RESEARCH PAPER

Evolution and Implementation of Environmental Policy in India: Performance of the Congress Led National Governments in India: 1947-1984

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RES/E&F-Planning/2011

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Scripted in 2011. A slightly modifies version of this paper was published as chapter XII of *A Centenary History of the Indian National Congress, VOLUME V: 1964-1984*, Academic Foundation, New Delhi, 2011, with the title "The Environmental Challenge: 1947-1984: Challenges to the Polity".

The sketch above and on the cover is by Pratibha Pande.

Essentially this paper is an attempt to document and analyse the evolution of environmental policy and its implementation by the Congress Party while it was in power at the national level in India. The paper specifically covers the period from 1947 to 1984.

Preamble

Though the paper only deals with the post-independence period, in order to place the approach of the national government towards the environment in its proper perspective, there has to be at least a cursory understanding of traditional environmental practices, and environmental policy and its implementation in the colonial period prior to independence. Towards this end and for the purpose of this paper, Indian environmental history is divided into three phases, pre-colonial (before the advent of the British), Colonial, and post independence.

The Pre-colonial Era

Much before the birth of the Congress party, or of the modern nation-states and the centralized systems of governance that we know today, India had a rich history of environmental consciousness. However, given the scope and purpose of this paper, only a very brief and general account of this period is attempted here.

Pre-colonial India, compared with much else of the world at that time, was marked by a very complex attitude towards nature and a relatively sophisticated system for the management and conservation of nature and natural resources. Nature was, for the most part, feared, worshipped and revered, wilderness areas were variously considered to be the abodes of Gods, of the souls of ancestors, and of evil spirits.

Among the strategies adopted for its conservation were the recognition of sacred sites, where there were restrictions for exploitation, desecration and sometimes even of entry. Certain species were recognized as sacred and treated accordingly, and other species had taboos attached to them.

> *"Stretching into prehistoric times, the concept of the sacred grove in India has its roots in antiquity, even before the era of the Vedas which presents the only recorded remains of the thoughts of the ancient Aryans who migrated into the sub-continent. In their migration from the steppes of Central Asia, through Balkh in Khorassan[i] to the Indian sub-continent, the ancient Vedic people of prehistoric*

times assimilated new environmental values system of the original inhabitants of the Indian sub-continent.[ii] Though many traditional societies value a large number of plants species from the wild for a variety of reasons such as for food or medicine, sacredness attached to species in Indian is perhaps a more recent aspect of post Vedic Hindu rituals. Thus the existing concept of sacred groves at the landscape or ecosystem level of the original pre-Vedic inhabitants of India was interpreted by the migrants of the Vedic age down to the level of particular species.

Buddhism and Jainism, which initially branched out as revivalistic off shoots of Hinduism,[iii] also led to a renewal in practices with conservation value. One branch of this religious revival was the creation of a sect of Jains (the Digambara Jains) implacably set against killing any living organism. Another branch was the concept of the `sacred landscape' represented by the holistic ecological philosophy of Sikkimese Buddhists". [Ramakrishnan 1996]

It is a moot question whether the ecological value of conserving certain sites was recognized by the wise people of that time and the depiction of sacredness followed as the most effective way of conserving these areas, or whether fear and awe of nature was primordial and the consequent strategies just an ecologically fortunate option. Most likely, it was a bit of both!

However, lest the impression be created that all conservation imperatives were based on a fear of the supernatural (with roots in superstition), it is important to note that there were numerous community practices recorded from all over India that clearly showed a concern for the sustainable use of natural resources. There was also public participation in the management of common resources, of a kind that is almost impossible to find today, except in a few isolated tribal areas.

Pre-colonial India was also characterized by an extraordinary public compassion for animals – even those species that often attacked human beings and their crops and livestock. There was also a concern for public and personal hygiene and especially for the integrity of drinking water sources: something that unfortunately became imbedded into the repressive caste system prevalent in India.

The Colonial Era

The British brought in an entirely different approach towards nature. By the time they came to India, much of the natural forests in Britain had already been destroyed and most of their large mammals had become extinct. They saw the natural resources of India as a renewed opportunity to carry on, with a few modifications, the policies and practices of exploiting natural resources that had helped them to become a world power, albeit while depleting their own forests and wildlife.

The British replaced the traditional systems of managing nature and natural resources with an extractive ethos and a centralized management system, with a stress on selective regeneration of commercially valuable timber species, stocking of hunting and fishing compartments, and "scientific" management and classification.

The evolution of the traditional Indian methods of conserving nature and natural resources was thus interrupted by the British and especially by their setting up a forest department in India in 1864[iv], and enacting the Indian Forest Act in 1865[v], soon to be replaced by a more comprehensive act in 1878, and finally the Indian Forest Act of 1927, that survives till today.

The Impact of Technology

Arguably, with the growth of forest based industries new systems of managing the forests had to be developed. Also, with the rapid growth of technology, new and more effective methods of accessing (and destroying) forest resources became available and had to be put to use. The progress from hand held stone tools, to the axe and then to the hand saw, the pit saw, the power saw, right up to bull-dozers and specially designed machinery that could clear hundreds of hectares of forests in a day, had an inevitable impact on the time frame, the quantum and the economics of extracting timber and other natural resources.

Similarly, implements for hunting went through a rapid transformation, especially with the invention of gunpowder and of precision rifles, and finally machine guns and explosives.

As technology grows in a socio-political ethos and not in isolation, the nature of colonialism encouraged the growth of technology designed to destroy nature and

extract natural resources, without the concomitant growth of technology aimed at protecting and regenerating nature. Unfortunately, even after the colonial bond was broken, nature remained external to the politico-economic systems and continued to be treated as a free commodity.

Institutional Structure for the "Management" of Nature

With the setting up of a forest department, the forests also began to be viewed more as a source of raw material, especially timber for the construction of ships and railway tracks, rather than as sacred sites or sustainable sources of raw materials for local communities. An element of "scientific" forestry was introduced, mainly to increase the production of commercially valuable timber species (like the Indian teak) often at the cost of other "less valuable" species. Large tracts of forests were converted into single species plantations, invariably with an adverse impact on other species and on the biodiversity.

The Indian Forest Act of 1878 prescribed a process by which rights of local people over the forests, that were now being appropriated by the government, be recorded and either allowed, settled, or extinguished. Though at least for a while this meant that the people were not denied all access to forest resources, in most parts of the country only land owners were considered to have rights over forests. Besides, even in those forests where people were allowed to retain their rights, only some of the traditionally existing rights were allowed.

Wildlife

As the British settler's population increased in India, there was also increasing demand for *shikar* or animals to hunt, the most prized among them being the tiger, unique to Asia, followed by the lion, the cheetah, and the elephant. The one horned Indian rhinoceros was also hunted, as were "edible" species of deer, antelope, wild boar, pheasants, fowls, and partridges, among others.

Fishing was also a favourite "sport" of the British, and there was increasing demand for well stocked fishing streams, especially with preferred species like *mahasheer*. Even exotics, like the trout, were introduced into the rivers and streams of India as preferred "game fish".

Though, from all accounts, wildlife was plentiful during the early 1800s, by the dawn of the 20th century there was a marked decline in populations of the preferred game species, especially large mammals. Accordingly, from the early 1900s the British started setting up a network of sanctuaries and game reserves, culminating into the passing of the Hailey National Park Act of UP in 1936, by which the Hailey (later renamed Corbett) National Park was created in the then United Provinces. Subsequently, similar laws were passed in the Central Provinces (including the present Madhya Pradesh), Bombay (including the current Maharashtra), and Assam.

The British also seemed to have inspired the princely rulers in India to take to ceremonial hunting in a big way. Many of them took to the British way of hunting, which often involved the mass slaughter of animals, mainly for trophy, with each dignitary trying to outdo all others in shooting or catching the biggest, the longest and of course the most. Many of these princes set up their own hunting preserves, like Bharatpur, Sariska, Bandhavgarh, Madhav (Scindia), most of which survive till today, though mercifully now as national parks and sanctuaries.

A plethora of laws were passed, ostensibly to protect threatened species, but mainly to ensure that they were only accessible to those who had the patronage of the government. Such laws included the Elephant Preservation Act of 1879, the Wild Birds and Wild Animals (Protection) Act 1912, and the Bengal Rhinocerous Act of 1932.

Growth of Population

Along with all this bonhomie among the "sahibs" and the "brown sahibs", there were other conflicts brewing. The growing population and the demand for increased production of food, especially to support the various wars that the British were perpetually engaged in, meant that the area under agriculture also multiplied drastically. This coincided with British policies aimed at creating a market in India for British industrial goods. By suppressing the indigenous artisanal sector (and its associated guilds) the British ensured its collapse all over India, and many of the erstwhile artisans lost their markets and were consequently forced to shift to

agriculture to eke out a living. All this added to the pressure on land, and ultimately on the forests.

