



## Environment Protection and the India's Eleventh Five-Year Plan

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### ABSTRACT

Important feature of any environmental strategy is that environmental objectives require action in several areas, which typically lie in the purview of different ministries. The Ministry of Environment and Forests (MoEF) has the important role of monitoring the development process and its environmental impact in a perspective of sustainable development and to devise suitable regulatory structures to achieve the desired results. While this role is crucial, environmental objectives can only be achieved if environmental concerns are internalized in policy making in a large number of sectors. This would require sharing of responsibility at all levels of government and across sectors with respect to monitoring of pollution, enforcement of regulations and development of programmes for mitigation and abatement. The Eleventh Five Year Plan of India has taken the due note of the concerns in terms of threat to food security due to degradation of land, forest and overexploitation of groundwater, lack of access of the community to basic services particularly energy, drinking water, sanitation facilities, low level of socio-economic development, high incident of unemployment, stagnant infant mortality and under-nourishment amongst children and the deterioration in quality of life. There is a pathology of evidence to indicate that poverty reduction and sustainable economic growth is undetermined by degradation of soil, scarcity of freshwater, over-exploitation of coastal ecosystems, loss of forest cover, biodiversity at genetic, species and ecosystem level, and long term change in the climate. The Eleventh Plan, therefore, marks a paradigm shift as it visualizes that economic growth alone is not the objective of national planning and the development objective not to be GDP of per capita income, and to promote greater participation of the community in the decision making process. The eleventh plan has indicated the monitorable targets as indicators of human development as well as the human welfare as the determinant factor of the development strategy. The study of provisions regarding protection of the environment in XI<sup>th</sup> Five Year Plan reveals that definitely some attempts will be made in Indian economy to protect the environment. But it seems those are not adequate. Some additional provisions and efforts are necessary. This plan does not much talk on the problem of air pollution and noise pollution, which are very much important in urban areas and have very bad consequences. The plan also does not consider what can be role of the private, cooperative sectors and NGOs in the protection of the environment. Likewise, what responsibility a city in our country is expected to discharge concerning environment protection. The plan also lacks in providing for the problems of climate change and global warming.

### INTRODUCTION

The environment sustains all life, the plants and animals that provide us food, clothing medicines raw materials and all other human needs including a liveable atmosphere providing the basic life support system to us. Natural resources from the basis of all our scientific advances, technological progress, genetic engineering, agricultural and industries; it is the basis of human survival itself.

Protection of environment has to be central part of any sustainable inclusive growth strategy. This aspect of development is especially important in the eleventh plan when consciousness of danger of environmental degradation has increased greatly. Population growth, urbanization and anthropogenic development employing energy-intensive technologies have resulted in injecting a heavy load of pollutants in the environment. More recently, the issue assumed special importance because of accumulation of evidence of global warming and associated climate change that it is likely to bring.

An important feature of any environmental strategy is that environmental objectives require action in several areas, which typically lie in the purview of different ministries. The Ministry of Environment and Forests (MoEF) has the important role of monitoring the development process and its environmental impact in a perspective of sustainable development and to devise suitable regulatory structures to achieve the desired results. While this role is crucial, environmental objectives can only be achieved if environmental concerns are internalized in policy making in a large number of sectors. This would require sharing of responsibility at all levels of government and across sectors with respect to monitoring of pollution, enforcement of regulations and development of programmes for mitigation and abatement.

### OVERVIEW

The eleventh plan must build on tenth plan experience by integrating environment consideration into policy making in all sectors of the economy like infrastructure, transport,

water supply, sanitation, industry, agricultural and anti-poverty programmes. Some initiatives needed to integrate environmental concerns into planning and developmental activities across all the sectors are given below:

- Environment is a residual central subject. Since regulation and enforcement in this area cannot be handled by the central government alone and the responsibility of maintaining the environment rests at all levels of Government, we need to consider whether environment can be made a concurrent subject in the constitution.
- There is a case for setting up an independent statutory body on outstanding development with the specific responsibility of guiding government policies and programs for making them more socially and environmentally sustainable and to monitor and evaluate their outcome.
- The State Pollution Control Boards should be restructured into statutory environment protection authority with the mandate of developing regulations, standards and upgraded facilities for enforcing compliance.
- At the district level, the scheme for paryavaran vahinies or committees of concerned citizen should be revived to serve as environmental watchdogs and undertake selective first hand monitoring of the environmental situation in the district.
- For improving the quality and transparency of the environmental clearance process, prior informed consent of the local self governments of the respective areas, as specifically provided in PESA, may be introduced for proposals requiring environmental clearance. Public hearing should also be made mandatory for the activities specified in the environment impact assessment notification.

