conditions obviously evoked responses from the Government and people.

The basic thing here is that the Himalayan region is not very well known. According to Von Eurer-Haomendorf "it is only in the last forty or fifty years that detailed research, expressed in field work, could be done in these areas".[7] These areas should be carefully investigated so that the problems of this area can be identified.

The development of mountainous region is receiving increasing attention from the Government in recent years. Their distinct physiology, highly dispersed population,low availability of cultivable land, inadequate diversification of economic activities, low accessibility and inadequate

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7. Civon Furer - Haimendorf, "Himalayan Studies", in N.K. Rustomji and Charles Ramble, eds., Himalayan Environment and Culture (Shimla, 1990), p.3.

infrastructure and employment opportunities constantly demands special attention from planners.

The Government of India has been taking care from the Second five year plan. But at this time "it paid concern only towards the sensitive border areas and scheduled areas of Himalayan region."[8] Deforestation and floods in the Himalayan region especially in the 1970s led the Government to appoint a Working Group to formulate action plan for flood prone areas in the Indo-Gangetic basin. The action plan presented by Working Group identified 18 major catchments in the Himalayan region of Gangetic basin covering some 50 million hectares which required remedial action.

The Government felt the need for the integrated development of the region. Hence, Hill Area Development programme (HADA) was launched during the Fifth Five Year Plan. There occurred Major shift in the policy related to hill areas in the Sixth Five year Plan. It identified the problems of the hill regions and laid emphasis on ecological aspects of the hill area development so as to promote proper management of the country's natural resources. Its main thrust was on two aspects- 1) development in harmony with

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8.. K.N. Ninam, Issues in Development of Hill Region (Bangalaore, 1988), p.3.

ecological balance 2) promotion of the quality of life of hill people. It formulated schemes such as better land use, control of erosion, watershed management, afforestation, silviculture development, infrastructural development programmes etc. The Planning Commission constituted task force for the study of " Eco-development in the Himalayan Region" in 1981. The core strategy recommended by the task Force has three fold objectives-"Protection, of natural resource base, regeneration of resources like forest, effective use of water resources, realization of agricultural potential etc. and development of natural resources."[9]

The Seventh Five Year Plan (1985-90) recognized the problems of the mountain areas by mentioning that inadequate programmes are evolved for conservation and proper utilization of the resources of the hilly areas, the problems of these areas will continue to remain unsolved and the economy of the plains will also get disturbed." It laid emphasis on the integrated development of the hilly region through HADP, development of productive sectors based on ecological principles, tapping alternative sources of energy, people's active involvement in watershed management,

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9. A.K. Mukerji, "Development of the Himalayan Hill States through Integrated watershed Management", in A.K. Dev & S.A. Rizvi, ed., Development Programme and Planning in Hill Areas (New Delhi, 1991), p.63.

proper utilization of natural and human resources, finding suitable alternatives to meet the needs of the packaging industry, etc. Biosphere reserves and establishment of sanctuaries and national parks is also the main plank of the Government Strategy.

Despite these programmes the entire Himalayan region, except few pockets, is mostly backward. Rajni Kothari opines that " the entire Himalayan territory can be designated as backward. "[10] This region is endowed with many natural resources Sayed S.Shafi said, "while Egypt is the gift of the Nile, so is India a gift of the Himalayas."[11] It influences every facet of life, living and culture. Some attribute population growth and their demand for natural resources as the sole causes responsible for the degradation of the Himalayan environment while others attribute it to the forces of modernization such as mining, tourism, development of infrastructural facilities like road building, and industrial development. These in turn attracted responses from the people.

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10. Rajani Kothari, Politics in India (New Delhi, 1970), p.1.

11. Sayed S. Shafi, "Planning the Hill Habitat; Premises, Problems and Paramdres", in A.K..Dev and S.A. Rizvi eds., Planning the Hill Habitat, (New Delhi, 1991), p.8.

In the decade of 1970s, problems like floods, severe shortage of firewood and fodder due to deforestation, earthquakes, soil erosion, waterlogging and shortage of wasters, threatened the lives of people. People had become aware of all these problems and led the famous Chipko movement to preserve the nature insitu. It is a movement that aims to establish symbolic relationship between the environment and nature. This movement successfully influenced the government in its formulation of forest and wild life policies. The movement has been spread to the extensive areas of the Himalayas. People are protesting against the construction of Tehri dam, mining in Darjeeling, mussorie, Singrauli, etc. and against deforestation, soil erosion and waterlogging. Many grass-root organizations like DGSM are involved in conservation measures. They are resenting many other projects in the name of development.

It is true that geographical factors in this region belittle the development process, but at the same time there should be concerted efforts on the part of the Government and people. So far, the fruits of development have not percolated and the result is that development has been patchy and has not created much impact. Further there are regional imbalances whether it be Kashmir, Himachal or the North-Eastern States. These problems often led the tribals to agitate for separate states like Jharkhand, Uttarakhand,

Gorkhaland, Vidharbha Rashtra, Bodo land etc. These movements are gradually garnering support from the most affected people causing disturbances for the functioning of the economy of these regions and in turn affecting the development as a whole.

The planners should pay attention because, "large variations in topography, climate, soil and socio-economic conditions of these regions which present very special ecological problems".[12] The government should keep in its view the fragility of the area. The bureaucracy which frames out various plans comes from the urban middle class or from areas with no knowledge of the peculiar local problems. So, they should consult the local people and use wise traditional plans of conserving nature. Often environmentalists claim that the Government is ignoring the rights of the weaker sections of the society. So the Government should pay attention to these. Further, there is a basic fear on the development strategy. Sayed S. Shafi opines that, " the effort has been mainly economic and the emphasis so far is on the sectoral approach concerned almost entirely on allocation of resources and funds but not much consideration shown on locational aspects."[13] So the challenge before planning in the hill areas is related to

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12. Mukerji, n.9, p.59.