The livestock sector was also expanding rapidly. Though accurate national statistics before 1950 are not available, the sense was that the number of livestock, especially cattle, goats and sheep was growing exponentially, with a parallel rise in demand for fodder and grazing areas.

Given the reducing forests, the expanding area under agriculture and the rapidly rising number of livestock, it was not surprising that conflicts between wild animals and the rural population increased, primarily as a result of animal attacks on livestock and people, and because of crop depredation. Interestingly, historical records show that the forest department and the civil administration were very alarmed at this conflict and a host of measures were set in motion to both prevent incidents and pay compensation where such attacks or depredation nevertheless occurred.

On the Eve of Independence

Therefore, by the eve of independence, the British had succeeded in colonizing almost all of the forests of India, bringing these under the control of a forest department, regulated by the Indian Forest Act, to be managed "scientifically" in order to maximize production of commercial species and provide game for hunting. This was done after dismantling most or all of the traditional systems of conservation and management that existed for hundreds of years in much of India, and mainly at the cost of conservation values, especially biodiversity conservation, and to some extent at the cost of the basic needs of the rural people, especially the poor and the landless.

The British colonialism had not only damaged India's political system, which could be repaired after independence, but had also begun to change the relationship of the Indian, especially the rural Indian, with nature and natural resources. Though the gaining of political independence from the British offered an opportunity to restore some of the traditional values, practices and institutions related to conservation, this opportunity was never recognized and soon faded away.

This changing relationship, and the reluctance to challenge it, perhaps lost India some of the unique advantages its history and tradition had provided in the battle to conserve nature and secure a sustainable future while tackling the problems of poverty, starvation and underdevelopment that afflicted the nation on the eve of independence.

INDEPENDENT INDIA

Evolution of Environmental Policy in India: 1947-1984

Government policy is the fundamental statement of government perspective and intent regarding various public issues. From policy follows legislation, schemes and programmes, financial allocations, and even institutional structures. However, if one was to seek to understand government policy from only the formal policy statements that the government issues, then much of the actual policy would go unnoticed. Government makes policy statements in many ways, and unfortunately there is no one place where all the elements and nuances of government policy can be easily found, even for one aspect of governance.

Rather than cluttering this paper with numerous references to policies, circulars, Parliamentary speeches and undertakings, affidavits before courts of law, and various other instruments of government that implicitly or explicitly enunciate government policy, it was thought that perhaps the best compilation of government policy is the Five Year Plan document of the Planning Commission. Though it might not be comprehensive, it almost always contains all the main elements of the policy of the government, with a brief and perhaps rosy description of the implementation of these policies during the period under review. Therefore, what follows is an account of the evolution of environmental policy in India through an analysis of the Five Year Plan documents.

For many years after independence, the only two aspects of what is today thought of as the "environment sector" that got any attention were forests, and wildlife. These two, however, were viewed as a part of the agricultural sector, perhaps because of the predominant preoccupation with "harvesting" that the British had introduced, and therefore did not get the kind of attention they deserved. Though

even at independence there was some understanding of the role forests played in regulating water regimes and preventing soil erosion, little else of their contribution to the health of the earth was recognized.

Despite the fact that the management of other natural resources, especially land and water, should have very much been a central part of the environment agenda, for the first nearly thirty years they were looked at more as an economic resource that needed to be exploited more fully, rather than a natural resource that needed to be conserved and regenerated.

First Five-Year-Plan Period (1951-56):

As already mentioned, when India became independent there was recognition of some of the ecological services that forests played and of their value as a source of raw material for industry. Accordingly, the chapter on forests in the first five year plan document states:

> *"Forests play a vital role in India's economy. They are an important source of fuel and also of raw materials, such as, timber, bamboos, lac, gum, katha, useful for domestic, industrial and agricultural purposes. They also provide materials for defence and communications as well as grazing for cattle. Forests help in the conservation of soil fertility and play an important part in the maintenance of the water regime of the land. ….. Thus forests protect the hilly areas against excessive soil erosion. Similarly, they protect flat lands against desertification and erosion caused by winds." (First Five Year Plan,* Planning Commission, Chapter 21)[vi]

However, despite such sentiments in the opening sections of the chapter on forests, the thrust of the plan was on the exploitation of forest "resources", and the philosophy was clearly enunciated in the first chapter: "*An underdeveloped economy is characterised by the co-existence, in greater or less degree, of unutilised or underutilised manpower on the one hand and <u>of unexploited natural resources</u> on the other."* (Emphsis added – *First Five Year Plan,* Planning Commission, Chapter 21, Planning: Economic And Social Aspects)

The tendency to pay lip service to the ecological functions of forests continued in the second plan, even while the plan focused on schemes and methods for extracting as much

timber and "minor forest produce" as possible, especially for industrial use, and for converting forest land to agriculture, as a part of the "Grow More Food Programme",

A new forest policy was announced in 1952, but apart from setting the target of 33% forest cover for the country, it added little to the existing policy and practice.

Second Five-Year-Plan Period (1956-61):

The second plan also saw a mention of the value of wildlife and (as it became subsequently known) biodiversity. The plan document specifically states that:

> *"The conservation of wild life is an intergral part of forest management, especially in view of the imperative need for protecting India's rich heritage of wild life, which is now finding its last refuge within the limits of the reserved forests of the country. Such notable animals as the lion and the rhinoceros are in danger of extinction. In order to serve the cause of wild life, forestry programmes in the second plan include the establishment of 18 national parks and game sanctuaries, besides a modem zoological park in Delhi.* (*Second Five Year Plan,* Planning Commission, chapter 15).

However, the lack of understanding of what biological diversity really was - the recognition that plants were as much a part of biodiversity (and of wildlife) as animals, that small mammals, insects, reptiles and fish were as important, if not more so, than large mammals, and that the survival of the one was inextricable linked to the other - did not seem to have been understood even then. Earlier in the same chapter, for example, it is lamented that the Indian forests had too many "inferior" and "low value" species:

> *"Reference has already been made to the disadvantages arising from the mixed character of the tropical forests, with the valuable species forming a mere sprinkling in them. This causes serious difficulties in the effective regeneration and management of the mixed forests. In the case of teak, these difficulties could not be overcome in many areas except by resort to clear-felling and artificial regeneration in compact areas. A similar solution will have to be found for the production of wood required for industrial purposes…."*

Third Five-Year-Plan Period (1961-66):

It was only in the third plan that there was a mention of the notion of environmental sustainability, though even then from the perspective of extracting forest resources. The plan document, for the first time, had a chapter on natural resources (chapter 12) that talked mainly about forests but also about the approach to natural resources in general.

"The *productivity of India's forests can be greatly increased. Forests are among the few renewable resources in nature which, if properly managed, could go on yielding at undiminished rate and for an indefinite period. There is shortage of timber and fire-wood, of raw materials for drugs, paper and pulp and of fodder for cattle.*" (Emphasis added- *Third Five Year Plan*, Planning Commission, Chapter 12 – Natural resources).

There was also, for the first time, recognition of the need to conserve both the flora and fauna of the nation. In chapter 22, on "Forests and Soil Conservation", the document states:

> *"Nature conservation is an important aspect of forest development and includes the protection and proper management of indigenous flora and fauna. Where fauna have been greatly depleted due to human interference, animals and birds will be re-introduced.* (Emphasis added- *Third Five Year Plan*, Planning Commission, Chapter 22 – Forests and Soil Conservation)

Fourth Five-Year-Plan Period (1969-74):

In the fourth plan, for the first time, there was recognition of the dependence of the poor on the forests. In a section titled "The Problems of Weaker Sections", as a part of the first chapter of the plan document laying out the approach and policy, there is an assertion that the weaker sections of society must be enabled *"to participate in and benefit from the growth of the economy."* The document goes on to state that *"A similar approach will have to be adopted for the numerous miscellaneous producer classes as of migratory shepherds or those living on the exploitation of forest produce."* (Emphasis added). Perhaps not the most elegant way of putting it, but it was, at the very least, recognition that the forests were critical for the survival of some of the weakest segments of the Indian society.

However, the approach continued to be somewhat paternalistic with an assumption that the rural people needed to be "educated" about the value of nature and its conservation. A telling prescription reads as follows: "*In the ultimate analysis problems such as those of improving the conditions and status of scheduled castes and tribes or conserving forest wealth or vegetation cover cannot be solved unless local communities understand the significance and importance of national objectives and participate actively in the programmes for their attainment.*" (Emphasis added- Fourth Five Year Plan, Planning Commission, Chapter 1: Approach and Policy)

Nevertheless, later in the same document (chapter 8), there is an explicit acknowledgement of the linkage between rural communities and forests. While enunciating the objectives of the forestry sector, the document states that" *In the sector of forestry, there are three main objectives namely, to increase the productivity of forests, to link up forest development with various forest*-based industries and to develop forests as a support to rural economy." (Emphasis added).