#### **ENVIRONMENT IMPACT ASSESSMENT (EIA)**

EIA is an important management tool for integrating environmental concerns in the development process and for improved decision making.

The MoEF in 1994 issued the first EIA notification prescribing mandatory environmental clearance for 32 categories of developmental activities.

The process involved consideration of environmental consequence before starting projects and includes procedure like EIA study, public hearing in certain cases and consideration of the outcome by expert groups before issuing of final clearance by MoEF. This process takes time often causing long delays in commencement of projects.

#### **AFFORESTATION**

Forests play a critical role in environment protection in two ways. They help to absorb carbon dioxide in the atmosphere, thus, mitigating the buildup of SHGS. They also help to cope up with water stress by trapping water that would otherwise run off and this especially so when forests exist in upper ends of catchments.

The existing information on forests cover based on the satellite data of 2002 indicates a green cover of 23.68 %. There has been a net improvement of 0.65 % between 2000 and 2002. Presuming that the same growth rate continues till 2007, the tenth plan target of 25% may have been achieved by 2007. This will be variable in the data of 2008, to be used for the State of Forest Report (SFR) 2009. The present extent of forest lands in the country is 77.47 million ha. However, not all the forest lands are under the free company and trees grow outside forests also.

Severe pressure of meeting growing livelihood, industrial and development needs have been some of the critical contributing factors. A demand supply gap of almost 64 million cubic meters has been projected for timber in 2006. The total production of non-timber forest produce (NTEP) has been assessed at Rs. 4188 crore annually. While the gaps are huge, potential for improvement of productivity exists. The status of green cover is an indicator of status of productivity of forests. The following strategies have been involved in the sector for improving the status of green cover.

**Participatory forest management of joint forest management (JFM):** Initiated with the Circular of the MoEF on June 1, 1990 on people's involvement in forest conservation and management, the JFM regime has evolved gradually and at present 106479 such committees (22 million participants) are functioning in 28 States covering 22.02 million ha of forests. A similar approach has been attempted in wildlife management also. In project Tiger, Ecodevelopment project was implemented during 1995-2005 under Global Environment Facility (GEF) with focus on village ecodevelopment through optimum use of local resources and involvement of local people in conservation of protected areas.

**Social forestry:** The first five year plan, as far back as 1951, indicated the scope for establishment of village plantations subsequently a series of externally aided social forestry projects during the 1980 and allocation of 25% of district Rural Development Agency funds under National Rural Employment Programme, Rural Landless Employment Guarantee Programme and so on for social afforestation provided impetus to social forestry. This provision was not pursued since the Eight Plan.

## AGRO AND FARM INDUSTRY

The social forestry programmes also include extension and promotion of agro and farm forestry in the farm sector. The farmers of the states like Punjab, Haryana, Himachal Pradesh, Uttar Pradesh, Karnataka and Tamilnadu have adopted agro forestry. However, the forward linkages with the user industry and facilitation by the State agencies have not existed. Thus, the sector suffers from problems of unorganized markets driven by middlemen, depriving the farmers of optimum prices for their produce.

**Strategy for the Eleventh Plan:** The monitorable target of the Eleventh five year plan is to increase the forest cover by 5% of the total geographical area. The target of 33% forest and free cover reflects the free component without accounting for other vibrant non-free natural biomes light grassland. The policy objective of 33% free/forest cover should be revisited for its definition on ecological consideration. The green cover should include the existing natural ecosystems within which the free cover constitutes a sub-set. Enabling environment for social and participatory regimes should be the aim of central efforts, as is being done through the JFM mode under the National Afforestation Programme. Implementation of the central programmes has met with difficulties on fund flow management at the State level. It is advisable to undertake activities in project mode with earmarked funding, as is done in the externally aided projects.

## IMPROVING AIR QUALITY

The Air (Prevention and Control of Pollution Act, 1981 is

Table 1: Notified standards for water quality.