13. Shafi, n.11, p.7.

"harmonizing the imperatives of ecological and human considerations,"[14]

Checks on the construction of roads and dams, prevention of cutting of trees for timber extraction, restrictions, on mining and the movement of vehicles and control on population expansion in the fragile areas and tourist activities, will be needed for the development of the region. The Government should pay attention to the management of land-use because, "throughout the Himalayas, land use is the mainstay of the people."[15] People are so much affected by soil erosion that land is mostly devoid of productivity causing low agricultural yields. Infact, all these problems are inter-related and can be solved only through integrated manner. For that, cooperation among the Government, public, bureaucracy and environmentalists is required. Then only, development as a whole would occur in this region.

A Case Study of the Narmada Project

The Narmada river, rises from Amarkantaka, on the eastern fringe of the Maikala plateau and flows Westwards.

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14. Ninam, n.8, p.4.

15. U. Sahweinfurh, "Man's Impact on Vegetation and Landscape in the Himalayas", in S.O. Singh and Others eds., Impact of Tourism on Mountain Environment (Meerut, 1989), p.2.

It slopes down from Mandla in Madhya Pradesh to Jabalpur where it forms spectacular Dhuvandhar or Marble Rocks Falls. After this it flows through a gorge which is 3 km. long and flows to other areas and finally enters the Gulf of Cambay. Seven islands of which Aliabet is the Largest, occur in the estuary of the Narmada. During much of its Journey, it flows through a fairly narrow valley confined by precipitous hills which do not parent of any large tributaries.

Catchment area and annual yield of water in the Narmada basin

Area in Kms	98,795
Annual Yield of water in millions (M^3)	54,600
Rate of Flow (M^3/Km^2)	970,658
Storage Capacity millions M^3	2,550

Thus, Narmada forms the largest and the most important river in Central India. It flows through the States of Gujarat Madhya Pradesh and Maharashtra.

Surface water resource development of Narmada basin

1.	Average Annual Run Off Km^3	41
2.	Utilisable Flow Km^3	34.5
3.	Storage	
	a) Completed construction Km^3	2.8
	b) Under construction Km^3	11.44
4.	Major Projects	
	a) Completed	3
	Potential M.ha.	Ø.37
	b) Under construction	1Ø
	Potential M.ha.	2.33
5.	Hydro-Power M.W.	
	a) Total	1,321
	b) Created	-
	c) Under construction	835

Source: India 1990, p.429

The inception of construction of the Narmada dam goes back to 1946 when central waterways, Irrigation and Navigation commission (C.WING) recommended the construction of dams at seven different sites. In 1948, Khosla Committee recommended detailed investigations at only four sites in

view of the paucity of resources. (C WING was renamed as CWPC- Central waterways planning commission which carried several investigations over Narmada sites). The origin of Sardar Sarovar Project goes back to 1959 when CWPC submitted a project proposal to the Bombay consideration. This Navagam project-consists of two stages. In 1960, the states of Gujarat and Maharashtra emerged out of the bifurcation of Bombay. Planning commission sanctioned Navagam project-stage I with FRL 162' with provision for rising the dam to FRL320' later on. The Gujarat Government inaugurated it in 1961.

By this time, there emerged conflicts of interests over the use of Narmada waters among Gujarat, Maharashtra and Madhya Pradesh. The issue was over the height of the dam-Gujarat preferred the increased height of dam which will solve the drought problem of the state, while Maharashtra and Madhya Pradesh were interested in reduction of the height of the dam so that they could save hydel power.

When the attempts of the Union Minister of Irrigation & power, K.L. Rao failed to resolve the differences, In 1962, A.N.Khosla committee was appointed in 1964 with the aim of drawing up a Master plan for the optimum and integrated development of the waters of Narmada. This committee for the first time mentioned that waters would be allocated to Rajasthan also. The Tribunal was appointed to resolve the

disputes. It recommended allocation of 27.88 MAP between Gujarat and Madhya Pradesh, the height of Navagam Project, the so-called Sardar Sarovar, Should be at +300 and also decided the share of riparian states. Meanwhile, in 1978, World Bank Mission recommended the establishment of high level Narmada planning group, and retention of consultancy services and foreign experts for this purpose. In 1979, NPG was established and in 1980 Department of Environment had come into existence. By 1986, Ministry of Environment and Forests (MEP) clearly voiced its protest against the projects and it made strong point in favour of reduction of the height of Narmada Sagar Project and voiced concern over environmental effects. In 1987, Rajiv Gandhi Government pressured by the World Bank and concerned states granted the project and inspite of protests, MEP also gave its consent.

The Narmada project is considered as "the biggest riverine complex ever attempted in the human history."[16] The entire project comprises 30 bigdams, 135 medium and 3000 minor dams on the Narmada and its tributaries.● The two main

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16. Udaya Bhaskara Reddy, "The Implications of Large Dams in India: A Case of Narmada Valley Project", in Geographical Review of India (Calcutta), vol.53, no.3 September 1991, p.10

● See the Map No.3 (p.179).

dams are Narmada Sagar Project (NSP) in Madhya Pradesh and Sardar Sarovar Project (SSP) in Gujarat. Other major dams are Omkareshwar and Maheshwar in Madhya Pradesh. It is primarily these two projects that the world Bank agreed to finance. The central government had given permission to these two dams only in 1987.

The Narmada Sagar is to be erected near Punasa in the East Nimasr district of Madhya Pradesh. It is to be irrigate 1,23,000 ha. of land and to generate 273 M.W. of electricity. The sardar Sarovar dam is being constructed near Badgam in the Bharuch district of Gujarat. It is expected to irrigated 18 lakh ha. and to generate 3000 M.W. electricity. The Omkareshwar project which is also a multi-purpose project is planned across Narmada. It is to be constructed on the upstream of Mandhata Island. It is to irrigate 2,83,3224 ha. annually and to generate power with an installed capacity of 520 M.K. It is awaiting forest and environmental clearance from the centre. Maheshwar hydro-electric dam project is under construction.