The fourth plan was also the first plan to acknowledge the overall concern for the environment, which had already been echoing for many years in other parts of the world, especially in the industrialized nations. This being a dramatic change, at least in the rhetoric of Indian policy towards the environment, the section on the "Quality of Environment", in the chapter on "The Long Term Perspective" (chapter 2), is worth quoting in full.

> *"Most countries face in varying degrees problems of pollution of air and water, erosion of soil, waste of natural resources, derelict lands, loss of wild life, ugly landscape, urban sprawl and city slums—generally a progressive deterioration in the quality of environment. There is growing concern about the matter in India also. A healthy environment is vital for good life. It is an obligation of each generation to maintain the productive capacity of land, air, water and wild life in a manner which leaves its successors some choice in the creation of a healthy environment. The physical environment is a dynamic, complex and inter-connected system in which any action in one part affects others. There is also the inter-dependence of living things and their relationships with land, air, and water. Planning for harmonious development*

recognises this unity of nature and man. Such planning is possible only on the basis of a comprehensive appraisal of environmental issues, particularly economic and ecological. There are instances in which timely specialised advice on environmental aspects could have helped in project design and in averting subsequent adverse effects on the environment, leading to loss of invested resources. It is, therefore, necessary to introduce the environmental aspect into our planning and development. Along with effective conservation and rational use of natural resources, protection and improvement of human environment is vital for national well-being. It is particularly important that long-term basic considerations should prevail over short-term commercial considerations, the social costs and benefits be used as the yardstick rather than private gains and losses. At present there is no point in the structure of Government where the environmental aspects receive attention in an integrated manner. Nor are there sufficient numbers of experts who can analyse environmental problems and examine developmental projects from this angle so as to be able to give balanced advice. These deficiencies have to be overcome before any advance can be made. Meanwhile, it is proposed to make arrangements to provide for environmental expertise in teams constituted for planning major projects so that environmental aspects are not left out or misjudged." (Emphasis added)

It might be pertinent to mention here that the UN Conference on the Human Environment was held during the fourth plan period (1972), in Stockholm. This conference not only focused the attention of the world and its leaders on the growing environmental crisis, but also on the cost that much of humanity, especially the weaker and poorer among them, had already started paying as a result of environmental degradation. It was also at the Stockholm Conference that Mrs. Indira Gandhi, the then Prime Minister of India, made the famous statement that "poverty was the greatest polluter"[vii], thereby once and for all altering the tenor of the national debate on the environment, but also, perhaps unintentionally, providing an alibi for continued environmental neglect in India.

During the fourth plan, various significant initiatives were taken to give effect to the long term perspective described above. The first was the enactment of the

Wildlife (Protection) Act, 1972, and the Water (Prevention and Control of Pollution) Act, 1974. In 1973, the Government of India, with the help of international groups, designed and launched "Project Tiger", to protect critical tiger habitats and all the other faunal and floral species that formed the habitat, and use the tiger as a symbol for widespread conservation of wilderness areas and biodiversity.

In February 1972, a National Committee on Environmental Planning and Coordination (NCEPC) was set up in the Department of Science and Technology. The NCEPC functioned as an apex advisory body in all matters relating to environmental protection and improvement.

Fifth Five-Year-Plan Period (1974-79):

The fifth plan period marked a continuation of the new perspective and awareness that had emerged during the fourth plan period. The National Commission on Agriculture submitted its report in 1976 and, perhaps for the first time, there was a recognition that the forests of India were not doing very well. The finalization of the fifth plan document was delayed and it was only completed towards the end of 1976. Perhaps as a response to the findings and recommendations of the National Commission, the plan document was even more focused on ensuring conservation of nature and natural resources. The document started with an exhortation that: "*Concentration on development should focus more pointed attention on its long-term effects. We must inculcate in our engineers and all our people a deep reverence for Nature. Forests must not be recklessly cut down, nor air and water polluted. Technology should work in resonance with natural forces.*" (*Foreword*: Being the address of the Prime Minster to the National Development Council, 24 September 1976)

In a later chapter it is stated that: "*Taking note of the fact that forestry development has assumed a significant dimension as a source of timber and fuel and for the maintenance of the natural ecological system, special programmes for social forestry and economic plantations have been given high priority. Accordingly, for the remaining two years of the plan, the provision made is almost double the outlays provided for in the first three years of the Plan. Adequate provision has*

also been made for 'project Tiger' and for the development of National Parks and for strengthening the research programme in the forestry sector." (Chapter 5, Plan Outlays and Programmes of Development: Forestry)

The National Commission on Agriculture, in its 1976 report, highlighted the rapid destruction and degradation of forests – something that was some years later verified by remote sensing imagery. It identified the hiring of private contractors for extracting forest resources as one of the main factors contributing to the degradation and recommended the reorganization of the forest departments and the setting up of forest development corporations, to be exclusively in-charge of extracting forest resources.

The National Commission also identified the growing demand for fuelwood and fodder as another important factor behind the degradation of forests and recommended the plantation of fuelwood and fodder plantations in non-forest land, especially in wastelands and degraded common lands, as a part of what it called social forestry.

These two recommendations of the National Commission were accepted by the government and contractors were banned from Indian forests. Each state formed a forest development corporation and initiated social forestry plantations.

Subsequently, the government also passed the Constitutional 42nd Amendment Act of 1976 whereby they introduced articles 48-A and 51-A (g), as part of the Directive Principles of State Policy, and of the Fundamental Duties, respectively. The amendment provided for the following:

- Article 48 A: "The State shall endeavor to protect and improve the environment and to safeguard the forest and wildlife of the country".
- Article 51-A (g): "It shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures".

The Constitutional 42nd Amendment Act of 1976 also inserted, in the Seventh Schedule of the Constitution:

"17A. Forests.

17B. Protection of wild animals and birds",

thereby bringing forests, and wild animals and birds, into the concurrent list on which both the Central Government and the state governments could legislate.

Towards the end of the fifth plan period, the NCEPC in the Department of Science and Technology started doing some environmental assessments of proposed projects, thereby laying the foundation for the environmental impact regime that was soon to follow.

Sixth Five-Year-Plan Period (1980-85):

The Congress Party lost the general elections in 1977, and was out of power till 1980. With the return of Mrs. Indira Gandhi as Prime Minister, in 1980, there was a sudden focus on environment conservation and sustainable development, the likes of which had never before been seen in India, or in the rest of the so called developing world.

A Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection was set up in 1980 (under Mr. N.D Tiwari, the then Deputy Chairman of the Planning Commission). Based on its recommendations, a Department of Environment was created in 1980, which took over the environment related functions of the NCEPC and the Department of Science and Technology.

In the 1980s the government enacted The Forest (Conservation) Act (1980), the Prevention and Control of Air Pollution Act (1981), the Environmental Protection Act (1986), and made many other rules and legislations. A system for conducting environmental appraisal of proposed projects and activities with a potential for adverse impact on the environment was also set up, and finally (in 1985) a full fledged Ministry of Environment and Forests[viii] came into being.

In the Sixth Plan Document there was, for the first time, an attempt to address all the major areas and issues relating to nature and the natural environment. There was also recognition that environmental concern must be an underlying factor in all activities and programmes. The chapter on the environment declared that: "*The environment must not be considered as just another sector of national development. It should form a crucial guiding dimension for Plans and programmes*

in each sector. This becomes clear only if the concern for environmental protection is understood in its proper context." (Chapter 20)

Broadening the approach taken during the Stockholm Conference, the plan document recognized that, "*Environmental problems in India can be classified into two broad categories. A. Those arising from conditions of poverty and under-development. B. Those arising as negative effects of the very process of development.*" (Paragraph 20.2)

In the chapter on environment there were sections on land and water, soil, forests, marine ecosystems, water pollution, air pollution, land pollution, and even noise pollution. There were separate sections, in the chapter on environment, on human habitation, urban environment, rural environment, and on environment impact assessment.

Also for the first time there was an explicit statement of the need to conserve genetic resources, and of the value of wild relatives of domesticated animals and cultivated plants.

As a result, India very quickly became one of the most legislated nations among the "developing countries" and began to compare favourably with many "developed" countries. However, implementation remained a major problem.

Implementation of Environmental Policy in India: 1947-1984

Even though it was somewhat of a late starter and reacted to disasters, rather than proactively anticipating them, few would dispute that by the mid 1980s India had an impressive array of policy and legislation relating to the environment. Therefore, judging only by the "evolution of policy", India was home safe. However, when the implementation of these laws and policies, the institutional capacity built up around them and how seriously they were taken, is examined, then the picture that emerges is depressingly different.