Designated Best Use	Class of Water	Criteria
Drinking water source without conventional treatment after disinfection	A	<ol style="list-style-type: none"> <li>1. Total coliform, most probable number (MPN)/100 mL &lt; 50</li> <li>2. pH 6.5-8.5</li> <li>3. DO &gt; 6 mg/L</li> <li>4. BOD (5 days, 20°C) &lt; 2 mg/L</li> </ol>
Outdoor bathing (organized)	B	<ol style="list-style-type: none"> <li>1. Total coliform (MPN)/100 mL &lt; 500</li> <li>2. pH 6.5-8.5</li> <li>3. DO &gt; 5 mg/L</li> <li>4. BOD (5 days, 20°C) &lt; 3 mg/L</li> </ol>
Drinking water source after conventional treatment and disinfection	C	<ol style="list-style-type: none"> <li>1. Total coliform (MPN)/100 mL &lt; 5000</li> <li>2. pH 6.5-9.0</li> <li>3. DO &gt; 4 mg/L</li> <li>4. BOD (5 days, 20°C) &lt; 3 mg/L</li> </ol>
Propagation of wildlife and fisheries	D	<ol style="list-style-type: none"> <li>1. pH 6.5-8.5</li> <li>2. DO &gt; 4 mg/L</li> <li>3. Free ammonia (as N) &lt; 1.2 mg/L</li> </ol>
Irrigation, Industrial cooling, controlled waste disposal	E	<ol style="list-style-type: none"> <li>1. pH 6.5-8.5</li> <li>2. Electrical conductivity (25°C) micromhos/cm &lt; 2250</li> <li>3. Sodium Adsorption Ratio, Max. 26</li> <li>4. Boron, Max. 2 mg/L</li> </ol> <p>Below-E, Not meeting A, B, C, D &amp; E criteria</p>

Source: Central Pollution Control Board

the main legislation for regulation of air quality through the Pollution Control Boards (PCBs) in the States. The Central Pollution Control Board (CPCB) has identified 230/medium and large scale polluting industrial units under 17 highly polluting categories.

The requisite pollution control devices are reported to have been provided in 1927 units, while 235 have been closed and 139 are still defaulting. CPCB also monitors ambient air quality at 308 stations covering 115 cities/towns in 28 States and four UTs in the country to (i) determine the status and trend in ambient air quality on significant parameters like benzene and polyaromatic hydrocarbons (PAHs), (ii) assess health hazard and the damage to materials, (iii) develop preventive and corrective measures, and (iv) understand the natural cleansing process. Presently, the criteria pollutants monitored by Central/State PCBs and associates agencies includes sulphur dioxide (SO<sub>2</sub>), NO<sub>x</sub> and Respirable Suspended Particulate Matter (RSPM). Other parameters for toxic trace matters like PAHs are also monitored for select cities.

A programme for real time air quality monitoring for cities with population of more than one million was started during the Tenth plan. The automatic air quality monitoring systems are operational in Jodhpur, Patna, Pune and Sholapur while those in Kanpur, Varanasi, Jharia and Kolkata will be functional soon. As many as 76 cities/towns are found to exceed acceptable limits of these parameters mainly due to vehicular and industrial pollution measured in terms of ambient air quality in residential, industrial and sensitive areas

Table 2: Water quality data for River Ganga (summer average March-June).

Station/Location	1986		2006	
	DO (mg/L)	BOD (mg/L)	DO (mg/L)	BOD (mg/L)
Rishikesh	8.10	1.70	8.30	1.00
Haridwar D/S	8.10	1.80	8.10	1.30
Garhmukteshwar	7.80	2.20	7.70	2.10
Kannauj U/S	7.20	5.50	7.35	1.11
Kannauj D/S	NA	NA	6.45	4.20
Kanpur U/S	7.20	7.20	6.20	6.80
Kanpur D/S	6.70	8.60	3.90	6.80
Allahabad U/S	6.40	11.40	7.10	4.90
Allahabad D/S	6.60	15.50	8.50	3.20
Varanasi U/S	5.60	10.10	8.70	2.10
Varanasi D/S	5.90	10.60	8.65	2.25
Patna U/S	8.40	2.00	7.40	2.05
Patna D/S	8.10	2.20	8.10	2.30
Rajmahal	7.80	1.80	7.20	1.95
Patna	NA	NA	6.96	2.58
Ulnberia	NA	NA	6.46	2.64

Source: Central Pollution Control Board; Note: U/S = Upstream; D/S = Downstream; DO = Dissolved Oxygen; BOD = Biochemical Oxygen Demand

Table 3: Water quality data for River Yamuna (summer average March-June).

