

**NATIONAL CONSERVATION
STRATEGY
AND
POLICY STATEMENT
ON
ENVIRONMENT AND DEVELOPMENT**

**GOVERNMENT OF INDIA
Ministry of Environment & Forest**

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PREFACE

We are in the last decade of an extra-ordinarily eventful twentieth century. The world has seen spectacular political, social, cultural, economic and scientific progress during this century. But this progress has been monopolized by the chosen few at the unbelievably and indescribably large cost of the majority of mankind. The most disconcerting manifestation of this lop sided progress has been our planet's ravaged ecology.

A good environmental sense has been one of the fundamental features of India's ancient philosophy. However, during the last few decades global circumstances have forced our country into a situation where it is becoming increasingly difficult to practice a life style that does not push this planet towards doom. During the last ten years, there has been a gratifying resurgence of this good environmental sense in this country. The most important aspect of this growing environmental consciousness in this country is its permeation at the establishment as also the people's level.

It is imperative that environmental consciousness becomes a pre-occupation with our people as no amount of government intervention can reverse ecological collapse. I see clear signs of that happening in India. Against this backdrop, we now have a system of environmental checks and balances fully in place. There is enough institutional, legislative and political strength to combine with a responsive citizenry to produce a practicable environmental culture. In Constitutional terms too, India has enough guarantees to protect its ecological systems.

Since the inception of this Ministry, we have evolved enough to be able to chart out a life, which is happy without compromising the environment. There is a sizeable number of people who can rein in an indiscriminate establishment. In fact, we are now working towards a unique compatibility between the Development and the Environment.

We have our great past to draw from to create an equally great future. I see this environmentally degraded present only as an aberration for an enlightened civilization.

What you will read in the following pages are some of the specific means through which we propose to attain the goals of an environmentally wise society.

(KAMAL NATH)

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1.0 PREAMBLE

1.1 The survival and well-being of a nation depend on sustainable development. It is a process of social and economic betterment that satisfies the needs and values of all interest groups without foreclosing future options. To this end, we must ensure that the demand on the environment from which we derive our sustenance, does not exceed its carrying capacity for the present as well as future generations.

1.2 In the past, we had a great tradition of environmental conservation which taught us to respect nature and to take cognizance of the fact that all forms of life - human, animal and plant - are closely interlined and that disturbance in one gives rise to an imbalance in other's. Even in modern times, as is evident in our constitutional provisions and environmental legislation and planning objectives, conscious efforts have been made for maintaining environmental security along with developmental advances. The Indian Constitution has laid a new important trail in the Section on Directive Principles of State Policy by assigning the duties for the State and all citizens through article 48 A and article 51 A(g) which state that the "State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife in the country" and "to protect and improve the natural environment including forests, lakes and rivers and wildlife, and to have compassion for the living creatures".

1.3 Nevertheless, over the years, there has been progressive pressure on the environment and the natural resources, the alarming consequences of which are becoming evident in increasing proportions. These consequences detract from the gains of development and worsen the standard of living of the poor who are directly dependent on natural resources. It is in this context that we need to give a new thrust towards conservation and sustainable development.

1.4 The National Conservation Strategy and the Policy Statement on Environment and Development are in response to the need for laying down the guidelines that will help to weave environmental considerations into the fabric of our national life and of our development process. It is an expression of our commitment for reorienting policies and action in unison with the environmental perspective.

2.0 ENVIRONMENTAL PROBLEM: NATURE AND DIMENSIONS

2.1 Environmental problems in India can be classified into two broad categories:

- a. those arising as negative effects of the very process of development; and
- b. those arising from conditions of poverty and under-development.

The first category has to do with the impact of efforts to achieve rapid economic growth and development and continuing pressures of demand generated by those sections of society who are economically more advanced and impose great strains on the supply of natural resources. Poorly planned developmental projects are also often environmentally destructive. The second category has to do with the impact on the health and integrity of our natural resources (land, soil, water, forests, wildlife, etc.) as a result of poverty and the inadequate availability, for a large section of our

population, of the means to fulfill basic human needs (food, fuel, shelter, employment, etc.). Needless to say, the two problems are interrelated.

2.2 Population is an important resource for development, yet it is a major source of environmental degradation when it exceeds the threshold limits of the support systems. Unless the relationship between the multiplying population and life support systems can be stabilized, development programmes, however, innovative, are not likely to yield the desired results. It is possible to expand the 'carrying capacity' through technological advances and spatial distribution. But neither of these can support unlimited population growth. Although technological progress will add to the capabilities for sustaining a large number of population, the need for a vigorous drive for population control can hardly be over emphasized in view of the linkage between poverty, population growth and the environment.

2.3 Even today, over 250 million children, women and men suffer from under-nutrition. The scenario for the coming years is alarming and we are likely to face food crisis unless we are in a position to increase crop and animal productivity on a continuing basis, since the only option open to us for increasing production is productivity improvement. Also, access to food will have to be ensured through opportunities for productive employment.

2.4 A growth in domesticated animal population has been accompanied by a loss of area under grasslands and pastures. Hardly, 3.5 per cent of our geographical area is under grasslands, while our domesticated animal population numbers nearly 500 million. The livelihood security of majority of our people depends on land and water based occupations such as crop and animal husbandry, forestry and fisheries.

2.5 Out of total area of India of about 329 million hectares, 175 million hectares of land require special treatment to restore such land to productive and profitable use. The degradation is caused by water and wind erosion (150 million ha), salinity and alkalinity (8 million ha) and river action and other factors (7 million ha).

2.6 Our forest wealth is dwindling due to over-grazing, over-exploitation both for commercial and house-hold needs, encroachments, unsustainable practices including certain practices of shifting cultivation and developmental activities such as roads, buildings, irrigation and power projects. The recorded forest cover in the country is 75.01 million ha which works out to 19.5% of the total geographical area against the broad national goal of 33% for the plain areas and 66% for hilly regions. Even within this area, only 11 % constitute forests with 40% or more of crown cover. According to the State of Forest Report, 1991, the actual forest cover in the country was 64.07 million hectares during 1987-89. The loss of habitat is leading to the extinction of plant, animal and microbial species. According to the Botanical and Zoological Surveys of India, over 1500 plant and animal species are in the, endangered category. The biological impoverishment of the country is a serious threat to sustainable advances in biological productivity. Gene erosion also erodes the prospects for deriving full economic and ecological benefits from recent advances in molecular biology and genetic engineering.