Sectors of the Environment

Environment as a subject or "sector" in government can be divided into various sub-sectors. One way of broad classification is to distinguish the "green" issuesfrom the "brown issues". The green issues include the conservation, sustainable use, and

regeneration of natural resources like forests, grasslands, water and land resources, wetlands, coastal and marine areas, wildlife and, as much of this is now described, biodiversity. The "brown" issues relate mainly to the prevention and control of pollution, including water, air, land, and noise, and the prevention of chemical and other hazards.

The Government of India maintained this distinction for many years. Right up to 1980 the "green" issues were mostly under the Ministry of Agriculture, and the "brown" issues partly under the Ministry of Science and Technology, and partly under the Industries and the Urban Ministries. It was only in 1980 that a Department of Environment was set up and took over some of the "brown" issues, along with wildlife and the relatively new concern for an integrated approach to sustainable development. And it was in 1985 that the Ministry of Environment and Forests was formed and took over both the green and the brown issues, along with the process of environmental impact assessment.

Given the period covered by this paper, and the way policy evolved and was implemented, for the purpose of this section we can divide up the environmental area into four different segments: forests, wildlife, pollution and hazards, and the overarching sustainable development.

Constraints of length inhibit a detailed analysis of the implementation of each of the policies and their many objectives. Also, a detailed analysis of the various factors that supported and inhibited success can at best only be cursorily touched upon here. The best that can be done is to identify one or two of the major objectives in each segment of the environment and then judge implementation of the policies of each segment based on how fully, effectively, and sustainably these objectives were achieved.

SOME ENVIRONMENTAL MILESTONES IN INDIA

1857 The Oriental Gas Company Act (was enacted to prevent or reduce atmospheric pollution in and around Calcutta.)

1864 The British set up a Forest Department

1865 First Indian Forest Act

1871 The Cattle Trespass Act (For preservation of forests)

1878 New Indian Forest Act

1879 The Elephant Preservation Act

1882 The Indian easements Act (guaranteed property rights of riparian owners against "unreasonable" pollution by upstream users.

1893 The Shore Nuisance (Bombay and Kolaba) Act (was enacted to prevent marine water pollution)

1897 The Indian Fisheries Act

1905 The Bengal Smoke Nuisance Act (was enacted to prevent or reduce atmospheric pollution in and around Calcutta)

1912 The Bombay Smoke Nuisance Act (was passed to check smoke nuisance in Bombay area)

1912 The Wild Birds and Wild Animals (Protection) Act

1927 Amended Indian Forest Act

1932 The Bengal Rhinocerous Act

1936 The Hailey National Park Act

1948 The Factories Act (provides that the liquid effluents, gases and fumes should be treated)

1951 The Industries (Development and Regulation) Act

1952 New Forest Policy

1954 The Prevention of Food Adulteration Act

1956 The River Boards Act

1957 The Mines and Minerals (regulation and Development) Act

1968 The Insecticides Act

1972 The Stockholm Conference and Mrs. Gandhi's "poverty is the greatest polluter" remark

1972 The Wildlife (Protection) Act

1972 Setting up of the National Committee on Environmental Planning and Coordination (NCEPC)

1973 The launch of Project Tiger

1974 The Water (Prevention and Control of Pollution) Act

1974 Setting up of the Central and some State Pollution Control Boards

1976 The report of the National Commission on Agriculture

1976 The Constitutional 42nd Amendment Act of 1976 (whereby they introduced articles 48-A and 51-A (g), as part of Directive Principles of State Policy, and of the Fundamental Duties, respectively).

1977 The Water Cess (Prevention and Control of Pollution) Act

1980 Forest Conservation Act

1980 Setting up a Committee for Recommending Legislative Measures and Administrative Machinery for Ensuring Environmental Protection (the Tiwari Committee)

1980 Setting up of the Department of Environment

1980 Rejection of the Silent valley Project

1981 Shelving of the Tehri Project

1981 The Air (Prevention and Control of Pollution) Act

1982 Inclusion of social forestry in the restructured 20 Point Programme

1983 The National Wildlife Action Plan

Forests

Objectives and challenges: As discussed earlier, at the time of independence, policy relating to forests was more developed than policy relating to any other segment of the environment. There was recognition of the many different and critical roles that forests played and the consequent need to conserve and regenerate them. Therefore, the primary objective of the forestry sector could be seen as the conservation and protection of the existing natural forests and the regeneration of the degraded forests to finally ensure that 33% of the land area (60% in hilly areas and 20% in the plains) was under good forest cover.

The challenge was to do this while providing timber and other forest based raw materials for industry, non-timber forest produce (then known as minor forest produce) to local communities, and allowing various development and infrastructure projects and urban centres to come up on forest land. There was also the concurrent pressure to grow more food and convert forest land to agricultural use. This was clearly a tall order!

Fortunately, at independence there already existed a large and professional forest department in most of the states. There were also various laws and policies in existence, and a fair amount of survey and inventory work had already been completed.

History of Implementation: Initially, the forest area of the country seemed to increase. This was because along with independence came the abolition of the princely states and, therefore, the amalgamation of the forests of the erstwhile princely states with the national forests. In addition to this, there was the enactment of a law abolishing *zamindari* and this also brought into the national forest kitty some amount of forests that were a part of the *zamindari* holdings. Consequently, the legal forest area went up in the first few years of independence.

However, these notional gains were short lived. With the resurgence of the "Grow More Food programme" in the early 1950s, a lot of forests were cut down and the land brought under cultivation of agricultural crops.

As the population and economy grew there was increased demand for forest produce and a consequent increase in the felling of timber. Development projects,

especially the construction of river valley projects and of roads, also took their toll on the forests. In fact, the new and rapidly expanding network of roads opened up a lot of inaccessible forest areas, further facilitating their destruction.

Deforestation was particularly acute in the mountain regions of the Himalayas, where populations were sparse and traditionally poor communications and a lack of industrial development had ensured that the forests stood almost untouched. Increasing demand for high value timber (like *deodar*) and the expanding road and transport network soon reversed this trend, and even where the road network was inadequate, timber began to be floated down on all the major mountain streams and rivers, not only depleting the forests but also disrupting the river ecology. Hill slopes started destabilizing and the frequency of landslides, aggravated by the construction of sometimes badly designed roads, went up sharply.

Soil erosion also increased many fold and mountain streams, which had perennially carried sparkling blue water for thousands of years, became muddy seasonal streams, carrying the rich soil of the mountains and depositing it on the river beds in the plains. This started the eternal vicious circle of floods in the monsoons and drought in the dry season.

However, despite all this, there seemed to be no sense of alarm at the national level, especially as most Indian statistics were about "forest land", which was just a legal classification indicating the area that had been declared as forest under the Indian Forest Act or other similar state acts. In actual fact much of this "forest land" had no forest or other vegetation cover. There were no statistics at the national level on how much of this forest land actually had forest cover, was this cover increasing or decreasing, and at what rate.

Recognition of the Crisis: As earlier discussed it was only in 1976, when the report of the National Commission on Agriculture highlighted the alarming state of India's forests, that there was a glimmer of recognition that the current policies and practices were not working and something drastic needed to be done.

The government launched, in 1979, a social forestry programme, with support from the World Bank and various other bi-lateral and multi-lateral donor agencies. However, forests continued to decline and, these social forestry programmes,

apart from being only marginally successful, caused major distortions in the forestry sector.

Meanwhile, remote sensing false-colour imagery had made it possible to assess the actual extent of forest cover in the country (see table below).

ACTUAL FOREST COVER IN INDIA

State/UT	Forest Area (Sq. Km.) 1972-75	Forest Area (Sq. Km.) 1980-82	% Change
Andhra Pradesh	49049	40435	-17.6
Assam	21055	19796	-6.0
Bihar	22687	20139	-11.2
Gujarat	9459	5057	-46.5
Haryana	757	401	-47.0
Himachal Pradesh	15075	9130	-39.4
Jammu & Kashmir	22335	14361	-35.7
Karnataka	29480	25655	-13.0
Kerala	8611	7376	-14.3
Madhya Pradesh	108568	90215	-16.9
Maharashtra	40682	30350	-25.4
Manipur	15090	13572	-10.1
Meghalaya	14390	12458	-13.4
Nagaland	8154	8095	-0.7
Tripura	6330	5138	-18.8
Orissa	48383	39425	-18.5
Punjab & Chandigarh	1120	499	-55.4
Rajasthan	11294	5972	-47.1
Tamil Nadu	16676	13187	-20.9
Uttar Pradesh	25869	21022	-18.7
West Bengal	8347	6483	-22.3
Sikkim	1761	2883	+63.7
Arunachal	51438	58104	+13.0
Delhi	18	10	-44.4
Goa, Daman & Diu	1221	1139	-6.7
Mizoram	13860	11971	-13.6
Total	**551709**	**462873**	**-16.1**

Source: National Remote Sensing Agency, as reproduced in *Evaluation Report on Social Forestry Programme*, Porgramme Evaluation Organisation, Planning Commission, New Delhi, August 1987

These estimates by the National Remote Sensing Agency, made public in 1984, suggested that India was losing 1.3 million hectares of forest cover each year – a truly alarming picture which, if true, would have meant that the 46 million odd hectares of forests that was remaining in India in 1982 would have all disappeared in 30 years or so. Fortunately, this has not happened.