Station/Location	1986		2006	
	DO (mg/L)	BOD (mg/L)	DO (mg/L)	BOD (mg/L)
Tajewala	11.70	1.20	11.20	1.50
Kalanaur	11.40	1.05	7.30	2.50
Sonepat	9.75	3.00	8.40	2.50
Palla	13.95	6.00	8.00	4.80
Nizamuddin Bridge	0.30	25.00	0.00	31.30
Agra Canal	0.35	26.50	0.00	28.30
Majhawali	0.50	22.00	3.05	26.00
Mathura U/S	8.10	4.00	5.40	13.38
Agra U/S	10.656	4.50	8.40	15.00
Agra D/S	1.65	9.00	8.17	14.80
Batteshwar	13.90	11.00	9.68	14.00
Etawah	11.16	7.00	16.90	15.50
Udi	9.71	2.00	13.30	3.00
Auraiya Juhika	8.14	5.00	8.40	1.80

Source: Central Pollution Control Board; Note: U/S = Upstream; D/S = Downstream; DO = Dissolved Oxygen; BOD = Biochemical Oxygen Demand

for SO<sub>2</sub>, oxides of nitrogen, SPM, ammonia and carbon monoxide. Action plans for improvement of air quality have been drawn for 16 identified cities on the advice of the Supreme Court. Based on the basic format prepared by CPCB for these purposes, the State PCBs have been asked to evolve such plans for their respective areas.

During the Eleventh plan period, all central programmes on outdoor pollution should be reorganized under National Air Quality Plans (NAQPs), which will cover (i) city based-Clean Air Action Plans (CAAPs) and (ii) pollution control and prevention in industrial areas programmes. The ongoing national programme for monitoring air quality will be taken forward for achieving real time data. This would help in creating yearly warning systems and, thus, enforcing the

plan target of conforming air and water quality to WHO standards. The entire air quality monitoring network should be expanded from the current 308 stations to 1000 stations.

Vehicular pollution is a major source of air pollution in our cities and its control should have high priority in planning for a clean urban environment. More generally, effective urban transport planning, with appropriate initiatives for the development of public transport is particularly important. CAAP should, therefore, be integrated with the National Urban Transport Policy and the JNNURM to ensure optimal development of public transport including both bus and rail based mass rapid transit systems. CAAP should also be the basis of all Central and State funding with appropriate provision of penalties for non-compliance. The

monitorable target in air quality should be to achieved whom standards of air quality in all major cities by 2011-12.

#### Strategy to Control Vehicular Emissions

- There should be uniform fuel quality and emission standards across India. The road map proposed in the government's auto fuel quality must be accelerated and tightened to cover all cities and to implement Euro IV standards.
- The use of diesel in private vehicles must be discouraged. The present distortions in pricing under which diesel is much cheaper than petrol, encourages the growth of diesel vehicles leading to cheap and toxic motorization.
- All central funding for the transport sector must be linked to the implementation of car restraint measures including parking charges designed to recover the full cost of using parking space (linked to the real estate and construction cost) and rationalization of road and other transportation related taxes (such as passenger tax, sales tax) to reduce the tax burden on public transport and increase it for the personal motorized transport.
- The government should impose higher annual taxes on personal transport, which should be used to create a dedicated fund for public transport.

#### WATER QUALITY

**Monitoring water pollution:** The Water (Prevention and Control of Pollution) Act 1974 regulates water quality through the State PCBs. The CPCB under MoEF has established a nation wide network for water quality monitoring comprising 1099 stations in 27 States and six UTs. The monitoring is done on a monthly or quarterly basis for surface water and on half-yearly basis for groundwater. The monitoring network covers 200 rivers, 60 lakes, five tanks, three ponds, three creeks, 13 canals, 17 drains and 321 wells. Water samples are analysed for 28 parameters including physical parameters, nutrients, major ions, and organic and bacteriological parameters.

**National River Conservation Plan (NRCP):** Out of the various parameters monitored Biochemical Oxygen Demand (BOD) and coliforms are critical maintenance of certain level of flow that could ensure a minimum assimilative capacity in water bodies remains a matter of concern especially in the light of increasing consumptive demands of various sectors such as household, industry and agriculture. Based on monitoring done during the last 10 years, 14% of riverine length is highly polluted (BOD more than 6 mg/L) and 19% moderately polluted (BOD 3 to 6 mg/L). A total of 86 polluted stretches have been identified and action plans for improving the water quality in them are being prepared.

As small-scale industries do not have adequate resources, skilled manpower and space to treat their wastewaters, a scheme of Common Effluent Treatment Plants (CETPs) was initiated in June 1990. The CETPs are partially funded by the Government of India. Eighty eight CETPs covering more than 10,000 polluting industries have been set up during the Tenth plan. Charters on Corporate Responsibility on Environmental Protection in respect to 17 categories of highly polluting industries have also been formulated in collaboration with the concerned industries. It is necessary to consider rivers holistically to evolve plans to restore their ecological health and improve the water quality to bathing standard. Untreated sewage dumped into rivers is a major cause of water pollution. The total sewage generation in the country is about 33,000 MLD (million litres per day).