Power and irrigation from Narmada Dams

Project	Irrigation (M.ha)	Power			
		Installed	Initial Phase	Final Phase	Average
1. Narmada Sagar	1,23,000	1000	223	148	170.5
2. Omkareshwar	1,29,000	390	131	62	96.5
3. Maheshwar	-	200	92	42	67
4. Sardar Sarovar	1,792,000	1450	300	150	225

Source: Damming the Narmada, Table I, p.14.

It is estimated that the Sardar Sarovar Project would cost Rs.11,144 cr. according to C.C. Patel report.[17] This project is designed to irrigate 18 lakh ha. of arid Gujarat land and Provide MP and Maharashtra with 1450 M.W. of power.[18] The cost of Narmada Sagar project is estimated as Rs.3,450 cr. irrigating 1.9 mln ha. and 1450 M.W.

The main issue especially related to Sardar Sarovar and Narmada Sagar Projects is whether the projects would create more wealth than resulting in destruction. Here the government and environmentalists put different opinions leading to the Narmada controversy. The benefits cited by the authorities follows here.

These projects result in creation of additional irrigation and electricity facilities. The numbers are already given previously. It is estimated that the projects while creating 573.5 M.W. of power, earn 2,000 cr. a year by the sale of electricity alone. The irrigation facilities would lead to the production of 80 lakh tonnes of foodgrains annually.

Sardar Sarovar will generate employment opportunities to 4 lakh people during its progress and 6 lakh people

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17. The Statesman (New Delhi) 18 April 1993.

18. ibid.

through improvements in agriculture and its allied activities after completion. These projects encourage industries, solve drinking water problem, check floods, enable pisciculture development and encourage tourism.

The likely side-effects of the dams are mentioned here. According to the Institute of Urban Affairs, New Delhi, "the entire Narmada Valley Project will lead to the actual displacement of one million people. These two dams displace over two lakh people. 126 villages to be submerged in Maharashtra, M.P. and Gujarat and other 365 villages will be partially submerged. The people to be most affected will be tribals and backward people.

Displacement of People by Narmada Sagar and Sardar Sagar Projects

Displacement	Narmada Sagar	Sardar Sarovar	Total
1. No. of villages to be fully submerged	89	37	126
2. No. of villages to be partially submerged	165	200	365
3. No. of families to be affected	-	10,758	-
4. No. of people to be affected	1,29,000	67,000	1,96,000

Source: Indian Express, 15 April, 1987

These two dams will inundate a total of 75,164 ha. of arable and 51,045 ha. of rich forest - the biggest submergence that has ever taken place in the history. The cost of loss of forest due to Narmada Sagar and Sardar Sarovar is estimated at Rs.33,000 cr. and Rs.10,000 cr. respectively.

Total area to be submerged by Narmada Dam

Project	Total sub-mergence (ha)	Forest (ha)	Agricultural Land (ha)	No. of Villages
Sardar Sarovar	39,134	13,744	11,318	234
Narmada Sagar	91,348	40,332	44,363	254

Source: Narmada Project Authority, Project Report.

Department of Environment and Forests (DOE&F) in its report to the Prime Minister in 1987, commented that "it is not possible to assess the impact of the loss of habitat on the wild life and the overall loss of biological diversity and genetic reverses."[19] Rare species of trees and medicinal plants will be submerged. This area is the house

19. V.S. Mahajan, ed., "Environmental Aspects of the Narmada Valley Project" in Environment Planning, Machinery and Management, p.320.

of diversified flora and fauna. A preliminary report done by the environment planning and coordination organization (EPCO) Madhya Pradesh, admits that, "suitability of the area as a wildlife feeding and breeding habitat may be affected by massive deforestation. Even compensating afforestation would not be much helpful."[20]

Other problems are the loss of fertile land for agriculture. These two dams will submerge nearly 56,000 ha. of agricultural land. Salinity of the rivers will increase. Silation will reduce the life-span of the dam. Other side-effects of such development projects are rise in incidence of malaria, flaria, cholera and other water-related diseases.

Though, the study of Environmental Impact Assessment (ECA) has been conducted for the dams, it was not at all satisfactory, as admitted by the study reports themselves. For example, the EIA study, though mentioned impacts on flora and fauna, ecological implications of forest submergence etc., however gave a green signal to the Sardar Sarovar Project. The cost benefit ratio was changed according to the political analysists. In 1982, it was estimated as 1:1.88 wherein the capital costs and

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20. I.S. Clarode Avares & Ramesh Billorey, Damming the Narmada (Dehradun, 1988), p.31.

environmental costs were excluded. Later on, the figures changed many times. It stands at 1:1.57 now.

The origin of big dam controversy dates back to the fifties. However, it attained its heights only in the eighties. The debate over big dams centers around three issues - "1) People oppose dams on the grounds of their not delivering the benefits that they are claimed to and the social costs paid by certain sections are huge while the benefits accrue to others. (2) Some, while accepting the concept of big dams, want proper treatment meted to the environment. (3) Some accept big dams without question."[21] These debates threw many challenges regarding the "very basis of such projects, socio-political and ecological consequences, issue of social justice for the affected and development process."[22] Narmada Valley Project is an impediment of all these features.

There are certain strands of ideology among the government apparatus. They believe that dams, the larger the better, are a must for any modern irrigation. They view that irrigation through large dams is synonymous with good

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21. Satyajit K. Singh, "Evaluating Large Dams in India", Economic and Political Weekly (New Delhi), 17 March 1990, p.561.

22. People and Dams - A Series of Articles, Society for Participating Research in Asia (New Delhi, September 1981, p.1.

irrigation. Further, they feel that all river valley systems in the country must be tapped. In applying these to reality, the authorities could not withstand any opposition from people against these dams. They go to the certain extent of crushing environmental movement also.

Authorities are totally convinced that the Narmada Sagar Project (NSP) and Sardar Sarovar Project (SSP) are the magic cure for the problems of this region - ranging from urban water supply to fish farming. They claim that NSP would be the largest irrigated project ever planned and implemented as a single unit anywhere in the world. If executed, it will affect the lives of about twelve top fifteen million people in the States of Gujarat, Madhya Pradesh, Rajasthan and Maharashtra.