In 1981 the Government of India set up the Forest Survey of India, with the express purpose of monitoring the state of the forests in India. Their first report, produced in 1987, showed that good forest cover had further declined to just 36 million hectares. In the foreword to the 1987 report, the then Union Minister for Environment and Forests wrote:

"According to interpretation of satellite imagery, good forest cover extends over 36 million hectares only, which is about one third of the extent of forest cover envisaged in the National Forest Policy…. There is now a marked thrust in the Government policies to protect what is left, nurse back that has been degraded and bring new area under tree cover, wherever possible. It would not be an exaggeration to say that the country has entered into an area of ecological "renaissance"."

Performance: Therefore, in 1984, the forest cover in India was just a little over 40 million hectares, and declining fast – reaching 36 m ha in 1987. Given that the land area of India is over 340 m ha, 40 m ha was less than 12% of the area- while the policy required a minimum of 33% forest cover.

Further, the assessment done through remote sensing could only capture the density of the canopy cover; it could not reveal the health of the forests. In actual fact, some of this forest, though its canopy was relatively intact, was dead or dying as there was heavy pressure on the undergrowth and regeneration was badly affected. Clearly, the implementation of the forest policy was not a success.

Social Forestry in India during the Sixth Five Year Plan

A shortage of adequate fuelwood for rural communities was perceived during the 1980's, and the consequent destruction of forest areas to meet these shortages was recognized. It was also noted that when fuelwood was in short supply cattle dung, which was far more useful and important as a fertilizer, was used in its stead, leading to lower soil fertility. In response, the government of India developed the Social Forestry Programme, launched during the Sixth Five Year Plan and included in the 20 Point Programme when it was restructured in 1982. In addition to meeting the demand for fuelwood in rural areas, the Social Forestry Programme was also designed to meet fodder and small timber requirements, and fuel the drive towards afforestation. The programme received a great deal of foreign funding, with funds from the World Bank, U.S. Aid, SIDA (Sweden) and CIDA (Canada) being allocated to various states.

The Social Forestry Programme was believed to be the most efficient way to raise plantations of quick growing species on all available private and community wasteland outside forest areas. Designated areas were to be as close to consumption points as possible, so as to minimize the energy needed for transportation purposes. The newly afforested regions were expected to be ecologically beneficial as well. The Fuelwood Study Committee in its 1982 report (*Report of the Fuelwood Study Committee, Planning Commission, Government of India, New Delhi, March 1982)* further emphasized the importance of meeting the requirement for fuelwood among the rural and urban poor, while protecting existing forestland..

The programme was initially launched in 101 select districts in the country, where acute fuelwood shortages had been documented, and was later extended to an additional 56 districts to ensure wider coverage. Nurseries were set up to provide saplings free of cost, and programmes like 'A Tree for Every Child' aimed to encourage farmers and children to plant trees in their farms and in the backyards of their homesteads. In addition to fuelwood and fodder specific species, where tenable, commercial species like Eucalyptus, Poplar and Bamboo were also planted, as were fruit trees.

Though widely initiated, the programme was only somewhat successful. It was found that the government did not sanction enough additional staff for the project, and the brunt of its implementation was borne by already overworked Forest Department staff. Further, the nurseries set up were, in most cases, rather small and yet appeared to meet the requirement for saplings, indicating that the demand was quite small. There were also shortcomings in the drive to motivate people to participate in the programme, with local panchayats particularly uninterested and uninvolved. Additionally, there was a tendency to plant trees on land meant for agricultural use, especially in the case of commercially valuable trees like Eucalyptus.

(Source: *Evaluation Report on Social Forestry Programme*, Planning Commission, 1987)

Wildlife

After independence, several states promulgated wildlife laws modeled after the British India acts, specifically the Bombay Wild Birds and Wild Animals (Protection) Act 1951. However, hunting was still rampant in most parts of the country and the last of the Cheetah was reportedly shot dead in the mid 1950s and has never since been seen in India. Populations of almost all the species began to

decline, partly as a result of hunting but mainly due to the destruction of their habitat.

Though a network of wildlife protected areas existed at the time of independence, and a few more areas were added after independence, in 1960 there were just 65 wildlife protected areas (national parks and sanctuaries) in India, covering less that 0.5% of the land area, and many of these were under great pressure. The bulk of India's wildlife was outside these protected areas and had virtually no protection. It was hunted, legally and illegally, and also became victim to the destruction of forests and other wilderness areas, the expansion of agriculture and human habitation, and to the disruption of its migratory routes by roads and other infrastructure projects.

However, this rampant destruction of wildlife also went unnoticed, as did the extinction of many species of birds, plants and insects. It was only in the late 1960s, with international attention becoming focused on the fast disappearing Indian wildlife, especially the enigmatic tiger that, for the first time since independence, there was an effort to review policy and step up implementation.

Accordingly, in 1972 the Wildlife (Protection) Act was promulgated and, in 1973, Project Tiger was launched. The web site of Project Tiger describes the events leading up to the launching of Project Tiger as follows:

> *"An estimate of the tiger population in India, at the turn of the century, placed the figure at 40,000. Subsequently, the first ever all India tiger census was conducted in 1972 which revealed the existence of only 1827 tigers. Various pressures in the later part of the last century led to the progressive decline of wilderness, resulting in the disturbance of viable tiger habitats. At the IUCN General Assembly meeting in Delhi, in 1969, serious concern was voiced about the threat to several species of wildlife and the shrinkage of wilderness in the country. In 1970, a national ban on tiger hunting was imposed and in 1972 the Wildlife Protection Act came into force. A 'Task Force' was then set up to formulate a project for tiger conservation with an ecological approach."*

Apart from launching Project Tiger and setting up various Tiger Reserves, the government also rapidly increased the number of wildlife protected areas (national parks and sanctuaries) and by 1984 the number had crossed 200, tripling the number from the 65 in 1960.

Though the trend of destruction had not been fully reversed, the rate of depredation had been significantly slowed down and some of the more threatened species, including the Tiger, the Lion, the Elephant, and other such had been given special protection under the law.

Pollution and Hazards

Despite the fact that India was rapidly industrializing, urbanizing, and adding emissions from motor vehicles and thermal power stations to its atmosphere, its regime for the prevention and control of air and water pollution remained very weak.

Water Pollution:Though a national law to prevent and control water pollution was enacted in 1974, and the Central Pollution Control Board set up the same year (along with corresponding state pollution control boards), our rivers and water bodies continued to be polluted, both by industrial effluents and by municipal wastes. In the "green revolution" areas this was supplemented by runoffs of chemical pesticides and fertilizers from agricultural fields.

However, the bulk of the water pollutants were from domestic sources, essentially household waste. The polluted water caused a host of water borne diseases, including diarrhea and dysentery and killed millions of people, mostly children.

Unfortunately, the industrial and agricultural pollutants, though smaller in quantity, were by far the more deadly. Chemicals and heavy metals released by industries persisted in the environment and there was a process of bio-accumulation of heavy metals in the human body that led to a buildup of dangerous levels of mercury and lead in people living in and around industrial and urban areas. Research suggested that many inexplicable and often fatal "major organ failures" were a result of the chemicals and heavy metals accumulated in the body, which killed slowly but surely.

There was widespread contamination of fruits, vegetables and grains by pesticides and chemicals. Fruits, like grapes, were saturated in chemical pesticides.

Shockingly, in order to cater to elite urban tastes, vegetables were being bleached white or dyed green, all using toxic chemicals. Wheat and rice grains were being contaminated by pesticides and residual chemical pesticides in the soil were being picked up even by those vegetables which were not the intended targets.

Random studies of people living in and around the capital, and other "green revolution" areas, showed that concentrations of chemical pesticides accumulated in their fat reserves were many times the maximum prescribed limit.

Air Pollution: In 1981 a national law to prevent and control air pollution was added to the statute books. Though the Central and state pollution boards were given the added responsibility of implementing this law, our cities and industrial areas continued to be polluted, with the air getting worse each year.

Leaded petroleum continued to be used, despite it being phased out in many parts of the world. It was only in 1998 that unleaded petrol was finally introduced in the capital of India, Delhi, but by that time Delhi had already become the fourth most polluted city in the world!