The NRCP has covered 160 towns along 34 polluted river stretches in 20 States and has created 2055 MLD of sewage treatment plants (STP) capacity till now, which approximately 38% of the approved capacity of 5435 MLD to be set up under the plan. Under the Ganga Action Plan (GAP Phase-I), sewage treatment capacity of 869 MLD was set up covering 25 Class-I towns in Uttar Pradesh Bihar and West Bengal. As a result of the implementation of GAP-I, the length of the polluted stretch of the river was reduced from 740 km to 437 km. Phase-II (1993) covered Ganga's tributaries (Yamuna, Damodar and Gomati) in 96 towns in seven States. Other major river cleaning projects cover Gomati river in Uttar Pradesh, Yamuna river in Delhi, Musi river in Hyderabad and Pamba river in Kerala. The 22 km stretch of the Yamuna in Delhi between Wazirabad and Okhla is critically polluted. A sewage treatment capacity of 2960 MLD was required to handle the entire discharge load in Delhi.

The impact reported by MoEF reveals that BOD is within the prescribed standards (BOD) of less than 3 mg/L and dissolved oxygen (DO) more than 6 mg/L for bathing quality at most major cities along the Ganges. The River Narmada, Mahanadi, Brahmini, Buitarni, Subarnrekha, Beas and Chambal maintain DO levels of 4.0 mg/L or above throughout the year. In the Ganga, Yamuna, Krishna, Sabarmati, Tapi, Sutlej, however, the DO level goes as low as 0.3 mg/L.

**Strategy for the Eleventh Plan:** The contrary's first river action programme, GAP, completes over 20 years and the NRCP completes 10 years in 2007. The experience of the first 20 years needs to be used to design an effective and affordable river cleaning programme for the further.

- A basic objective must be to maintain minimum flows, which are threatened by withdrawal of water to meet the needs of agriculture and industry, and to ensure treatment of sewage and effluents.
- As urban sewage load is the dominant factor causing river

pollution, integration of the NRCP and National Lake Conservation Plan (NLCP) with the urban development programmes and agencies is essential.

- For receiving assistance under the NRCP/NLCP, ULBs should be fully involved in developing the programme along with specific statutory responsibility for operating and maintaining the treatment facilities created.
- The city development plan should incorporate environmental management services as the number one priority in JNNURM and Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT). Mechanisms are needed to ensure that the urban areas covered under these programmes provide for full treatment of the sewage generated.
- For the plan period, the river conservation programme should aim on completing the projects in hand and new projects should be considered only in towns, which are not covered under JNNURM and UIDSSMT.
- The NRCP should encourage installations on command area basis to facilitate investment in the treatment of maximum quantity of sewage and reuse in the vicinity.
- The wastewater management strategy needs to emphasize the use of store of the art Geographical Information System (GIS) based decision support system.
- Water efficiency in flushes and gadgets should be planned in order to reduce wastewater generation. Recycling/reuse of treated sewage in cities should be promoted. Resident groups should be sensitized forwards water conservation, recycling and reuse.

**National Lake Conservation Plan (NLCP):** The NLCP was approved as a 100% centrally funded scheme during the Ninth Plan with the objective of restoring the polluted and degraded lakes of the country. To begin with, NLCP proposed to cover urban lakes of tourist importance. The scope of work has been expanded during the Tenth plan to include rural water bodies also. Under the programme, conservation of 46 lakes in 13 States has been taken up through 31 projects. So far, projects for 10 lakes have been completed and 10 more are likely to be completed. Improvement in the quality of water in the lakes in the completed projects is more marked than in the river conservation projects. The scheme now provides assistance to States on a 70 : 30 sharing basis and till date, the estimated approved cost is about Rs. 565 crore.

The activities covered under NLCP include inter caption and treatment of pollution loads entering the lake, lake cleaning interaction such as desilting, dewatering, bioremediation, catchment area treatment, lake front ecodevelopment like bunding, fencing, shoreline development, and creation of facilities for public recreation and entertainment.

**Dal Lake Conservation Project (DLCP):** The DLCP was approved by the government at a cost of Rs. 298.76 crore in September 2005. As an exception, this project is being implemented entirely by the Central Government. The expected date of completion of the project is March 2010. The work envisaged include interception and diversion of pollutants entering the lake, setting up of six STPs, desilting, dewatering, removal of encroachments in the project area, and so on. The Government of India has released Rs. 70 crore for the project till 2006-07. The progress of implementation is, however, slow due to delay in relocation of families who need to be shifted from the project area of the lake. On the whole, the lake conservation plan focuses on pollution abatement in lakes, the larger objective of conservation of lakes is the maintenance of the aquatic ecosystems.