2.7 Our unique wetlands, rich in aquatic and bird life, providing food and shelter as also the breeding and spawning ground for the marine and fresh water fishes, are facing problems of pollution and over-exploitation. The major rivers of the country are also facing problems of pollution and siltation. Our long coastline is under similar stress. Our coastal areas have been severely damaged due to indiscriminate construction near the water-line. Coastal vegetation including mangroves and sea grasses is getting denuded. Our mountain ecosystems are under threat of serious degradation. Extensive deforestation leading to the erosion of valuable topsoil is threatening the livelihood security of millions of hill people. Equally serious is the downstream effects of the damage done upstream. Indo-gangetic agriculture, often described as a potential bread basket in the world, is being damaged beyond repair as a result of soil degradation. Some areas are facing problems of water-logging and rising water tables because of poorly planned and ill-executed irrigation. In other areas, the water table is receding because of over-exploitation of ground water. Furthermore, the quality of groundwater is being affected due to chemical pollution and in coastal areas, due to the ingress of sea water. The excessive use of fertilizers and pesticides impose threat to human health, to the genetic stocks and reduces the natural soil fertility in the long run. The absence of an integrated land and water use policy for the country is taking a heavy toll on these basic natural assets.

2.8 Coral reefs are the most productive marine ecosystems and provide habitat for diverse flora and fauna. These ecosystems are adversely affected by indiscriminate exploitation of coral for production of lime, recreational use and for ornamental trade. Similarly, the fragile environs of island ecosystems have been subjected to pressures of various forms including migration of people from the mainland.

2.9 Global atmospheric changes resulting in altered temperature and precipitation and rising ocean levels, are no longer within the realm of mere theoretical possibilities. Combination of local subsidence, greenhouse induced sea-level rise and coastal environmental degradation may lead to periodic floods, incursion of salt water, melting of glaciers and river flooding. Local changes of average rainfall will severely affect agriculture and water supply, especially in semi-arid areas.

2.10 Compounding these human-inflicted wounds on natural ecosystems and life-support mechanisms, we are facing serious problems of pollution and unsanitary conditions especially in urban areas. Pollution arising from toxic wastes and non-biodegradable consumer articles is tending to increase.

2.11 Lack of opportunities for gainful employment in villages and the ecological stresses is leading to an ever increasing movement of resource-poor families to towns. Mega cities are emerging and urban slums are expanding. Illiteracy and child labour are persisting. There has been a substantial urban growth in the last four decades. This has resulted in congestion and squatter settlements with millions of people having no access to the basic needs of civic amenities. The green cover in our urban centres has been largely destroyed and once beautiful garden cities have become concrete jungles. The man-made heritage in India has been often gravely and even irrevocably damaged.

2.12 A large number of industries and other development projects have been incorrectly sited, leading, on the one hand, to over-congestion and over-pollution in our urban centres and on the other hand, to diversion of population and economic resources from the rural areas. This has also resulted in the pollution of most of our water bodies which are major constituents of our life support systems. Pollution of water bodies, in turn, has adversely affected the growth of aquatic fauna and flora which is an environmentally undesirable phenomenon for any ecosystem. The problems of women in villages are compounded in this whole scenario of energy, environmental and developmental imbalance. The incidence on malaria is high in many parts of the country. Safe drinking water is still a luxury in many villages. Liver ailments and gastro-intestinal diseases are common due to unclean drinking water.

2.13 It is difficult to clearly delineate the causes and consequences of environmental degradation in terms of simple one-to-one relationships. The causes and effects are often interwoven in complex webs of social, technological and environmental factors. For instance, from a purely scientific and technological standpoint, soil erosion would result from the cultivation of marginal lands. However, from the point of view of a comprehensive environmental impact analysis, it is important to go further back and analyze the circumstances that force people to cultivate marginal lands. Viewed in this light, it becomes clear that a concern for the environment is essentially a desire to see that national development proceeds along rational, sustainable lines. Environmental conservation is, in fact, the very basis of all development.

2.14 The overriding impact of adverse demographic pressures on our resources and ecosystems due to poverty and overpopulation of man and livestock has to be highlighted. Unless there is curb on population growth and even a reduction of such populations and a corresponding improvement in land use policies, the current trend of over-exploitation and ecological degradation is not likely to improve.

2.15 Thus, we are faced with the need for accelerating the pace of development for alleviation of poverty which is, to a great extent, responsible for many of our environmental problems. On the other hand, we have to avoid proceeding along paths with environmental costs so high that these activities cannot be sustained. Development has to be sustainable and all round, whether for the poor or the not so-poor or for the village folk or for the town people. The development models followed so far need to be reviewed.

3.0 ACTIONS TAKEN

In recognition of the felt need for environmental protection, various regulatory and promotional measures have been taken in our country over the past twenty years. These include the following

3.1 Legal

- The Wildlife (Protection) Act, 1972, amended in 1983, 1986 and 1991.
- The Water (Prevention and Control of Pollution) Act, 1974, amended in 1988.
- The Water (Prevention and Control of Pollution) Cess, Act, 1977, amended in 1991.

- The Forest (Conservation) Act, 1980, amended in 1988.
- The Air (Prevention and Control of Pollution) Act, 1981, amended in 1988.
- The Environment (Protection) Act, 1986.
- The Motor Vehicle Act, 1938, amended in 1988.
- The Public Liability Insurance Act, 1991.
- A Notification on Coastal Regulation Zone, 1991.