Indian coal, which is the staple for the power industry, has very high ash content – nearly 40%. Though there was a legal requirement that the ash that rose up the chimney of the power plant (called fly ash) must be trapped in the chimney and safely disposed of, most power stations did not follow the law. In Delhi itself, till the 1980's, the Indraprastha Power Station and the Rajghat Power Station, both located in the heart of the city surrounded by millions of people, spewed most of the fly ash they produced into the atmosphere. Badarpur Power Station, located on the outskirts of Delhi was similarly polluting. It was, therefore, no wonder that the suspended particulate matter in Delhi's air was often five to six times the maximum prescribed limit, leading to severe rampant ailments amongst the city's population.

The proliferation of vehicles without any check on emission levels, especially of diesel vehicles, trucks and buses in particular, ensured that the level of respirable suspended particulate matter (rspm), which got imbedded in the respiratory system and was suspected to be carcinogenic, was many times higher than the safe limit.

The situation in other towns and cities, and in industrial areas, was even worse. Air pollution levels in towns like Korba, which was a centre of power generation, could not be measured, as their values crossed the capacity of the measurement instruments!

Hazards: The growth of the chemical industry, and of nuclear power plants, raised the specter of chemical and nuclear hazards in India. Unfortunately, this was never adequately acknowledged at the policy level, and there were hardly any policies or laws relating to hazardous substances and processes in existence, and no effective institutional structure at all. The country paid a heavy price for this in 1984 when a highly toxic gas, MIC, leaked out of the Union Carbide plant in Bhopal.

Sustainable Development

As mentioned earlier, it was only in the fourth five year plan period (1969-74) that for the first time there was talk of sustainable development and the need to integrate environmental planning and economic planning. The fourth plan document specifically stated that:

> *"There is also the inter-dependence of living things and their relationships with land, air, and water. Planning for harmonious development recognises this unity of nature and man. Such planning is possible only on the basis of a comprehensive appraisal of environmental issues, particularly economic and ecological. …… It is, therefore, necessary to introduce the environmental aspect into our planning and development. .....At present there is no point in the structure of Government where the environmental aspects receive attention in an integrated* manner." (Fourth Plan document, quoted earlier)

However, though these pious intentions were expressed as early as 1969, it was only in the next (fifth) plan period that preliminary steps to do an environmental impact assessment began. The first recorded instance seems to be in 1976, when the Planning Commission asked the Department of Science and Technology (there was no department of environment then) to assess the environmental impacts of river valley projects. Subsequently such assessments were done for other projects requiring the clearance of the Public Investment Board of the Government of India.

Even then, the process was formalized only in the late 1980's and, and that too through an administrative order. It was only in 1994 that it became a legal requirement.

The Department of Environment came into being in 1980, but it was only ten years later, in 1990, that the Planning Commission, which had the primary responsibility for integrating environmental concerns into economic and development planning, formed an integrated division for environment and forests.

In the 1980's there were two major decisions of the Government of India that reflected its growing concern for the environment. The first was the scrapping of the proposed Silent Valley Hydro-electric project, in Kerala, as it submerged a very valuable biodiversity area. The second was the shelving of the Tehri Hydro-electric Project, in 1981, as it was judged to be environmentally non-viable and had major safety concerns. Unfortunately, the Tehri Project was subsequently reinstated and is now operational.

Meanwhile, Carter Brandon and his team, from the World Bank, estimated that the cost of environmental degradation for selected environmental parameters was between 2.64% and 6.41% of the GDP (see table below). This was without taking into consideration loss of biodiversity, among others. Clearly a country whose growth rate was under 5% could hardly lose up to 6% in natural resources and still pretend to be growing sustainably.

SUMMARY OF MAJOR ANNUAL ENVIRONMENTAL COSTS IN INDIA

Problem	Impacts on health and/or production	Low estimate (millions US$)	High Estimate (millions US$)
Urban air pollution	Urban health impacts	$517	$2,102
Water pollution (health impacts)	Urban and rural health impacts, esp. diarrheal diseases.	$3,076	$8,344
Water pollution (production impacts)	Higher incremental costs for clean water supply.	not estimated	not estimated
Industrial hazardous waste	Long-term health impacts, esp. cancer.	not estimated	not estimated
Soil degradation	Loss of agricultural output.	$1,516	$2,368
Rangeland degradation	Loss of livestock carrying capacity.	$238	$417
Deforestation	Loss of sustainable timber supply	$183	$244
Coastal and marine resources	Unsustainable harvesting of marine resources.	not estimated	not estimated
Loss of biodiversity	Loss of use, option, and existence values.	not estimated	not estimated
Tourism	Decline in tourism revenues.	$142	$283
Total Costs of Environmental Degradation		$5,672	$13,758
Total cost, % of GDP		2.64%	6.41%
Average Cost - US$		$9,715	
% of GDP		4.53%	

SOME ENVIRONMENTAL IMPACTS OF ECONOMIC ACTIVITIES

Essentially the understandable push for growth and modernization of **agriculture** had a series of impacts on the environment. Some of the main ones included:

- Expansion of land under cultivation, especially as a part of the "grow more food" programme, the resettlement of refugees, and the later green revolution. This resulted in the cutting down of large tracts of forests to bring the land under agriculture.
- This also resulted in the reduction of numbers of many threatened species of wildlife and an increase in the conflicts between wild animals and people.
- The introduction of chemical fertilizers and pesticides, especially as a part of the green revolution, which resulted in extensive water and soil pollution and the contamination of foodstuff and milk, thereby affecting human wellbeing and the health of plants and animals.
- The introduction of hybrid varieties of crops and livestock, which also led to the extinction of traditional crop varieties and domesticated species of livestock, and the traditional practices associated with them.
- The expansion of the irrigation network, especially the construction of large irrigation projects that submerged large areas of forests, destroyed natural habitats and the species found in them, and often waterlogged parts of the command areas. They also displaced a large number of people.
- In many parts of the country expanding agriculture also meant the over exploitation of ground water resources.
- The rapid growth of livestock for milk production, goats and sheep for meat and for other purposes, put unsustainable pressure on the forests and the grasslands.
- The growth in fisheries resulted in the over exploitation of the commercial species, both in inland and marine areas. This also sometimes resulted in the introduction of exotics or the manipulation of populations of certain species, resulting in loss of biodiversity.
- The shortage of fuel wood resulted in the further degradation of forests, and in the diversion of biomass like cow dung and green manure from the soil to the rural kitchens, thereby impoverishing the soils.

Similarly, the inevitable growth of **industry** also had serious environmental consequences, some of which were:

- Exploitation of forests for wood based raw material for the paper, match, rayon and veneer industry, and for timber for construction and for development of infrastructure, especially railways.
- Conversion of green areas, especially in and around towns and cities, into industrial belts, and the resultant loss of green cover.
- Air and water pollution, and the dumping of toxic and hazardous wastes, and the resultant impact on human health and on the environment.
- Over exploitation of ground and surface water sources and the consequent degradation of the ecosystem.

SOME ENVIRONMENTAL IMPACTS OF ECONOMIC ACTIVITIES contd..

To fuel the growth of industry and to service the growing urban population, there was the need to supplement **energy** generation. This resulted in:

- Extensive mining for coal, with the attendant environmental problems, especially the impact of the dumping of overburden on land and rural habitations, the poor working and living conditions of miners, and the depletion of ground water.
- The diversion of water, especially in the rural areas, from agriculture and domestic use to meet the requirements of power plants.
- Thermal pollution of rivers and coastal areas by release of heated water.
- Pollution of the air, especially by fly ash and sulphur dioxide, and by coal dust.
- Contamination of land and of ground water because of the dumping of fly ash.

The growth of towns and cities, as part of the **urbanisation** of India, took its toll, especially in terms of:

- Conversion of forest and other productive land for urban use.
- Use of topsoil (for bricks), stone, sand and other construction material and the resultant environmental destruction in their extraction.
- Water and air pollution.
- Consumption of water and energy.
- Municipal waste

The growth of the **transport** network in India, especially the construction of roads and railway lines, had many impacts including:

- Destruction of forests for accommodating roads and railway tracks.
- Disruption of water drainage due to roads and railway tracks.
- Construction material extraction, especially wood for rail sleepers.
- Blasting in mountain regions, destabilizing the hillsides.
- Air pollution by steam, diesel and petrol engines.
- Destruction of forests due to easy access through newly constructed roads.

DISCUSSION

In 1984, would the Indian Government's effort at conserving and regenerating the natural environment been considered a success or a failure? There are no absolute standards to judge against. We can either compare India's performance with those of other countries, or perhaps measure achievements against expectations **and potential**.