**Water pollution:** Effluent standards, environmental laboratories, and government analyses have been notified under the Environment (Protection) Act, 1986. There is need to much stronger monitoring and enforcement for expanded coverage by both the Central and State Pollution Control Boards. Greater awareness and involvement of local affected communities and local governments in compliance and monitoring is critically important. While compliance will cover treatment and recycling of used water monitoring should include the extent and quality of the treated water and water quality of the water bodies providing or receiving the water in treated or untreated form. The Joint Parliamentary Committee (JPC) on pesticide residues and safety standards for soft drinks, fruit juice and other beverages has suggested notifying quality standards like drinking water should be made mandatory.

## SOLID WASTE MANAGEMENT

Municipal Solid Waste (Management and Handling) Rule, 2000 stipulated that these were to be complied by December 2003. Under these rules, all local bodies were expected to undertake segregation of waste and its collection, storage, transportation, processing and disposal, while the Ministry of Urban Development reported that Jodhpur in Rajasthan, Sirsa in Haryana and Namakkal in Tamilnadu have been making good efforts towards compliance, no other city/town in the country has taken the required steps. Some local bodies are reported to have taken initiatives to set up waste processing and disposal facilities. These local bodies are generating about 1.2 lakh tones of municipal solid waste every day and treatment is not a priority in their plans.

**Urban solid waste management:** Management of industrial and municipal waste is a serious challenge because of its magnitude and the resources required. The JNNURM covers programmes for urban waste disposal. The scheme of

balanced use of fertilizer under the Ministry of Agriculture strengthens the soil testing programme in the country and encourages efficient fertilizer use and composting of urban biodegradable waste.

**Strategy for the Eleventh Plan:** Collection, treatment and disposal of solid waste are the responsibility of the ULBs. These bodies must be made specifically accountable in this respect. The Supreme Court directions for municipal solid waste collection and management which require segregation, sanitary landfills and other safe options of treatment should be part of a master plan. The following measures also need to be taken.

- Process for waste minimization and segregation should be promoted and pursued. The existing regulations have to be revisited to see the changes needed and the investments required.
- The role of CPCB and MoEF must be clarified. They should be charged with enforcing the rules through the ULBs and not rest satisfied solely from being the key standard setting and pollution monitoring.
- Assistance for projects for treatment and disposal of hazardous and biomedical waste should be provided as an incentive for compliance.
- Avoidance of waste going to the landfill should be the priority for all ULBs.
- For smaller and medium towns and cities, regional shared landfills and waste processing infrastructure should be considered and for larger cities the problem of availability of land should be addressed.
- Programmes like JNNURM and UIDSSMT need to link assistance to the progress in solid waste management. During the plan period all Class-I cities should have sanitary landfills in place.

The PCBs are responsible for enforcing management of Hazardous Waste and Biomedical Wastes (Management and Handling) Rules. It is assessed that about 44 million tones of hazardous waste are generated annually by over 13000 units. At the instance of the Supreme Court, an inventory of dump sites is being carried out. MoEF provides assistance for installing, transport, storage and disposal facilities (TSDF) for management of hazardous waste generating industrial clusters. So far, six such systems have been supported in PPP mode. The average capacity of these units is 1-1.2 lakh tones per annum. Biomedical waste is generally disposed off by incinerators or conventional methods. At least 17 units, mostly incinerators, were set up by industry associations. Some health care facilities have installed their own biomedical waste treatment facilities and others are

availing the services of common biomedical waste treatment facilities (CBWTF). There were 157 CBWTFs including eight under installation in the country as on March 2007.

During Eleventh plan period, an institutional mechanism would be required to be put in place to ensure that issues related to handling of industrial, hazardous and biomedical wastes are also dealt under JNNURM and UIDSSMT funding. Through these two umbrella schemes should be made conditional upon appropriate measures being taken in respect of these issues. In places not covered under JNNURM and UIDSSMT, an effective mechanism should be put into place to ensure strict monitoring and compliance by the concerned local authorities, frame work for management of e-waste also need to be put into place.