3.2 Institutions

- Department of Environment in 1980 and the integrated Ministry of Environment & Forests in 1985, Department of Science and Technology, Department of Agriculture and Cooperation, Department of Biotechnology, Department of Ocean Development, Department of Space, Department of Non-Conventional Energy Sources, Energy Management Centre, Council of Scientific and Industrial Research etc. at the Centre, Departments of Environment at the State and Union Territory level.
- Central Pollution Control Board and State Pollution Control Boards.
- Central Forestry Board.
- Indian Council of Forestry Research and Education with specialized institutions for research in and zone, forestry, moist and deciduous forests, wood technology, genetics and tree breeding and deciduous forests.
- Forest Survey of India (FSI) and the Wildlife Institute of India (VAI) in addition to the existing organizations like Botanical Survey of India (BSI) and Zoological Survey of India (ZSI).
- National Land-use and Wasteland Development Council.
- National Wastelands Development Board.
- Indian Board of Wildlife.
- National Museum of Natural History, Centre for Environmental Education, Institute for Himalayan Environment and Development and Centres of Excellence in specialized subject areas are among the various institutions set up.

3.3 Prevention and Control of Pollution

- Water and air quality monitoring stations in selected areas.
- Use-based zoning and classification of major rivers.
- Notification and enforcement of standards for polluting industries through the Central and State Pollution Control Boards.
- Rules for manufacture, storage, transportation and disposal of hazardous substances.
- On-site and off-site emergency plans for preparedness against chemical accidents.

- Fiscal incentives for installation of pollution control devices.
- Ganga Action Plan to prevent pollution of the river and restore its water quality which could be expanded to cover other major river systems subject to availability of resources.
- Identification of critically polluted areas and of highly polluting industries.

3.4 Conservation of Forests and Wildlife

- Adoption of a new Forest Policy (1988) with the principal aim of ensuring ecological balance through conservation of biological diversity, soil and water management, increase of tree cover, meeting the requirements of the rural and tribal population, increase in the productivity, efficient utilization of forest produce, substitution of wood and people's involvement for achieving these objectives.
- Under the Forest (Conservation) Act, 1980 stringent provisions for preventing diversion of forest land for any other purpose.
- Setting up of the National Wastelands Board to guide and oversee the wastelands development programme by adopting a mission approach for enlisting people's participation, harnessing the inputs of science and technology and achieving interdisciplinary coordination in programme planning and implementation.
- Formulation of a National Wildlife Action Plan.
- An exercise for preparation of a National Forestry Action Programme.
- Establishment of National Parks and Sanctuaries covering about 4% of the country's area.
- Eco-development plans for sanctuaries and National Parks.
- Identification of bio-geographical zones in the country for establishing a network of protected areas including seven Biosphere Reserves set up so far.
- Management Plans for identified wetlands, mangrove areas and coral reefs.
- Formulation of a National River Action Plan.

3.5 Land and Soil

- Surveys by the All India Soil, and Land-Use Survey Organization.
- Treatment of catchment in selected river valley projects and integrated watershed management projects in catchment of flood prone rivers.
- Assistance to States to control shifting cultivation.
- Assistance for reclamation and development of ravine areas.

- Drought prone areas programme.
- Desert development programme.

3.6 Environmental Impact Assessment

- Establishment of procedures for environmental impact assessment and clearance with regard to selected types of projects requiring approval of the Government of India.
- Prior clearance of projects requiring diversion of forests for non- forest purpose under the Forest (Conservation) Act 1980
- Formulation of Environmental guidelines for projects in various sectors.

3.7 Other Activities

- Eco-Task Forces of ex-servicemen for ecological restoration through afforestation and soil conservation.
- National Environmental Awareness Campaigns for creating environmental awareness through non-governmental organizations .
- Surveys and research studies.
- Training programmes, workshops and seminars for building up professional competence and for creation of awareness.

4.0 CONSTRAINTS AND AGENDA FOR ACTION

4.1 The modest gains made by the steps taken during the past few years leave no room for complacency when viewed in the context of enormous challenges. We can meet the challenges only by redirecting the thrust of our developmental process so that the basic needs of our people are fulfilled by making judicious and sustainable use of our natural resources. Conservation, which covers a wide range of concerns and activities, is the key element of the policy for sustainable development. Framing a conservation strategy is, therefore, an imperative first step. Development requires the use and modification of natural resources; conservation ensures the sustainability of development for the present and in the future. The conservation strategy is to serve as a management guide for integrating environmental concerns with developmental imperatives.

4.2 The primary purpose of the strategy and the policy statement is to include & reinforce our traditional ethos and to build up a conservation society living in harmony with Nature and making frugal and efficient use of resources guided by the best available scientific knowledge.

4.3 The agenda for action in this regard will include the following

- to ensure sustainable and equitable use of resources for meeting the basic needs of the present and future generations without causing damage to the environment;
- to prevent and control future deterioration in land, water and air which constitute our life-support systems;
- to take steps for restoration of ecologically degraded areas and for environmental improvement in our rural and urban settlements;
- to prevent further damage to and conserve natural and man-made heritage;
- to ensure that development projects are correctly sited so as to minimize their adverse environmental consequences;
- to ensure that the environment and productivity of coastal areas and marine ecosystems are protected;
- to conserve and nurture the biological diversity, genepool and other resources through environmentally sustainable development and management of ecosystems, with special emphasis on our mountain, marine and coastal, desert, wetlands, riverine and island ecosystems; and,
- to protect the scenic landscapes, areas of geomorphological significance, unique and representative biomes and ecosystems and wildlife habitats, heritage sites/structures and areas of cultural heritage importance.

4.4 To address to the above stated agenda, the instruments for action will include the following:

- to carry out environmental impact assessment of all development projects right from the planning stage and integrate it with their cost-benefit considerations. Appropriate costs of environmental safeguards and regeneration would continue to form an integral part of the projects;
- to ensure that all projects above a certain size and in certain ecologically sensitive areas should require compulsory prior environmental clearance;
- to incorporate environmental safeguards and protection measures, in policies, planning, site selection, choice of technology and implementation of development projects like agriculture, water resource development, industry, mineral extraction and processing, energy, forestry, transport and human settlements;
- to encourage research, development and adoption of environmentally compatible technologies; and to promote application of the modern tools of science and technology for conservation, bridging of large gaps in supply and demand as well as control and monitoring of natural resources;

- to elicit and ensure participation of people in programmes for environmental improvement and for integrating the environmental concerns in planning and implementation of development programmes;
- to create environmental consciousness through education and mass awareness programmes;
- to aim at moderation of process of demand unleashed by the developmental process itself by taking measures to recycle waste materials and natural resources, conserve energy, conserve use of natural resources in industrial products by measures like wood substitution and generally try to reach moderation's in life styles consistent with sustainability and human dignity;
- to develop appropriate organizational structures and a pool of professional manpower to serve as the cadre for environmental management service; and,
- to effectively implement the various environmental laws and regulations for environmental protection through creation or strengthening of the requisite enforcement machinery.