Global Comparison

If we compare India to Western Europe or North America then, of course, India comes up short. By the 1980s, though Western Europe had lost most of its natural forests it had managed to regenerate secondary forests in vast areas and had stabilized the area that was under forest cover. Many fauna and flora species had been lost in the early phases of industrialization and urbanization, but what remained was well protected. Water and air pollution was, by and large, within prescribed limits. Though new issues relating to climate change and depletion of the ozone layer had started emerging, in all the conventional parameters they were well ahead of India.

North America, mainly the USA and Canada had lower population densities than Europe and had managed to preserve much of their wilderness areas intact. They had also managed to keep pollution in check, though perhaps not as effectively as Western Europe had done. They were also yet to appropriately deal with new and emerging issues, including threats from genetically modified organisms, but they had otherwise stabilized their environment and their use of natural resources.

However, is a comparison between India and these countries fair? These were colonial and neo-colonial nations who had options of resource management that were not available to India. The Western European nations had exploited the natural resources of their many colonies in Asia, Africa, and South America to build up their infrastructure and their economies. They, along with their North American counterparts, had the buying power to continue to use, even after the dismantling of the political colonies, the resources of the erstwhile colonies while conserving their own.

Therefore, the timber for the houses and furniture in these countries came from Asia and Africa, and the beef for their hamburgers was grazed mainly in South America. The minerals for their consumption were mined in other parts of the world, and their polluting and hazardous industries operated in lands where human life was cheap, and regulations and standards less stringent. For many years the need to attract foreign investment, especially to provide employment, and the need to export whatever possible in order to earn foreign exchange, perpetuated a systematic degradation of the environment in countries of the South, thereby allowing the countries of the North to protect and regenerate their own natural environment.

The wealth that the erstwhile colonialists had accumulated as a result of exploiting the natural resources of their former colonies had allowed them to achieve a level of economic well being that immunised them from the adverse environmental impacts of poverty. They no longer had large proportions of their population foraging in their forests for fuelwood, fodder and raw materials. They did not have impoverished people being forced to commit ecological suicide by over cultivating their lands, over exploiting the water resources, or congregating in slums and shanties, in order to survive another day. There were enough surpluses in their system to allow a comfortable lifestyle for themselves without degrading their own environment, especially as they had the money power to transfer their environmental costs to others.

India, on the other hand, was an impoverished nation on the eve of independence, where food was scarce and poverty was rampant. Indian agriculture and industry were both in need of rapid growth and development. Agricultural development was critical to move towards self sufficiency in food, which was essential for true political freedom. There was also the constant fear of famines and the resultant human misery and civil unrest. Industrial development was critical if India was to become self sufficient in industrial goods and also in order to provide employment to a large and growing population. Would it, then, be fair to compare ourselves to those who had used, and continued to use, the natural and other resources of the rest of the world to set themselves up in a position where they could afford to conserve their own, without any grave risks to their economic or social well being?

Indian Expectation and Potential

What should have been the expectation of the Indian people from the government, and how best could the potential in India have been actualized to conserve nature while establishing a firm path towards sustainable development?

The Historical Perspective

At Independence, the Congress party chose to unquestioningly follow the objectives and structure of the British system of resource management. It can be argued, with some merit, that the Indian leaders, and the world as a whole, were too distracted by what seemed then to be the predominant and enduring problems of humanity: poverty and starvation, disease, colonialism, and war– to even be aware that there was another looming issue, that of conserving the natural environment. They were most certainly unaware that it was inextricably linked to the problems of poverty and starvation, of disease, and of war if not to the threats of political sublimation.

Perhaps the adoption of the colonial systems of "managing" nature and natural resources was also a result of the belief, among a large majority of the leadership of that time, that India needed to break away from the dark ages that clouded her past and emerge as a modern, scientific and democratic society. The chains of casteism, superstition, feudalism and colonialism needed to be shed, and there was a very strong sense of this transformation even in Nehru's famous "Tryst with Destiny" speech when he said: "The moment comes, it comes but rarely in history, when we step out from the old to the new, when an age ends…".

Unfortunately, as Indians have discovered in the years since independence, there were some bits of "the old" that needed to be understood, resurrected and amalgamated into "the new". This never really happened.

The Contemporary Perspective

In 1984, where this narrative stops, the options on how to deal with the environment were still not fully exercised. The world was still some years away from the collapse of the Soviet Union and the burying of the socialist dream, and India had not yet transformed into a globalized, privatized and liberalized market economy. Therefore, if one looked back from 1984, perhaps one would have said

that though India was a slow learner, it was no different from all the other countries of the region and, indeed of the world, who were trying to catch up with the erstwhile colonizers of the planet, while making sure that they did not in the process sink into political or humanitarian chaos.

One would also say that when India did get going, in the 1980s, whatever its reasons were, it was moving fast and though down a narrow path, it was preserving its options to broaden its approach at a later date. In this, it was ahead of most, perhaps even all, its peers.

1947-1977: The first thirty years after independence could, at best, be described as a "reactive" period as far as the natural environment was concerned. The government seemed to move slowly and nothing much changed till there was a crisis or a wake –up call. So, the forest policy and the practice of forestry remained almost unchanged from independence till 1976 when, partly as a result of the rapidly growing numbers of floods and droughts, and partly as an outcome of the alarm call given by the National Commission on Agriculture, the government set up Forest Development Corporations in most states, and initiated an ambitious social forestry programme. However, as we have seen, neither of these measures had a very profound impact and India kept losing forests and forest land, as witnessed by the remote sensing findings that started becoming publicly available in the early 1980s. This second wake up call resulted in the government enacting the Forest Conservation Act, which took away the power of state governments to convert forest areas to non-forest use, and vested this with the Union Government.

1980-1984: It is generally acknowledged that when Mrs. Gandhi returned as Prime Minister in 1980, after being out of the government for three years, she seemed to have a renewed interest in the environment and many laws and policies were formulated or initiated at that time. On her becoming the Prime Minister, she immediately set up a committee to recommend the institutional measures required to protect the environment (the ND Tiwari Committee), set up the Department of Environment, enacted the Forest Conservation Act, and undertook various other policy and legislative measures.

There has been much speculation on why Mrs. Indira Gandhi's priorities vis a vis the environment suddenly changed – Mrs. Gandhi was always known for her compassion towards animals, but the environmentalists still remembered her remark that "poverty was the greatest polluter. This was a remark that had often been used by the system to ignore environmental concerns.

Perhaps one explanation is that she felt a need to rehabilitate herself internationally after the ignominy of the emergency, and what better way to do it, now that she had restored democracy, than by becoming a champion of a cause that was at that time the western world's favourite – environmental conservation. On the other hand, perhaps her time out of office had given her the opportunity to look around and recognize that the environmental crisis that was overtaking the country required urgent attention.

Despite the new found zeal and urgency, in some instances too much time had been lost and this became painfully obvious when, in December 1984, less than two months after the assassination of Mrs. Gandhi, a disastrous gas leak occurred in the Union Carbide plant in Bhopal. The fact that the country had not been able to anticipate or prevent it was disastrous, but what was worse was its inability to comprehend and contain it. Many lives were needlessly lost because there was no preparation, no awareness, and not even basic information about the nature and impact of the gas – MIC.

Looking Back from 1984

How would one have judged, in 1984, the performance of the Government in fulfilling national expectations regarding the environment? Though there seems to be no easy way to answer this question, perhaps one could ask and answer three specific questions that both reflect the essence of what was the emerging thrust of Indian environmental policy, and capture the constraints and opportunities inherent to India.

The three specific questions are:

1. Had India achieved, or was it on the right track to achieving, a sustainable pattern of use and regeneration of nature and natural resources.

2. Was the Indian pattern of use and regeneration equitable, or did it put a disproportionate and unfair burden on the poor, the marginalized, the disempowered, and promoted regional disparity and a rural urban divide in the access and use of nature and natural resources.
3. Was the Indian approach to nature compassionate to other living creatures and sensitive to the value of maintaining the diversity of living forms.

Sustainability[ix]

However tempting it is to restrict ones evaluation and analysis to the three or four "environmental" sectors, like forests, wildlife, pollution and hazards, and the management of land and water resources, such an evaluation would be misleading. What happens to the 'environment' affects and is affected by many other sectors of the economy and governance. Just as what happens to our forests or our land and water resources and our fauna and flora, affects many other things, most importantly our health and the health of our economy; so do many other sectors impact upon the environment.

Therefore, though the financial allocations made for protection, conservation and regeneration of the environment have a grave impact on it, perhaps even more important are the subsidies we give, or do not give, the land uses we promote, our fertilizer and pesticides policy, our energy policy, our irrigation policy, our agricultural policy, our transport policy, the dams and roads we build, our patterns of urbanization, the location and nature of our mines and, perhaps most important, the determination of who uses whose resources, for what, and why. Concern for the environment cannot be seen in isolation of the lifestyles that a society is propagating, and the political reality that will determine who enjoys that lifestyle and who pays for it.