Authorities maintain that SSP will be a permanent solution for the drinking water supply problem of the drought-prone regions of Kutch and Saurashtra. New industrial corridor will be developed around the main canal and Ahmadabad. A fact-sheet brought out by the executing authority - Sardar Sarovar Nigam Limited in May 1992 clearly shows that "drinking water benefits in Saurashtra and Kutch are more widespread and far exceed the irrigation

benefit."[23] For example, in Kutch alone the drinking water benefits will reach 1.Ø5 million in 948 villages while the irrigation benefits will accrue to only 9Ø,ØØØ people in 73 villages. It would crate an employment potential for 7 lakh workers during the construction and 61 lakh workers during the post-construction stage.

The State authorities in Madhya Pradesh are putting forward prosperous state before the people. They maintain that when this project (NSP) is fully commissioned, the state will achieve equal status with states like Maharashtra and Gujarat. Irrigation potential would bring green and industrial revolutions. The state will have an additional capacity of 3ØØØ M.W. Hydrel power. The Chief Minister, Sunder Lal Patwa maintains that, "by the turn of the century, with the additional irrigation and power, the state would have a different look."[24] The State is looking forward to another two projects Maheshwari and Omkareshwar.

The State authorities, in countering the environmental movement, put forward its counter claims, changed rules and regulations related to rehabilitation and advocated the mantra of development before the starving

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23. The Statesman, 15 April 1993.

24. The Hindustan Times (New Delhi) 18 September 1992.

people. Authorities are maintaining that the experts who have the requisite technical knowledge have approved these projects so people have no basis for opposing these projects.

Resettlement and rehabilitation of nearly 2,30,000 people is the main issue of these projects. The States of Gujarat, Maharashtra and Madhya Pradesh have to follow the directions issued by the Narmada Water Disputes Tribunal and agreements with the World Bank. The State authorities of Gujarat are claiming that they have established certain norms and traditions in relation to rehabilitation policy, not only in India but also in the world. The Gujarat Government stipulated that against 0.4 ha. average agricultural land holding of an affected family, they receive 2 ha. irrigable plot of land selected by them, in most cases, in the command area of the project and it released a package of rehabilitation. The State authorities claim that "this issue has been handled by the government with human touch and sympathetic approach and rehabilitation on policies have been and are being liberalized further in

response to special situation."[25] Other states are claiming to follow these policies but with variations.

Details of Submergence Under the Sardar Sarovar

State	Area Submerged in Hectares				Villages Submerged	
	Agricultural land	Forest land	River bed/ waste land	Total	Fully	Partially
Gujarat	1877	4523	1069	7469	3	16
Madhya Pradesh	7883	2737	10208	20828	-	193
Maharashtra	1519	3459	1592	6570	-	36
Total	11279	10719	12869	34867	3	245

Source: Central Board of Irrigation and Power, 1991.

Other main issue is the ecological implications of the dam. The project authorities commissioned Environmental Impact Assessments (EIA) for the dams in the early 1980s. Gujarat claims that "SSP is the first major and multi-purpose river valley project, where EIAs have been carried

25. Symposium on Large Dams and Small Dams, Socio-Environmental and Techno Economic Assessment, Organised by Central Board of Irrigation and Power, (New Delhi, 1991), vol.2.

out through expert organizations and appropriate compensatory and preservation measures have been taken."[26] the State authorities evolved afforestation programmes and some packages related to it.

Authorities used the World Bank's assistance in support of their claim. For instance, Sardar Sarovar Nigam quoted the World Bank as saying, "the benefits of SSP are so large that they substantially outweigh the cost of the immediate human and environmental disruption and the project will have a grater impact on poverty than the alternatives."[27] So is the case with the authorities of NSP.

The response of the State authorities towards environmentalists and their movement differs. In Gujarat, the Government is violently against environmentalists and their anti-dam movement. Once, the Chief Minister of the State openly declared its preparedness to call even armed forces also to crush the movement. Even the press and people in Gujarat are against the movement. People are totally intoxicated with the coming prospects of the dam. Journalists and intellectuals launched tirade against the

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26. ibid., p.103.

27. The Statesman, 15 April 1993

opponents of the project which is aptly described as `lifeline of Gujarat.' The `Sandesh' daily news paper described the opponents of the project as `enemies of the people'.

In Maharashtra, the reactions of the state authorities are mild. In Madhya Pradesh, the state authorities are bent upon crushing the movement. Mr. Shyam Charan Shukla - former chief Minsiter, is in favour of the reduction of the height of the dam so that environmental hazards would be reduced while Mr. Sunder Lal Patwa's Government is visualizing the benefits of Narmada dam and totally in favour of the construction of the dam.

When the leader of Narmada Bachao Andolan (NBA), Ms. Patkar called for the review of the project "the Gujarat government violently reacted and passed a resolution opposing any proposal for the review of the project or lowering the height of the dam."[28] Mr. Sharad Pawar assumed soft line while Mr. Sunderlal Patwa was against it. The Gujarat government claimed, "no cancelling tomorrow."[29] The Government of India, despite the cancellation of assistance by World Bank and Japan has announced that "it

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28. The Times of India (New Delhi), 25 June 1993.

29. The Hindustan Times, 16 September 1992.

will go ahead with the project."[30] Now, the project has become a prestigious issue for the politicians. Further, the state authorities are maintaining that there can be no going back on the project because a substantial part of the work is completed and huge sums have been spent.

The view point of the environmentalists assumed major importance for they are the major hurdles for the ongoing project. The anti-dam movement is steadily gaining strength and popular support. According to Rusi Engineer, "a whole new movement has emerged against" destructive development consisting of a wide assortment of social activists, intellectuals, environmental and human right groups, with increasing grassroots support among project-affected people in different parts of the country.[31]

This environmental movement has posed many challenges about the model of development that we adopted and the related issues, the beneficiaries of these plans, human values, right to know information about projects, social

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30. The Hindu (New Delhi) 6 April 1993.