5.0 PRIORITIES AND STRATEGIES FOR ACTION

5.1 Population Control

5.1.1 Unabated population growth, as at present, not only adds to the economic burden for all developmental activities, but also reduces the impact of economic growth on our society. Therefore, for the success of our planning, population control becomes the most urgent necessity. A comprehensive programme, with strong political backing and appropriate socio-economic measures, fully utilizing the available scientific know-how, simultaneously making efforts for developing new methodologies, and supported by modern communication technology and managerial and organizational skills, is essential for success in this most difficult area. Population control should be a national mission for the next decade. Despite efforts of several years, population control projects have not met with success. More stern measures such as legislative and better incentives are needed.

5.1.2 Along with the development programmes to improve the living conditions, action must be directed towards stabilization of population including the following measures:

Launching a time bound national campaign for population stabilization with the small family as a socially responsible objective;

- Increased support for female education, female employment, and of social security programmes;
- Easier access to the means of family planning and health care facilities;
- Added incentives in terms of taxation and other benefits for family planning;

- Environmental sanitation, prevention and control of communicable diseases through integrated vector control and health education; and,
- Adoption of decentralized renewable energy devices that enhance quality of life in remote pockets while taking special care of the health needs of women.

5.2 Conservation of Natural Resources

5.2 Land and Water

5.2.1.1 An integrated land and water management approach is extremely important to sustain the food production, animal husbandry and other activities.

5.2.1.2 Amelioration of water-logged and salt affected lands, command area development, protection of good agricultural land against diversion to urban and other uses, prevention of land fragmentation, maintenance of sustained productivity of soil and conservation of lands with forests and vegetal cover are the integral components of sustainable management.,

5.2.1.3 The importance of water as a finite, though a renewable resource, must be clearly recognized. Land and water use are to be considered together, particularly in the context of recurring droughts and floods. Water conservation measures; discipline on use of water; economizing the consumption of water in households, agriculture and industry; and appropriate recycling would be essential.

5.2.1.4 The steps to be taken for sustainable use of land and water should include the following:

- Classification, zoning and apportionment of land for designated uses such as, agriculture, forestry, grassland, green areas, industrial activities, catchment areas and watersheds and human settlements based on assessment of their capabilities and environmental considerations;
- Enactment of laws for appropriate land uses to protect the soil from erosion, pollution and degradation;
- Protection of land near water bodies and prevention of construction there upon;
- Measures to ensure equitable access to and responsibility for sustainable use of land and water resources;
- Micro-level planning to develop appropriate methodology and implementation of action plan by involving the people at the village level in social forestry programmes, land use planning, afforestation etc.;
- Countrywide campaign to minimize soil and run-off losses by carrying out extensive works like contour trenching, contour bounding, terracing,

construction of small storages, catchment treatment and protection of the vegetal cover in the catchments and watersheds. This is to be a specific charge of project authorities in all irrigation, power, road and agricultural projects;

- Restoration and reclamation of degraded areas including weed infested areas, mined areas, grazing lands and salt affected soils;
- Measures for preventing wind erosion by undertaking special programmes of conservation and afforestation in desert areas;
- Development of suitable agro-silvipastoral techniques with special emphasis on hilly areas and in, and semi-arid zones;
- Building up a network for assessment and monitoring of soil and water (surface and ground water) quality throughout, the country which should be on a permanent basis as in the case of meteorological stations;
- Measures for water conservation, recycling and optimal conjunctive use of surface and ground water for specific uses;
- Legislative measures to check over-exploitation of surface and ground water for various uses;
- Conservation of wetlands for ensuring sustainable ecological and economic benefits;
- Encouragement to and improvement in traditional methods of rain water harvesting and storage.
- Stringent measures for prevention and control of pollution due to indiscriminate disposal of solid wastes,, effluents and hazardous substances in land and water courses;
- Control and abatement of pollution of water bodies from municipal and industrial wastes generated from urban habitats by intercepting and diverting such wastes away from water bodies;
- Classification, zoning and regulations for maintaining the quality of the water bodies to protect and enhance their capabilities to support the various designated uses; and,
- Adoption of low cost sanitation technology for prevention and control of pollution in water courses.

5.2.2 Atmosphere

5.2.2.1 For prevention and control of atmospheric pollution including noise pollution, the thrust will be on the following:

- Use of clean fuels and clean technologies, energy efficient devices and air and noise pollution control systems;
- Setting up of source specific and area wise air quality standards and time bound plans to prevent and control pollution;
- Proper location of projects to minimize the adverse impact on people and environment;
- Incentives for environmentally benign substitutes, technologies and energy conservation;
- Raising of green belts with pollution tolerant species;
- Developing coping mechanisms for future climatic changes as a result of increased emission of carbon dioxide and greenhouse gases; and
- Appropriate action to control adverse impact on Indian continent due to ozone depletion and other gaseous effects in the atmosphere at global level.