Though much that had happened before was clearly unsustainable, in 1984 it seemed as if finally, after much indifference and blundering, the country was beginning to take stock of the natural environment and start turning things around. A department of environment had been set up, and would soon become a part of a full-fledged ministry, most major aspects of the environment now had legal protection and there were the beginnings of an effective regulatory regime. The government was talking about sustainability and though India had lost large amount

of forests and many species, and its water and air was polluted, it all still seemed retrievable.

The environmental movement in the country was growing and the Centre for Science and Environment had just brought out their influential "State of the Environment Report", highlighting national failures in conservation but also showcasing the pockets of hope where individual or group action was conserving and regenerating nature. This and subsequent reports were extensively covered by the media and Rajiv Gandhi, when he became Prime Minister, invited the then Director of the CSE to address the Union Cabinet on the environmental crisis facing the country.

At local and regional levels, the *Narmada Bachao Andolan*, the Anti Tehri Movement and the *Chipko* Movement were all growing in influence and size, forcing the government to take another look at their development strategies at least in so far as they impacted the environment. A major hydroelectric project, the Silent Valley Project, was shelved because of environmental concerns, becoming perhaps the first major project being shelved for such a reason.

The National Wastelands Development Board, which promised to afforest India by planting five million hectares of forests each year through a people's movement, was optimistically launched soon after, as was the Ganga Action Plan which promised to once and for all clean up the Ganga and return it to its pristine glory. It was a time of hope and anticipation. Never had the natural environment received so much attention or appeared to have had so much support at the highest levels of the government.

Equity

The rapid growth of population, the slow and somewhat skewed economic growth, and the diversion of natural resources for urban and industrial use had put increasing pressure on local communities, especially those primarily dependent on nature and natural resources for their livelihood and survival needs. Areas where industry, power stations and other infrastructure had come up had lost much of their green cover, making access to fuel wood, fodder, and non-timber forest

produce increasingly difficult for the local communities. Pollution levels had also gone up and water resources had come under increasing pressure.

Mining areas were sometimes even worse off, with much of the agricultural land in the region being degraded because of the careless dumping of the overburden. In some such areas ground water became scarce as mining operations often involved the pumping out of ground water that could threaten the safety of the mines. Urban areas also swallowed up forests and fertile land, and became bottomless sinks for energy, water, stone and other building material, and a source of air and water pollution. Large dams not only submerged large tracts of forests and fertile land but invariable displaced thousands of families.

However, on the other hand, areas that did not get industry or infrastructure remained "backward" and "underdeveloped". It was famously, and not inaccurately, demonstrated that if you overlaid a map of India's forest cover over a map of all the economically developed regions, you would find a perfect inverse correlation. Therefore, for the common Indian the option seemed either to be polluted, alienated from nature, and ecologically impoverished, or be marginalized, isolated and economically impoverished.

This was the pattern of development that seemed prevalent in 1984, and there were no signs that this was about to change in the near future. So, even if the environmental destruction wreaked by commercial and development projects was minimized, there was little or no hope that it would be more equitably distributed. And even though there were many benefits generated by these projects, there was little hope that these would go primarily to those who paid the major costs. The battle for ecological justice had still to be fought.

Concern for life forms and their diversity

India had a proud and ancient heritage of compassion to other living creatures. Though this did not stop a section of Indians hunting animals, and others eating meat, the common Indian was loath to kill or otherwise harm most animals and even some plants. This was partly a result of the historically prevalent notion of the sacredness of nature, but also partly an element of the Indian culture. Therefore, to formalize a code that involved compassion towards other living creatures was

not a difficult task and the hunting of most wild animals was effectively banned in the early 1970s. The ban has been successful in most parts of the country, for most species. Poaching commercially valuable species (like the Tiger, the Elephant, or the Rhinocerous) still continues, but mainly for demand from China and other countries rather than because of rampant domestic demand.

However, compassion for animals and plants did not automatically lead to an understanding of the value of biodiversity. It was business as usual till 1970, with wildlife being regularly and extensively hunted, and deprived of its habitat, food and water. This led to a rapid decrease in the population of many species. The realization, in the early 1970s, that the Tiger was on the verge of extinction was the wake up call that the country needed, and this, finally, led to serious efforts at protecting what remained of the wilderness areas and wildlife in India.

By 1984, the government of India was well aware of the threats to India's biodiversity, and of the ecological, social and economic imperatives for protecting biodiversity. Perhaps the main strategy adopted was limited, for it primarily involved the setting up of national parks and sanctuaries (wildlife protected areas) where the habitat and all the species comprising it would be protected from all or almost all use and impact. In addition, certain species were declared as protected species (protected to varying degrees), and stringent penalties prescribed for tose who sought to hunt or collect them, or in any other way harm them.

Unfortunately, there was little or no involvement of the local affected communities in this strategy. Most of the areas identified as potential national parks and sanctuaries either had human populations, very often tribals or other disempowered groups, living within them. In many cases, even where there were no populations living within these protected areas thousands of people living in peripheral areas were dependent on their forest and other resources. The sudden expansion of the wildlife protected area network, as took place in the 1980s, resulted in the social and economic dislocation of a large number of rural families.

Therefore, though strong measures were taken to protect biodiversity and, in 1984, it seemed that India might finally be able to halt and turn around the rapid loss of wildlife species and populations, which had been the trend since

independence, the measures were somewhat restrictive and did not take into consideration the legitimate needs of the local communities. This resulted in growing conflicts around national parks and sanctuaries, between forest officials and the local people, making it increasingly difficult to protect the biodiversity. Unfortunately, this increased protection to our biodiversity resources was planned and implemented with little concern for the local communities living in and around the wilderness areas, and many of them had to pay a heavy social and economic cost that could have been avoided with better planning and some sensitivity.

CONCLUSIONS

Therefore, in 1984 it would have been understandable to believe that, as far as halting the headlong rush towards environmental destruction was concerned, we were for the first time in an era of hope, where the criticality of the issue had been recognized, been understood, and remedial action had started. The same could have been said for biodiversity conservation. The equitable distribution of the costs and benefits still remained a major worry.

Perhaps the leaders of India had missed a historical opportunity, at independence, to reinforce some of the progressive traditional strategies of conservation, especially the community protected sacred sites and species. However, they had weathered the storm and managed to wake up in the nick of time. Perhaps India's leaders were reactive, rather than being proactive, and needed crisis after crisis - the near disappearance of the tiger, the satellite based estimate that India was losing over a million hectares of forests each year, or the rapidly growing cycle of floods and droughts – but at least they reacted before it was too late and reacted decisively. In 1984, there were very few other nations that faced the sorts of challenges that India did and moved even half as far.

However, there would have been another equally credible viewpoint. From the perspective of an environmentalist, the writing was on the wall by the early 1970s. Yet nothing was done till there was a crisis. And even then, perhaps too little too late. Surely the time had come to change the model of development and switch to one that was truly sustainable, both ecologically and socially, being inclusive and equitable.

But from the perspective of a Prime Minister the question could well have been: where is this model? Who has adopted it and shown that it is workable. Would it not be unforgivable adventurism to embark on an untested and vague model of development when failure could mean millions of starvation deaths and the worsening of acute poverty?

In 1984 one could have been forgiven for saying that this was yet an unresolved debate and only time would tell who was right. However, if one was to look back from 2010 – as fortunately one is not required to – one might not have an excuse to defer judgment!

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[i] Dandekar, R.N. 1979. Vedic Mythological Tracts. Select Writings I & II Ajanta Publ., Delhi.

[ii] Vannucci, M.1994. Ecological Readings in the Veda. D.K.Printword, New Delhi.

[iii] Berreman, G.D. 1993. Hindus of the Himalayas. Ethnography and Change. Oxford University Press, New Delhi.

[iv] Though there was a forest department set up in Madras in early 1800s to study the plantation of teak in the Malabar.

[v] Though in 1855, Lord Dalhousie framed regulations for conservation of forest in the entire country, these were not codified into law till 1865.

[vi] Copies of Five Year Plans accessed from http://www.planningcommission.gov.in/plans/planrel/fiveyr/index9.html

[vii] "Are not poverty and need the greatest polluters? The environment cannot be improved in conditions of poverty. Nor can poverty be eradicated without the use of science and technology. For instance, unless we are in a position to provide for the daily necessities of tribal people and those who live in and around the jungles, we cannot keep them from combing the forests for their livelihood, from poaching and despoiling the vegetation. When they feel themselves deprived, how can we urge the preservation of animals?"

[viii] Till 1980, when a separate department of environment was set up, "environment" as a subject was under the Department of Science and Technology. Till 1985, the subject of "forests" was with the Ministry of Agriculture.

[ix] In a fundamental sense, environmental sustainability can be understood to involve extracting from nature only that much that can be regenerated, and dumping into nature only that much (and only such substances) that can be assimilated.