31. Rusi Engineer, "The Sardar Sarovar Controversy: Are the Critics Right?" in B.D. Dhawan, ed., Big Dams: Claims and Counter Claims (New Delhi, 1990) p.155.

injustice, rights of adivasies and others and implications of various projects towards environment. According to V. Suresh,

> the movement against the Narmada is not mere opposition to big dams per se. The initial reaction was to protect the rights of affected people due to rehabilitation and resettlement. Later, the focus became wider, encompassing important theoretical and political issues.32

Environmentalists are questioning every aspect of the Narmada dam-from policy formulations to water logging of the dam. They feel that the Narmada dam which is the largest irrigation project ever planned and implemented as a single unit anywhere in the world should satisfy the strictest constitutional and social norms, the economic norms of cost-efficiency and distributional equity and should not harm the environmental sustainability of the region. They argue that people have the right to know all the pros and cons of a project which is bound to shape their destiny. They resented the non-availability and secrecy of government records. Environmental activists and people are utterly dissatisfied with the replacement and rehabilitation of the states of Gujarat, Madhya Pradesh and Maharashtra. The World Bank admits that it will be the largest river basin

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32. V. Suresh, "Development or Destruction", Mainstream (New Delhi), 24 February 1990, p.10.

population resettlement to date. Inadequate compensation and settlement on inferior and uncultivable lands has become a common feature of Government resettlements schemes. Living conditions and amenities in these villages are very poor. The Government of India still follows land Acquisition Act, 1894, formulated by the colonial government, by which land can be acquired for a 'public purpose.' According to Gayatri Singh "in the case of SSP, large tracts of land were acquired from the tribals at abysmally low rates which were then used for the construction of quarters for non-tribals, all purportedly in the name of public purpose."[33] Further, lack of information among the tribals and others about their impending displacement and relocation is the hallmark of rehabilitation policies adopted by the state authorities.

Environmentalists are critical about the ecological hazards due to large scale deforestation and the consequent threats to the dam itself. "It is calculated that big river valley projects have swallowed Ø.5 M.ha of forest land between 1951 and 1976 - roughly one-tenth of the area which has benefitted from irrigation."[34] Environmentalists fear

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33. Gayatri Singh, "The Narmada Valley Project: An Epitome of Modernization but at what cost?" Social Action (New Delhi), vol.39, July-September 1989, p.3Ø2.

34. Satyajit K. Singh, n.21, p.562.

that the country still looses forest area when it has to increase. The destruction of flora and fauna including rare species is a major cause for concern. They point out the failure of various afforestation programmes taken by the country. Activists are dissatisfied with the calculation of benefit-cost (BC) ratio which varied with times. It is true that, 'project authorities indulge in various manipulations of the figures to meet the requirements of the Planning Commission.'

Baba Amte, noted environmentalist countered the claims of the Gujarat government about water supply to drought-prone area. He says, "of the 69 taluqs in Saurashtra as many as 56 that is 81 per cent will not get any water from SSP. In Kutch district, 5 out of the 9 taluqs will not get any water." He, further says that of the 43 drought-prone and 9 arid taluqs in Gujarat as many as 30 will not get a drop of water from the SSP.

Activists are also critical about the clearance of the project despite the fact that several critical studies and surveys essential for assessing the social and environmental costs of the projects have not been completed and remain incomplete even today. They are also critical about the policy of the authorities who start the construction of the projects before the completion of studies. They also pointed out that Seventh Five Year Plan

gives priority to the completion of unfinished projects which are in an advanced stage and are capable of yielding full or partial benefits in the seventh plan and pinpointed other objectives like restriction of new starts to Medium projects in drought-prone tribal and backward areas and emphasis on minor irrigation. They argue that the clearance given to the Narmada project is against the economic objectivity and financial discretion.

It is said that the opposition to Narmada project began with the creation of the Nav Nirman Samiti in Indore where the question, whether the dam would be in the interests of the people was raised. People's participation and response against the dam began as early as 1978 with the Tribunal Award regarding rehabilitation policy. In 1986, Medha Patkar and a few other activists established the Narmada Dharangrasta Samiti at Dhulia in Maharashtra. Many other non-governmental organizations have roused awareness among people. Narmada Bachao Andolan (NBA) is spearheading anti-dam movement. Some of the political leaders like Shyam Charan Shukla, Om Prakash Raval and Kashinath Trivedi supported the movement. It is receiving support from International Organizations also.

NBA is striving to promote awareness among people through seminars, conferences, plays, pamphlets and campaigning. It is acting as a pressure group through the

support of international environmental organizations and lobbyists. It organized groups of villagers who have formed Samparpit Dals or suicide squads in Aug. 1991. They opposed the arrival of World Bank's representative in India. Mr. Mikhael Baum who was trying to survey the affected villages with a district official. It achieved major success when Morse committee castigated World Bank, policy towards Narmada. Morse stated, "we think the SSPs are flawed,. that resettlement and rehabilitation of all those displaced by the projects is not possible under the prevailing circumstances and that the environmental impacts of the projects have not been properly considered or adequately addressed."[35]

Environmentalists are carrying non-violent struggle. They are critical of political parties. For instance, Baba Amte criticized that 'no political party is able to stand on the issue for the fear of hurting their vote banks'. Baba Ante vehemently declared, "while there is breath in my nostrils, I will not allow this dam to come up."[36] Medha Patkar complaints that 'the Government has no National Rehabilitation and Resettlement policy.' She asserted the right to know in no uncertain words when she said, "when the

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35. The Hindu, 6 April 1993.

36. Rusi Engineer, n.29, p.155.

tribals are being asked by the Government to sacrifice their very means of living that gives them the right to know how the land will be used whether that will be in the interests of the society at large."[37] Other noted environmentalists like Sunderlal Bahuguna, and others are participating in no unequal terms. Scientists and economists are also coming up against the dam. Recently, Medha Patkar demanded the review of the project and the right to know about all the aspects of the project.