5.2.3 Biodiversity

5.2.3.1 About 90% of the world food comes from 20 plant species. The plant breeders find that they have to turn more and more to the wild species to introduce into the cultivated forms desired qualities of resistance to pests and diseases and the ability to withstand adverse soil and weather conditions. India's biological diversity is very rich but unfortunately its wealth is being eroded due to various reasons. This diversity needs to be preserved and the immediate task will be to devise and enforce time bound plans for saving the endangered plant and animal species as well as habitats of biological resources. Action for conservation must be directed to:

- Intensification of surveys and inventorisation of biological resources in different parts of the country including the island ecosystems. The survey should include information on distribution pattern of particular species/population/communities and the status of ethnobiologically important groups;
- Conservation of biodiversity through a network of protected areas including Biosphere Reserves, Marine Reserves, National Parks, Sanctuaries, Gene Conservation Centres, Wetlands, Coral Reefs and such other natural habitats of biodiversity. This should include taxonomic and ecological studies on the flora and fauna with adequate emphasis placed on the lower vertebrate, invertebrate and micro-flora which are important in contributing to the healthy maintenance of ecosystems;
- Full and correct rehabilitation of rural poor/tribals displaced due to creation of national parks/biosphere reserves/tiger reserves;

- Conservation of micro-fauna and micro-flora which help in reclamation of wastelands and revival of biological potential of the land;
- Protection and sustainable use of plant and animal genetic resources through appropriate laws and practices;
- Protection of domesticated species/varieties of plants and animals in order to conserve indigenous genetic diversity;
- Maintenance of corridors between national parks, sanctuaries, forests and other protected areas;
- Emulation and support for protecting traditional skills and knowledge for conservation;
- Development of methodologies to multiply, breed and conserve the threatened and endangered species through modern techniques of tissue culture and biotechnology;
- Discouragement of monoculture and plantation of dominating and exotic species, in areas unsuited for them and without sufficient experimentation; and,
- Restriction on introduction of exotic species of animals without adequate investigations.

5.2.4 Biomass

5.2.4.1 For the vast majority of our rural people, the foremost need is for fuel wood, timber, fodder, fibre, etc. The issue of sustainable resource utilization, therefore, has to be specially addressed first from the point of view of the biomass requirements of the rural poor. Action must be directed to:

- Devising ways and means by which local people can conserve and use thereafter the resources of the common lands and degraded forests, so that they have a stake in the continuing productivity of the resources;
- Encouraging private individuals and institutions to regenerate and develop their wastelands;
- Raising of fuel-wood species and provision of alternatives to reduce dependence on fuel-wood;
- Taking measures to increase the production of fodder and grasses to bridge the wide gap between supply and demand;
- Raising of bamboo and species providing small timber for local house-construction and agricultural implements;

- Increasing biomass to meet essential requirement of biomass based industry;
- Promoting direct relationship between forest-based industry and farmers to raise needed raw materials, provided this does not result in diversion of prime agricultural lands and displacement of small and marginal farmers;
- Extensive research and development in forestry for better regeneration and improved productivity;
- Development of technologies for enhancing the productivity and efficiency of use of all biomass resources (both terrestrial and marine);
- Institutional and technological systems to enable rural artisans to sustain biomass based crafts; and,
- Curtailment of the supply of subsidized biomass based resources to industrial consumers.

6.0 DEVELOPMENT POLICIES FROM ENVIRONMENTAL PERSPECTIVES

Implementation of the aims and objectives of conservation and sustainable development will require integration and internalization of environmental considerations in the policies and programmes of development in various sectors.

Curtailment of consumerism and shift towards use of environment friendly products and processes, and low waste generating technologies through conscious efforts and appropriate economic policies including pricing of natural resources as well as fiscal incentives and disincentives will be the guiding factors for ensuring conservation and sustainable development.

For environmental conservation and sustainable development, the steps which need to be taken in some of the key sectors of development activities are outlined in the following sections

6.1 Agriculture and Irrigation

For sustainable management of agriculture and irrigation, the action points should include the following:

6.1.1 Agriculture:

- Development of pesticides and insecticides policy for the country;
- Development of integrated pest management and nutrient supply system;
- Development and promotion of methods of sustainable farming, especially organic and natural farming;

- Efficient use of inputs including agro-chemicals with minimal degradation of environment;
- Phasing out and stoppage of persistent and toxic pesticides and their substitution by environmentally safe and appropriate pesticides;
- Promotion of environmentally compatible cropping practices, bio-fertilisers and biopesticides ;
- Restriction on diversion of prime agricultural land for other purposes;
- Ensuring land for different uses based upon land capability and land productivity;
- Evolving cost effective and efficient methods of water conservation and use;
- Incentives for cultivation of crops with high nutritive value and those with lesser demands on water and energy inputs;
- Encouraging crop rotation patterns;
- Strengthening of local bodies like Zilla, Parishads, Panchayats and Samitis to ensure effective decentralization and optimal resource management; and,
- Anticipatory programmes and contingency plans for disasters such as drought, flood and climate change.

6.1.2 Irrigation

- Priority to small projects to meet the requirements of irrigation without causing significant alteration in the environmental conditions;
- Revival of traditional water management systems and development of alternate irrigation systems such as harvesting and conservation of run-off rain water;
- Measures for increasing the efficiency of water-use, water conservation and recycling;
- Measures for provision of drainage as an integral component of irrigation projects and to prevent water logging and leaching;
- Watershed management through catchment treatment of the drainage areas, protection of vegetal cover and measures to prevent siltation in an integrated manner with the irrigation authorities being fully accountable; catchment treatment would be so designed as to have a direct impact on the life of the reservoir, hydrological regime and life support systems. It would depend on the location specific conditions in each case;

- Adoption of command area development approach for all irrigation projects to ensure optimal utilization;
- Critical assessment of irrigation projects and delivery systems to ensure optimal utilization of water resources along with measures to mitigate environmental and social damage;
- Focus on decentralized network of small irrigation and water projects with minimum environmental disruption which will be of great value to local communities and yet capable of generating surplus for other areas at low cost;
- Design and implementation of irrigation projects which are environmentally sustainable, based on lessons learnt from a critical analysis of all past projects; and,
- Continuous and ongoing evaluation and monitoring of all projects.