## BIODIVERSITY

Habitat conversion or land use changes, land degradation, and pollution result in the decline of ecological goods and services needed for human welfare. The Biological Diversity Act, 2002 and Rules, 2004 provide for constitution of State Boards (SBBs) and Management Committees (BMCs) for conservation, documentation and sustainable utilization of biodiversity and for building up capacities of these bodies.

**Environmental programmes of Eleventh Plan biosphere reserves:** This programme was started in 1986 with UNESCO (Management and Biosphere) support for integrating social, culture and ecological values of ecologically rich landscapes. Keeping in view the facts that village ecodevelopment and participatory management of habitats are part of protected areas management schemes. The primary objectives of this programme will be research, documentation, and monitoring of the dynamics of human ecosystem. The programme should focus on cross-sectorial linkages between biochemical resource and human livelihood.

**Mountain Ecosystems:** The MoEF has established an autonomous institute, the G.B. Pant Institute of Himalayan Environment Development (GBPIHED) with the overall mandate of dealing with issue relating to the environment of the Indian Himalayan region. During the Eleventh Plan period, GBPIHED should reorient its activities to evolve as a resource centre for the Himalayan States and Government of India for advise on sustainable development of the Indian Himalayan region.

**Coastal Zone Management:** The earlier Coastal Regulation Zone notification prescribed regulation of activities based on uniform principles of vulnerability of costal areas against human activity.

**Botanical Survey of India (BSI) and Zoological Survey of India (ZSI):** The Botanical and Zoological Surveys of India are today facing major challenges in view of new regime on genetic resources, provisions of the Biochemical Diversity Act, and fast evolving knowledge and information on environment.

#### **ENVIRONMENTAL AWARENESS AND EDUCATION**

The environment education in school system project initiated in 1999 strengthens environment education in the formal school curriculum through infusion of appropriate education material. During the Eleventh Plan, the programme of environmental education, training, and extension may be continued with further linkages with the publicity and awareness mechanism of state forest departments. This may include a manual on public participation in all activities of MoEF. The National Museum of Natural History (NMNH), New Delhi, and three regional museums at Mysore, Bhubaneswar and Bhopal will be made more effective in natural history education and awareness with the introduction of the education and interpretation methods.

#### **NATIONAL ENVIRONMENTAL MONITORING PROGRAMME (NEMP)**

The steering committee on environment and forests for the eleventh plan has suggested a unified NEMP for ecology, environmental chemistry, public health and socio-environmental studies. This programme would track the status and change in the socially relevant biophysical parameters and their social impacts, wherever possible. NEMP may have sub-programmes on forest cover and ecosystem services, apart from air and water pollution. The programme may have linkages with educational, scientific and social organizations working in the relevant fields. Accordingly, the existing programme for environment information system (ENVIS) will be reshaped to provide information in interactive formats for effective use. Real time sharing of data on environmental parameters collected under NEMP will be independent. A special portal could also be organized for environmental data from school and college student projects.

#### **ENVIRONMENTAL RESEARCH AND DEVELOPMENT**

The MoEF supports nine centres of excellence in research, which need to be strengthened. During the eleventh plan period, environmental policies and programmes will need strong research backup. The identified research priorities will be met with by a combination of open competitive research grant programmes and dedicated support to special organizations and centres of excellence.

- An environmental research grant programme should focus on the relevant area such as clean technologies,

preventive strategies, hazardous substances managements and so on. There should be special programmes on ecosystem health, pollution and health, ecological footprints, NTFP regeneration ecology, invasive species for ecology and forest-watershed services.

- Documentation of traditional and community knowledge should be a special area of research.
- Special mechanisms may be set up for coordination and management of research amongst agencies like ICFRE, ICAR, CSIR, DBT, DST and UGC, as well as multilateral and bilateral donors and private foundations.
- The All India Coordinated Project on Taxonomy (AICOPTAX) needs strengthening in order to bring more taxa of lower organisms and issues like molecular taxonomy.

#### **TAXONOMY CAPACITY BUILDING**

The implementation of the Biological Diversity Act, 2002 and Rules, 2004 and National Environmental Policy, 2006 calls for an adequate number of trained taxonomists. AICOPIAX should be augmented for capacity building (including human resources) in taxonomy.

#### **CONSERVATION OF NATURAL RESOURCES AND ECOSYSTEMS**

Inland aquatic systems (excluding paddy fields) cover 5.3% of the country's land area but harbour 15% and 20% of India's flora and fauna diversities respectively. There are wide gaps in knowledge relating to hydrological parameters, ecosystems process, and aquatic life forms in these systems. The existing programmes on conservation accordingly need a revamp. The scheme on conservation and managements of mangroves, coral reefs and wetlands has been too small to make an impact on the conservation of these ecosystems. Initiatives on conservation need to be more effectively integrated with development and poverty reduction. The pricing of community reserves under the Wild Life (Protection) Act may be useful in such efforts. Long term plans for conservation of such habits will be important.