Thus, there exist different view points of Government, people, and environmentalists. Many people are coming up with alternatives to this controversy such as reducing the dam height, constructing medium projects, using of traditional and ecological storage methods of water, abandonment of the project etc. It is true that we need development and we have to use our water resources especially, when the bulk of the annual flows in most river systems occur in the four to five monsoon months. It is estimated that, "United States of America has constructed storages totaling four times the storages so far provided in India although the water available for development is the same as our country."[38] We should search for alternatives

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37. The Hindu, 1 September, 1991.

38. The Times of India, 31 July 1985.

that are viable. In this case, China, which has nearly 88,000 small hydropower stations meeting one-third of the rural electricity needs should be our example.

Political interests should not determine development policies. For instance, many politicians have come to power in Gujarat by assuring water to the drought-prone areas. They are exploiting this issue for their benefits. This project itself got clearance from the DOE&F in 1987 when the central government was facing political troubles. So far, the government has failed in rehabilitation policies and cannot achieve in future because of the scarcity of land. The government should consider all the relevant issues before the construction of the dam starts.

The Government, in view of the anti-dam movement that is gaining strength, should formulate national policy regarding resettlement and rehabilitation, of people affected. It should formulate a national policy about the use of our natural resources. People are asking that when the Government stopped the work on the Silent Valley Project on the environmental grounds, why can't the government stop the work on the Narmada Project. Further, it should take appropriate steps so that the work on any project could

start only when it goes through all the procedures laid down for the purpose. It is also important that environmentalists should not denounce every development project on the basis that it harms the environment. They should be radical and practical enough to realise the present situation in India and its needs. The cooperation between the people and the government is crucial for the success of any project.

CONCLUSION

"Wolrd can change, People can build a future that is more propserous, more just and more secure"

Brundtland
"Our Common Future"Schumacher,

The phenomenon of environmental degradation is not unique to the twentieth century in real terms. Man has been involved in the exploitation of the nature since ancient times. With rapid advances in science and technology and industrialization, environmental exploitation also followed suit. What is unique in the present century is the unparalleled environmental degradation and the consequential fall out of the quality of life. Rudolf C. Heredia thus rightly said that, "never before has human society had such an unprecedented and so disastrous an effect on its environment as ours."[1]

India experienced severe environmental degradation especially in the decade of 1980s. The ecological crisis itself caused diverse reactions and responses from various strands of society such as people, governmental institutions, scientific community and voluntary organisations. Ecological awareness poses many questions

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1. Rudolf C. Heredia, "Towards an ecological consciousness; Religious, ethical and spiritual perspectives", New Frontiers in Education (New Delhi), vol.xxi, no.3, July-September 1991, pp.292-328.

related to governments' role, society's relationship to its sustaining environment, development strategy, people's right to information and what is to be inflicted towards solving environmental problems in the days to come.

During the post-independence period, India was preoccupied with problems such as poverty, unemployment, hunger and low standards of living. Our planners thought that heavy industrialization, on the model of western countries only, would solve all these problems. Rapid growth of population and demands for development subsequently put enormous pressures on our natural resources thereby causing environmental degradation. Despite our plans stressed on to achieve 'growth with justice and growth with stability' the fruits of benefits accrued to only a small section. The poor have become poorer and the rich have become richer.

People are posing questions over their conditions. They are questioning the values and relevances of our development strategies. (The view that 'development at all costs' is in shambles). The side-effects of developmental plans led to a debate of development vis-a-vis environment. Even the Planning Commission admitted that development

policies have caused environmental degradation. Development policies which were adopted unmindful of environmental affects, have proved that these policies are faulty and futile.

These conditions led to an awareness in both government and the people. The government has taken many steps to solving environmental problems. Its eighth five year plan gave emphasis on sustainable development which has to become a main plank of government policies. Intellectual circles are arguing that the government should evolve 'Indian model of development' rather than following western mode of development blindly. Thus, there existed a growing recognition that development and environment are not necessarily contradictory to each other but are complemental and reciprocal.

There is a growing recognition that the government has a paramount role in combating environmental degradation. The extent, dimension and magnitude of environmental crisis is such that it is only the government with its manpower finance and co-ordination of its various organisations would solve the crisis. International organisations and political leaders are also stressing on this fact. For example, Untied Nations Conference at Stockholm in 1972 emphasised the role of politics and recently Mr. Mikhail Gorbachev, former Soviet leader called for environmental issues to

shift up to top priority for political leaders worldwide.[2] He even regards the preservation of environment today as the priority for all politicians.

Prior to 1972 conference, the attention of government, public and others mainly focused on conserving wildlife without much concern for environment. It is said that most of the people who raised these issues came from the elite class-shikaries, princes and princelings of yore.[3] The chipko movement in 1970s focussed the governments attention over issues of forest policies, exploitation of natural resources and people's conditions of the people. The decade 1980s witnessed the creation of Department of Environment and Forests, evolution of environmental machinery, national policies and laws, governments financial help to non-governmental organisations and environmental education and research.

The late Prime Ministers, Indira Gandhi and Rajiv Gandhi showed concern towards environmental protection. Other political leaders like Mr. Digvijai sinh, Mrs. Maneka Gandhi and recently Mr. Kamalnath have considered environment as one of the most important issue. Mrs. Maneka

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2. The Statesman (New Delhi), 25 May, 1993.

3. The Times of India (New Delhi), 6 November 1986.

Gandhi launched Delhi Vikas Manch - a political party with environment as its main concern. Recently, a Green Party of India has also emerged. Though these two political parties are conspicuous by their absence, but it reveals that green parties would soon emerge on the political heartland of India.

In spite of all these developments and the attention of the government, the decade 1980s could not escape from ecological crisis. Lack of will, flaws in implementation, failure to perceive the dimension of problems, close connections between the government and corporate circles and absence of holistic management of natural resources are responsible for the ecological crisis.