6.2 Animal Husbandry

The activities relating to animal husbandry should concentrate on the following:

- Development of an animal husbandry policy for the country;
- Intensification of sterilization programme for containing unsustainable growth in livestock population;
- Improvement in genetic variability of indigenous population;
- Distribution of animals like goats under the Integrated Rural Development Programme strictly consistent with the availability of pasture lands to reduce pressure on the lands;
- Propagation of wildlife and wildlife resources management on sustainable basis;
- Selective breeding of animals used for draught power to conserve fuel;
- Promotion of stall feeding and rotational grazing;
- Restoration and protection of grazing lands;
- Involvement of local people in the policy planning on pasture lands and stall feeding to avoid fodder scarcity; and,
- Incentive for growing fodder crops and establishment of fodder banks.

6.3 Forestry

Concerted efforts should be made for raising the forest cover and for conservation of existing forests which constitute an essential life support system and an important source of food, fibre, fodder, fuel and medicines etc. For attaining the goal of having at least one third of our land area under forest cover, intensified measures on a mission mode are required to be taken along with commensurate mobilization of resources for this purpose. As outlined in the National Forest Policy (1988), the action points should include the following:

- Maintenance of environmental stability through preservation and, where necessary, restoration of the ecological balance that has been adversely disturbed by serious depletion of the forests of the country;
- Conserving the natural heritage of the country by preserving the remaining natural forests with the vast majority of flora and fauna, which represent the biological diversity and genetic resources of the country;
- increasing substantially the forest/tree cover in the country through massive afforestation and social forestry programmes, especially on all denuded, degraded and unproductive lands involving the local people in this endeavour by giving them tangible economic motives and employment opportunities;
- Meeting the rights and concessions for requirements of fuel wood, fodder, minor forest produce and small timber of the rural and tribal population with due cognizance of the carrying capacity of forests;
- Increasing the productivity of forests to meet the essential national needs;
- Encouraging efficient utilization of forest produce;
- Restriction on diversion of forest lands for non-forest uses and compensatory afforestation in case where diversion is unavoidable;
- Afforestation on common lands by the local communities through usufruct-sharing schemes;
- Motivation of farmers/land owners to resort to tree farming in similar manner of crop based farming;
- Substitution of wood by other materials, alternative sources of energy and fuel efficient stoves;
- Permission to forest-based enterprises after a thorough scrutiny regarding the availability of raw materials;
- Supply of forest produce to the industrial consumers only at its true market value and not at concessional prices;

- Involvement of local people and dedicated grass roots nongovernmental organizations, in the afforestation programme and for protection of existing forests; and,
- Creation of land banks for compensatory afforestation.

6.4 Energy Generation and Use

For prevention and control of pollution and environmental hazards in energy generation and use as also for encouraging popularization of environmentally benign energy systems, the following measures should be taken:

- Environmental impact assessment prior to investment decisions and site selection; choice of practicable clean technologies for energy production and processes including waste utilization, treatment and disposal of solid wastes, effluents and emissions;
- Location of energy generation projects based on environmental considerations including pollution, displacement of people and loss of biodiversity;
- Decentralized small projects for meeting the rural energy needs and incentives for use of non-conventional energy sources;
- Incentives and punitive measures (including proper pricing) to prevent abuse and to promote the use of energy efficient devices in the production and distribution systems and for energy conservation in all sectors including households, agriculture, industry, power and transportation;
- Concerted efforts for development and propagation of non-conventional renewable energy generation systems; and,
- Setting up of biogas plants based on cow-dung, human excreta and vegetable wastes.

6.5 Industrial Development

Environmental considerations should be integrated while encouraging industrial growth. The action points in this regard should include a mix of promotional and regulatory steps which are as follows:

- Incentives for environmentally clean technologies, recycling and reuse of wastes and conservation of natural resources;
- Operationalisation of 'polluter pays principle' by introducing effluent tax, resource cess for industry and implementation of standards based on resource consumption and production capacity;

- Fiscal incentives to small-scale industries for pollution control and for reduction of wastes;
- While deciding upon sites, priority to compatible industries so that, to the extent possible, wastes from one could be used as raw material for the other and thus the net pollution load is minimized;
- Location of industries as per environmental guidelines for siting of industry;
- Enforcement of pollution control norms in various types of industrial units depending on their production processes/technologies and pollution potential; particular attention to be paid to highly polluting industries;
- Encouragement for use of environmentally benign automobiles/motor vehicles and reduction of auto-emissions;
- Collective efforts for installation and operation of common effluent treatment facilities in industrial estates and in areas with a cluster of industries;
- Introduction of 'Environmental Audit' and reports thereof to focus on environment related policies, operations and activities in industrial concerns with specific reference to pollution control and waste management;
- Dissemination of information for public awareness on environmental safety aspects and stringent measures to ensure safety of workers and general population against hazardous substances and processes;
- Preparation of on-site emergency plans for hazardous industries and off-site emergency plans for districts in which hazardous units are located;
- Public liability insurance against loss or injury to life or property;
- Setting up of environment cells in industries for implementing environmental management plans and for compliance of the requisites of environmental laws;
- Internalizing the environmental safeguards as integral component of the total project cost;
- Environmental impact assessment from the planning stage and selection of sites for location of industries; and,
- Clearance by Ministry of Environment & Forests of all projects above a certain size and in certain fragile areas.

6.6 Mining and Quarrying

To prevent and to mitigate environmental repercussions in mining and quarrying operations, action must be directed to:

- Mined area rehabilitation and implementation of the environmental management plans concurrently with the on-going mining operations to ensure adequate ecological restoration of the affected areas;
- Rehabilitation of the abandoned mined areas in a phased manner so that scarce land resources can be brought back under productive use;
- Laying down of requisite stipulations for mining leases regarding tenure, size, shape and disposition with reference to geological boundaries and other mining conditions to ensure systematic extraction of minerals along with environmental conservation;
- Emphasis on production of value added finished products from mining so as to reduce indiscriminate extraction;
- Upgradation and beneficiation of minerals at the source, to the extent possible in order to ensure utilization of low-grade mineral resources and to reduce the cost of transportation, processing and utilization;
- Environmentally safe disposal of the by-products of mining;
- Restriction on mining and quarrying activities in sensitive areas such as hill slopes, areas of natural springs and areas rich in biological diversity;
- Discouraging selective mining of high grade ores and recovery of associated lower grade ores during mining; and,
- Environmental impact assessment prior to selection of sites for mining and quarrying activities.