- An information system will be set up for islands, coral reefs, mangroves and wetlands by developing consolidated and easily accessible data base of all recorded species.
- Support activities will include participatory research for inventory and valuation of freshwater ecosystems, measures to tackle serious threats to them and ensure conservation, as also the livelihood security of dependent communities.
- With regard to linkage between biodiversity and climate



change, it should be recognized that biodiversity is an important tool to find solutions for tackling impact of climate change on rural population that depend on biomass for their livelihood.

- There is a need to be recognized the potential of biodiversity, to provide solution of adoption in the form of traditional crop varieties and donors for creating GMOS.
- National agro biodiversity and climate change, it should be recognized that biodiversity landscapes will be undertaken for conservation with the participation of farmers and pastoralist groups.
- The regulatory mechanism for trials and adoptions of GMOS will required to be based on scientific socio-economic, and EIA in the long as well as short term. Awareness generation will be important for ensuring effective outreach of the prescribed process for promotion of appropriately and adequately tested GMOS, mechanisms for enforcement of producers and process for safeguarding ecological and health safety will be established.

#### OTHER PROGRAMMES

Several ongoing programmes of MoEF on specific subjects will continue to be pursued during the eleventh plan period. This includes the environments planning and coordination projects for Madhya Pradesh, Nagaland, environmental authorities and tribunals, the Taj Protection Mission, National Natural Resource Management Systems, IT, Adaptation and Capacity Building on Climate Change, and so on. Such programmes, with specific mandate derived from the Supreme Court of externally aided projects will continue till their logical conclusion.

#### CONCLUSIONS

The Eleventh Five Year Plan has taken the due note of the concerns in terms of threat to food security due to degradation of land, forests and overexploitation of groundwater, lack of access of the community to basic services particularly energy, drinking water, sanitation facilities, low level of socio-economic development, high incident of unemployment, stagnant infant mortality and under-nourishment amongst children and the deterioration in quality of life. There is a pathoply of evidence to indicate that poverty reduction and sustainable economic growth is undetermined

by degradation of soil, scarcity of freshwater, overexploitation of costal ecosystem, loss of forest cover, biodiversity as genetic, species and ecosystem level and long term change in the climate.

The Eleventh Plan therefore marks a paradigm shift as it visualizes that economic growth alone is not the objective of national planning and the development objective not to be GDP of per capita income, and to promote greater participation of the community in the decision making process. The Eleventh Plan has indicated the monitorable targets as indicators of human development as well as the human welfare as the determinant factor of the development strategy.

Preparation of a national data base, using the modern remote sensing technology, GIS, etc. on environment, forest and wildlife sector, State of Environment Report with Natural Resource Accounting and the Agenda for Action would find top priority in all the States and Union Territories and receive thrust during the Eleventh Five Year Plan implementation.

The study of provisions regarding protection of the environment in XI<sup>th</sup> Five Year Plan reveals that definitely some attempts will be made in Indian economy to protect the environment. But it seems those are not adequate. Some additional provisions and efforts are necessary. This plan does not much talk on the problem of air pollution and noise pollution, which are very much important in urban areas, those have very bad consequences. The plan also does not consider what can be role of the private, cooperative sectors and NGOs in the protection of the environment. The plan also lacks in providing for the problems of climate change and global warming.

#### REFERENCES

- Verma, Sawali Bihari 2004. Environmental Law, Pollution and Management. Vol. II, University Book House Pvt. Ltd., Jaipur.
- Goel, P.K. and Sharma, K.P. 1996. Environmental Guidelines and Standards in India. Technoscience Publications, Jaipur, India.
- Eleventh Five Year Plan 2007-12. Vol. I, Inclusive Growth, Govt. of India. <http://www.PlanningCommissionGovernmentofIndia.org.in>
- Panigrahi, Srikanta K. 2003. Environment protection and the Tenth plan. Article published by Yojana.
- [www.cpcb.gov.in](http://www.cpcb.gov.in)
- [www.ICEF.org.in](http://www.ICEF.org.in)
- [www.NRCP.in](http://www.NRCP.in)
- [www.NLCP.gov.in](http://www.NLCP.gov.in)
- [www.EIA.worldbank.in](http://www.EIA.worldbank.in)
- [www.EIC.org.in](http://www.EIC.org.in)