The adverse environmental degradation has led to peoples' reactions towards it. The worst-affected due to this problem are tribals, marginal farmers and mostly the disadvantaged section of the population. Their access to natural resources are either restricted or prohibited. They lost their sources of avenue on the wake of various development projects. Initially, people were ready to bear the cost of development policies in the hope of improvement of their standards of life. But when their hopes were belied, they are no longer ready to suffer. In this process, there occurred people's movements against deforestation, commercial fishing, mining sites;

establishment of refineries and nuclear power plants, salinity and waterlogging and displacement of people due to the construction of dams. India can also boast of having a large number of voluntary organisations which are leading people in these ecological movements. The main feature of ecological movements is their local base. Grass-root ecological movements mainly focus attention towards local problems and engross themselves in the conservation of resources. Despite many weaknesses, there is a possibility of expansion and scope of these movements in the years to come.

The debate over large dams versus small dams goes back to 1950s. Indian planners paid attention over the construction of large dams. The worlds six highest dams are located in India. The side-effects of large dams like displacement of lakhs of people mostly poor, salinity, water logging, sanitation, floods, prone-ness to earthquakes, loss to wild life and architectural monuments and forests have received widespread attention in recent decades. The debate over Narmada dam is a culminating point in this respect. While the government has put forward its development view point and announced its determination to go ahead with this project; at the same time it talks loud about its sincerity to protect the environment. Anti-Narmada activists are posing questions over human values, preservation of culture and environment, the role of bureaucracies in formulating

plans and policies and the right to information of facts and figures pertaining to a problem. However, the work on Narmada, despite the stoppage of funds by the World Bank and Japan is continuing and the government is holding talks with the agitators at present.

Other area, where ecological degradation is threatening the very survival of the region is the Himalayas. Man's attempt to exploit natural resources carried him even to the ecologically sensitive areas. Illegal felling of forests, unscientific management of resources, mining, tourism and other recreation facilities and population pressure and government's failure are the main causes responsible for environmental degradation. These conditions in turn led to people's awareness and movements to protect this region.

It is perceivable that India has reached a stage where the absorptive and assimilative capacity of our ecological system has been over used and misused. Awareness in various circles lead to many attempts to solve these issues. The only way is to strike at the root of the problem. Holistic approach towards natural resources, environmental education, coordination of NGOS and government and people's participation are invaluable.

In fact, India has ancient tradition of preserving and conserving natural resources which also preached against unmindful exploitation of nature. The one way is to recourse into old-wise conservation methods. For example; once we used mud cups for drinking or plantain leaves for eating which are biodegradable, western influences led us to become slaves to the use of plastic and polythene culture which threatens environments. In Medieval period, Rajasthanies preserved water by following natural techniques. But today they are facing acute water shortage because of the failure to recultivate the methods they used. There is no harm in following age-old techniques which are nature friendly and less costly.

The need of the hour is to develop certain sets of conditions such as (1) every citizen should comprehend the state of environment and its sensitivity (2) assessment of environmental movement and persuasion of citizens who inflict damages to environment. (3) Cohesiveness of environmental policy (4) We should follow the long-term orientation in our civilization as a whole, in the direction of enduring harmony with its natural environment.

The government should not neglect to think of major issues like pollution of rivers, deforestation, soil erosion, floods and droughts and growing desertification even trivial aspects like hygiene, sanitation, drainage and

drinking water supply. It should do everything in its power for the betterment of the environment. It is true that some people consider that if the government's does not take action, eco-disaster would soon follow. The ultimate solution lies in the government ability to solve ecological crisis.

The need of the hour is to respond to the call of nature thereby lending it more vivacity and a greater longevity to the humankind and this planet. We should add a dynamic component to our way of thinking defying what Einstein once remarked, "everything changes, except the human way of thinking." For maintaining ecological balance, the revolution should start from home - the basic unit of the society.