6.7 Tourism

- To ensure sustainable growth of tourism without causing irreversible damage to the natural environment, activities relating to tourism should take care of the following :
- Promotion of tourism based on careful assessment of the carrying capacity and support facilities such as transport, fuel, water and sanitation;
- Development of tourism in harmony with the environmental conditions and without affecting the lifestyles of local people; and,
- Restriction on indiscriminate growth of tourism and strict regulation of the tourist activities in sensitive areas such as hill slopes, islands, coastal stretches, National Parks and Sanctuaries.

6.8 Transportation

- For prevention of pollution and for development of environmentally compatible transportation systems, the following steps should be taken :

- Improvement in mass transport system to reduce increasing consumption of fuel, traffic congestion and pollution;
- Improved transport system based on bio-energy and other nonpolluting energy sources;
- Rail transport and pipeline transport instead of road transport, where ever possible, by appropriate freight pricing so as to reduce congestion, fuel consumption and environmental hazards;,,
- Transportation of hazardous substances through pipelines;
- Improvement in traffic flow through proper maintenance of roads, updated traffic regulation and strict enforcement of prescribed standards;
- Enforcement of smoke emission standards for containing vehicular exhausts, at the manufacturer and user level;
- Phasing out the use of lead in motor spirit; and,
- Regulations for environmental safety in transportation of hazardous substances.

6.9 Human Settlements

- To check unplanned growth of human settlements and to ensure a better quality of life for the rural and urban population, the action points should include the following :
- Creation of gainful employment opportunities and provision for meeting the basic needs through better communications, entertainment, medical and educational facilities in rural areas to check rural-urban migration;
- Decentralization of urbanization through establishment of secondary cities and towns with requisite infra-structural services and employment opportunities by developing human settlement perspective plan at national and state level;
- Disincentives for industrial and job location in existing urban centres which have exceeded their carrying capacity;
- Improvement of infra-structural facilities such as water supply, sewerage, solid waste disposal, energy recovery systems and transportation in an integrated manner;
- Promoting the use of indigenous building materials and appropriate construction technologies by revising building and planning codes supporting small scale production, skill upgradation of artisans and people oriented delivery systems;

- Conservation of heritage sites and buildings, through regulation to ensure that these are not demolished, encroached upon and affected by indiscriminate construction and pollution;
- Stock-taking of buildings, areas, monuments of heritage value in the country;
- Recycling of existing building stock to save green open compounds and save building material;
- Planning of shade giving and fruit bearing and ornamental trees along the road side, in the compounds of schools, hospitals, Government as well as private office buildings, places of worship, places meant for public fairs, assemblies and markets, and the periphery of play grounds and water bodies;
- Botanical gardens representating the local flora;
- Raising of gardens, parks and open spaces in the towns and cities for public use and for promotion of environmental consciousness;
- Laying down a system for the propagation and protection of urban forestry by assigning responsibility amongst the various authorities;
- Deterrent measures to discourage indiscriminate growth of human settlement and polluting industries in vulnerable areas such as hilly regions and coastal stretches;
- Environmental appraisal of projects related to urban development and regional planning, preparation of environmental/eco-development plans for sensitive regions and sub-regions for evolving desirable norms and space standards;
- Prevention of environmental health problems and associated communicable and non-communicable diseases by educating people on personal hygiene, sanitation and use of potable water;
- Creation/ strengthening of health care facilities for all sections of society both in rural and urban areas; and,
- Establishment of monitoring systems and epidemiological data to ensure adequate early warning system for prevention and control of diseases.

7.0 INTERNATIONAL COOPERATION

7.1 A major threat to sustainable development has been visualized, in recent years, from environmental problems of a global nature -ozone layer depletion, global warming and climate change, destruction of biological diversity, trans-boundary air pollution, marine pollution and land-based marine pollution, trans-boundary movement of hazardous 'substances. On a philosophical plain, the scientific proof of such problems provides an opportunity to reconsider the development path ushered in by the industrial revolution, and the blinkered pursuit of lifestyles which place extreme

pressures on the natural resource base. But at a practical level, it means pressures on developing countries to take measures which they can ill-afford.

7.2 It has been India's firm conviction that it is the process of industrialization, and the continued profligacy of industrialized economies that have created the problems which threaten our planet and its life forms. Not only do they use up non-renewable natural resources in disproportionate quantities, but create discharges and emissions which disturb delicate balances in eco-systems and atmospheric equilibrium. It is true, of course, that this has not been done consciously or intentionally (except in matters such as dumping of hazardous wastes, or the use of nuclear and chemical weapons). Nevertheless, the responsibility is clearly established, as also the need for urgent and effective action, by the developed world, to prevent global disaster. This includes not only direct action, but also indirect measures such as creation of an economic order which helps developing countries to exert less pressure on their own natural resources.

7.3 The Indian approach to global environmental problems is generally in keeping with other developing countries and has the following basic elements:

- Our economic development cannot be hampered in the name of the global environment, which we have done nothing to damage and can do little to save. Our resources are required to meet our developmental needs such as education, nutrition, health services, drinking water, housing, sanitation, agriculture, industry, infrastructure, even all of which we find it difficult to provide having been behind in the race for development. Without this development, threats to the environment will in any case grow. In the short run, this developmental effort could even add to the discharges and emissions which cause global problems - but these are miniscule compared to the quantities which industrialized countries have already contributed. In any case, such emissions etc., can easily be compensated for a marginal reduction of the same in the industrialized world;
- For environmental protection and improvement, we will do our best with the resources available in the country. With new and additional funding support and transfer of environmentally sound technologies from the developed countries, we will be in a position to augment our capacity to deal with the environmental problems; and,
- Regulatory international regimes can be useful in some areas such as ozone depletion or even climate change - provided the special situation of developing countries is fully addressed. But in other sectors - such as forestry - such a regime is neither workable nor acceptable. In such sectors, what is required is a reduction of international economic and commercial pressures which generate unsustainable exploitation, and additional financial resources to tackle the damage already done.

7.4 India's traditional lifestyle still followed by a vast majority of its population :- has always emphasized conservation of plant and animal life, waste minimization, recycling, simplicity in food habits and other such environment - friendly attitudes. There is no doubt that with economic development will also come lifestyles which

require more intensive resource use. On the one hand we have to minimize the adverse environmental impacts of development (e.g., through legislation and control, impact assessment and monitoring, education and awareness). On the other, we have to continuously see how far the traditional Indian ethos can be reflected in modern lifestyles. If these efforts are supported by adequate financial resources from the international community, as well as the transfer (and development) of environmentally sound technology, India can contribute significantly to the international action to deal with global environmental problems.

8.0 SUPPORT POLICIES AND SYSTEMS

Implementation of the aims and objectives of environmental policy will need support policies and systems for filling up of the gaps in the existing institutional set up, legislative instruments and enforcement mechanisms, research and development, mobilization of financial resources, creation of public awareness and training of professionals.

8.1 Strengthening of Institutions and Legislation

8.1.1 It will require strengthening of existing institutions at different levels. It will need a close linkage among the compartmentalized sectors which have been historically dealt with by separate organizations. It will call for a change in the institutional mechanism for enlisting public participation. It will necessitate quick decision making on development projects based on assessment of their potential of rendering long term sustainable benefits to the society at large, particularly vulnerable sections. It will also require effective implementation of laws and regulations for environmental protection through strengthening of and closer interaction among the regulatory bodies and administrative machinery.

8.1.2 Existing laws and enforcement mechanisms should be subjected to periodic* review to evaluate their adequacy and efficacy in the light of changed circumstances and experience.

8.2 Natural Resource Accounting

8.2.1 As economic policies form the frame-work for a range of sectoral development, it will be necessary to consider how these policies affect the quality and productivity of environmental resources. This will require a system of resource accounting along with the other exercises of cost benefit analyses.

8.2.2 In essence, indicators of growth such as GNP and GDP should include a measure of depletion cost and value judgments in terms of environmental resources. It will require instruments and expertise for evaluation and conscious trade offs, where unavoidable, to meet the legitimate development needs.

8.2.3 The Government will prepare, each year, a natural resources budget which will reflect the state and availability of resources like land, forests, water etc. and which will rationally allocate these resources in keeping with the principles of conservation and sustainable development.

8.3 Training and Orientation Programmes

8.3.1 Available management resources in the enterprises/projects would be oriented towards environmental considerations and expertise to be developed through appropriate training programmes.

8.3.2 Formal education and training programme in specialized areas of pollution control and environmental management will be a continuing need. For this purpose, intensive programmes for education and training will need to be introduced in the universities, IITs and other professional institutions. Environmental education at the school level including training of teachers shall be an important component of educational programmes.

8.4 Promoting Environmental Awareness

To raise public awareness and involvement in environmental activities, the mass media ranging from local folk lores to electronic media should serve as a vital role. To raise public awareness on environmental issues and to promote people's participation, in environmental activities and conservation of natural resources, development of environmental education resource material and use of traditional and modern media of communication need to be strengthened. Scope and functions of the existing environmental education centres should be further strengthened and enlarged to develop a network of infrastructure for environmental education including development of orientation centres and provision of educational material for visitors at the national parks, sanctuaries and tiger reserves.

8.5 Promoting Appropriate Environmental Technologies

Existing research and development efforts need to be strengthened to develop the appropriate low cost technologies considering the possibilities, opened up by biotechnology, genetic engineering, information and material technologies and remote sensing, tailored to the local environmental and socio-economic conditions.

8.6 Rehabilitation of Project Oustees

8.6.1 While implementing the projects in various sectors, conscious efforts should be made to avoid displacement of local people. Where it is unavoidable, necessary measures should be taken to ensure their rehabilitation by providing suitable facilities.

8.6.2 The Government will formulate a comprehensive national rehabilitation policy which, apart from other things, ensures that the oustees are economically better off than before and above poverty line as a result of their rehabilitation.

8.7 Role of Non-Governmental Organizations

8.7.1 Implementation of the conservation strategy would be impossible without active participation of the people. Non-Governmental Organizations (NGOs) can play an important role in mobilizing the people at grassroots. This will need a network among

NGOs and interface between people and Government to work on community involvement, providing information on environmental surveillance and monitoring, transmitting development in science and appropriate technology to the people at large.

8.7.2 Environmental Information Centres should be set up at the district level to generate knowledge regarding traditional and endogenous system management practices. NGOs at the district level should be involved in the management and dissemination of the environmental information.

8.7.3 Non-Governmental Organizations, citizen groups and village level institutions like forests panchayats, and Gram Sabtra should be empowered with locus standi and support for mobilization of public opinion and participation in development activities.

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8.7.4 Managerial capacity of the NGOs should be strengthened. Training programmes for NGOs on regional basis should be organized. An advisory cell for rural NGOs should be made available at all district headquarters.

8.8 Women and Environment

Women at the grassroot level should be actively involved in the conservation programmes which should be income generating and self financing and sustainable on a long term basis and the Government Ministries/Departments should have an NGOs cell or at least Liaison Officer for interaction with the NGOs.

8.9 Partnership role of Centre and State Governments

Effective implementation of necessary measures, as outlined in the Statement, will be facilitated by a partnership role of Central and State Governments. Many environmental problems assume national significance. Hence, the policies and programmes at the State and Central level should be drawn up keeping in view overall national policy considerations. A monitoring mechanism involving central and state Government representatives will be set up for inter-action as required for implementation of the policy initiatives.

9.0 CONCLUSION

9.1 It is only through such initiatives the contours of which have been highlighted in preceding paragraphs, we will be in a position to resolve the conflicts which often arise between the environmental concerns and developmental pursuits that have a direct bearing on the very fabric of our society and life styles.

9.2 The task before us would be daunting if it were not for the many positive factors that are emerging: people's movements to conserve their own environment, greater public and media concern for environmental issues and spread of environmental awareness among children and youth.

9.3 It is up to us, as State and citizens, to undertake development process in keeping with our heritage and the traditional conservation ethos and in harmony with the environmental imperatives of this land.