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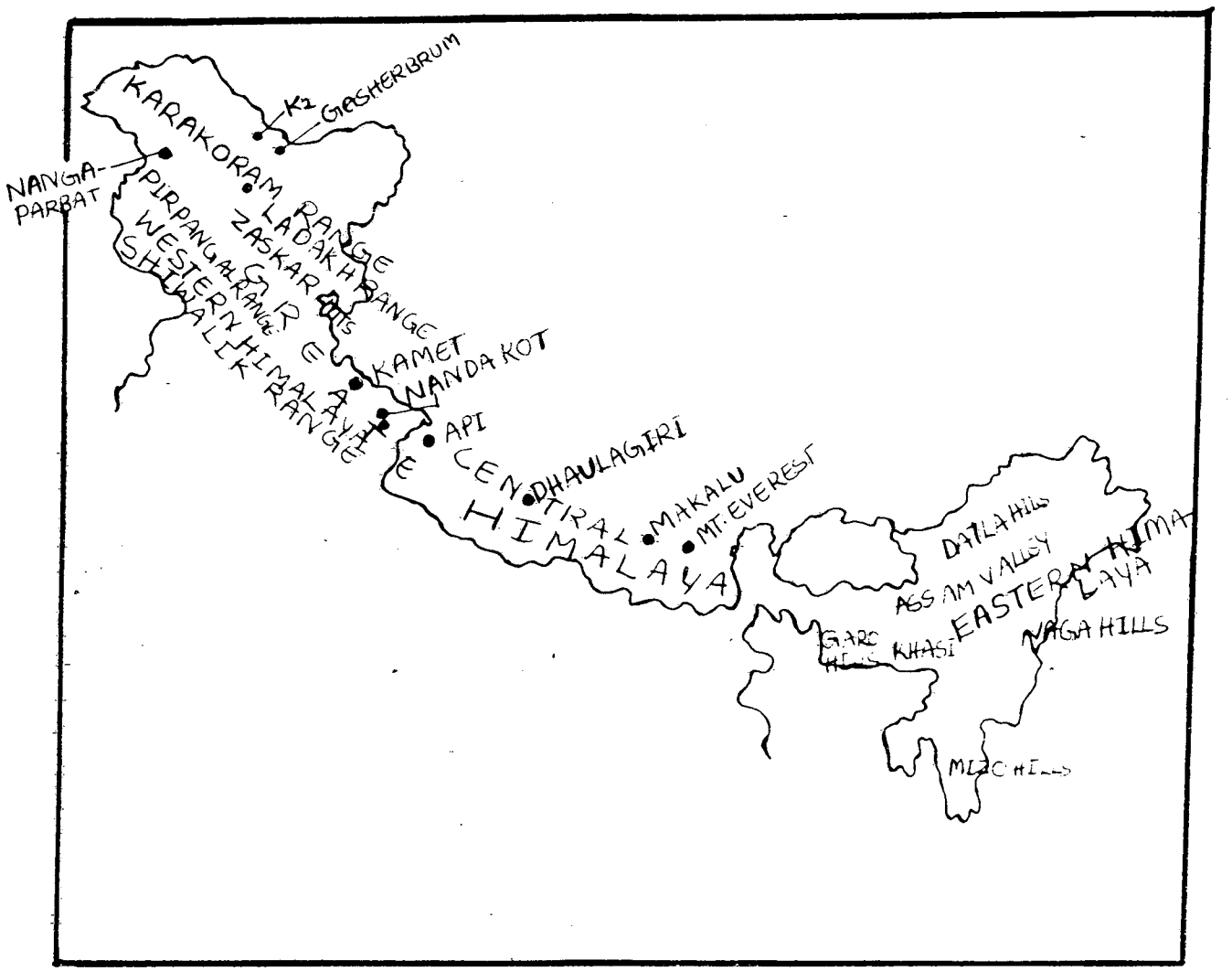
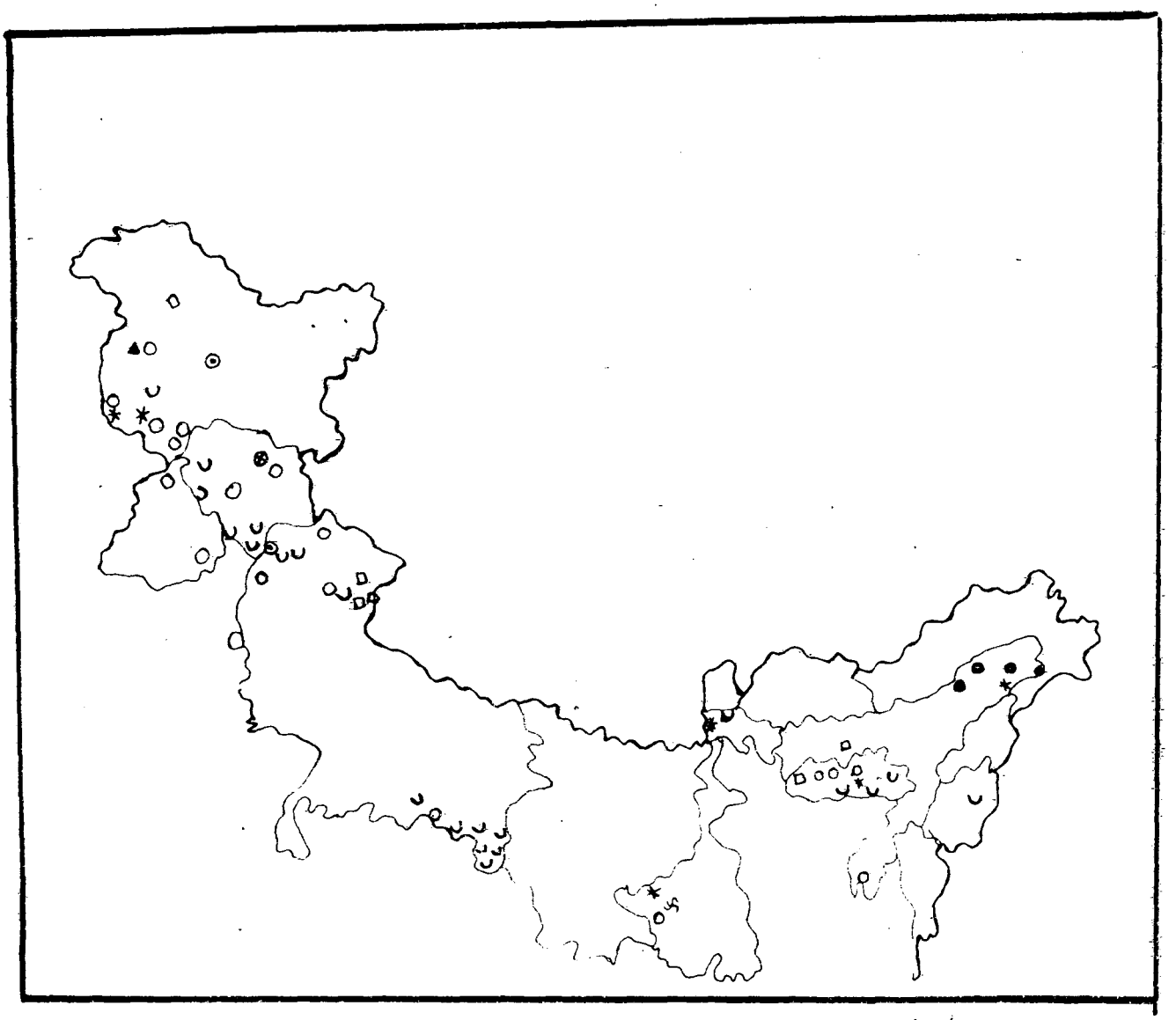
MAPS

MAP-I



PHYSICAL DIVISION OF THE HIMALAYA

MAP-II



MINERAL DEPOSITS IN HIMALAYAN AREAS

⊙ CHROMITE
○ BAUXITE
▲ LIGNITE
* COAL
⊗ ANTIMONY
□ CALCITE
● OIL
∪ LIMESTONE
KYANITE

MAP-III

MAJOR DAMS IN THE NARMADA RIVER VALLEY PROJECT