



Conservation and Management of Urban Wetlands: Strategies and Challenges



T.V. Ramachandra

Convener (cestvr@cistup.iisc.ernet.in)

Urban Ecology, Environment and Policy Research Group

Centre for infrastructure, Sustainable Transportation and Urban Planning (CiSTUP)

Indian Institute of Science, Bangalore 560 012

ENVIS TECHNICAL REPORT: 32

September 2009

ENVIRONMENTAL INFORMATION SYSTEM [ENVIS]

Centre for Ecological Sciences,

Indian Institute of Science, Bangalore – 560 012

Email: cestvr@ces.iisc.ernet.in

energy@ces.iisc.ernet.in

Web: <http://ces.iisc.ernet.in/energy>

<http://ces.iisc.ernet.in/biodiversity>

Conservation & Management of Urban Wetlands: Strategies and Challenges



ENERGY AND WETLANDS RESEARCH GROUP

CENTRE FOR ECOLOGICAL SCIENCES

INDIAN INSTITUTE OF SCIENCE

BANGALORE - 560 012

Telephone : 91-80-23600985/22932506/22933099

Fax : 91-80-23601428/23600085/23600683[CES-TVR]

Email : cestvr@ces.iisc.ernet.in,

energy@ces.iisc.ernet.in

Web: <http://ces.iisc.ernet.in/energy>

<http://ces.iisc.ernet.in/biodiversity>

Open Source GIS: <http://ces.iisc.ernet.in/grass>

Acknowledgement: We thank the following members for taking part in the Brainstorming session towards finalizing the strategies for conservation and management of wetlands.

| Stakeholders | Representatives | Organisation |
|---|-------------------------------------|--|
| Environmentalists | Dr. Yellappa Reddy | Bangalore Environment Trust |
| | Harish Bhat | CES, IISc |
| | Shyamal | |
| Researchers | Dr. Ramachandra T.V. | CES and CiSTUP, IISc |
| | Dr. T G Sitharam | CiE and CiSTUP, IISc |
| | Dr. Mohan Kumar | CiE and CiSTUP, IISc |
| | Dr. Chanakya H N | CST and CiSTUP, IISc |
| | Dr. Chakrapani | CES, IISc |
| | Dr. Gururaja K V | CiSTUP, IISc |
| | Mr.Karthick B | CES, IISc |
| | Ms. Supriya G | CES, IISc |
| | Ms. Alakananda | CES, IISc |
| | Dr. Nandini | Bangalore University |
| | Mr.Shivashaktivel | Bangalore University |
| | Durgesh R | Bangalore University |
| | Harshavardhan | UVCE |
| | Harish. M | SVCE |
| | Ms.Ananya | CST, IISc |
| | Supreeth | Bangalore University |
| Members of the SEAC | Dr. Raghavendra Rao | Chairman, SEAC |
| | Dr. Ramachandra T.V. | Member, SEAC |
| Government Officials | Dr. Ramakrishna N R | JD, Department of Fisheries |
| | Jagadeesh B R | Department of Fisheries |
| | Dr. Vikas S J | AD Department of Fisheries |
| | Dr. Basappa | Director General, EMPRI |
| | Uzra Sultana | EMPRI |
| | Dr. U V Singh | CCF, Lake Development Authority |
| | J R Gopalakrishna Rao | Cauvery Niravari Nigam Limited |
| | Dr. K S R Shankar Reddy | Bangalore Development Authority |
| | Dr. Ramakantha | CCF, Karnataka Forest Department |
| | Mr. Suresh | ACF, Bruhat Bangalore Mahanagara Palike |
| | Dr. Syed Aajiz Ahmed, Mr Narahari S | Secretary, Bangalore Water Supply and Sewerage Board (BWSSB) |
| | Dr. Mohan Kumar M S | Karnataka State Council for Science and Technology (KSCST) |
| | Mr Shiva Kumar A R | |
| School | Mr Khan M A, Ms Ali Rani | K K English School, Varthur |
| College | Mr.Yathiraju | Kalidasa Junior College |
| | Dr. B K Chakrapani | Vijaya College, Jayanagar |
| | Mr Amit Yadav | Mumbai |
| Media personnel | Mr. R Manjunath | Vijay Karnataka |
| | Ms.Bosky Khanna | DNA |
| | Mr.Amit Upadhye | Deccan Chronicle |
| Non Governmental Organisation's representatives | Praveena Sreedhar | Argyam Foundation |
| | Abby Brown | Argyam Foundation |
| | Sanjay Vijayraghavan | Praja.in |

Participants of the Workshop on urban lake monitoring (23-25th Sept 2009)

| | |
|----|---|
| 1 | Aditi Kashinath Kale, Abasaheb Garware College, Pune - 411004 |
| 2 | Saravanan. M, Bharathiar University, Coimbatore |
| 3 | Debayan Bose, Vellore Institute of Technology, Vellore. |
| 4 | Deepthi .S, Department of Studies in Zoology, University of Mysore, Mysore. |
| 5 | Divya .K, Vellore Institute of Technology (Vit University), Vellore. |
| 6 | Gitanjali Kanwar, Wildlife Institute of India, Dehradun, Uttarkhand. |
| 7 | Hariharan .T, Department of Environmental Sciences, Bishop Heber College, Trichy - 17. |
| 8 | Joseph Salve, Abasaheb Garware College, Pune – 4. |
| 9 | Kavitha. C, Bharathiar University, Coimbatore |
| 10 | Mridula B. Ram, North Maharashtra University, Jalgaon, Maharashtra. |
| 11 | Muralidharan .G, Kongunadu Arts and Science College, Coimbatore. |
| 12 | Nita Shashidharan, Institute of Science, Mumbai. |
| 13 | Ramkumar. V, Kongunadu Arts and Science College, Coimbatore |
| 14 | Sangeetha .M, Bharathiar University, Coimbatore. |
| 15 | Santhiya .M, Bharthidasan University, Trichy. |
| 16 | Satyavati, Allahabad University, Allahabad – 211015, UP. |
| 17 | Savitha .N, University of Mysore, Mysore. |
| 18 | Shruti R. Bhargava, The Institute of Science, Mumbai. |
| 19 | Smitha R.B, Department of Botany, University of Calicut, Calicut |
| 20 | Vidyagurkar, Yuvaraja College, Mysore. |
| 21 | Arivoli .A, Bharathidasan University, Trichy. |
| 22 | Jomet Sebastian .K, University of Mysore, Mysore. |
| 23 | Dindegave Nagnath Annarao, D.B.F.Dayanand College of Art and Science, Solapur – 413002. |
| 24 | Prajapati Sujit Kumar Ramanlal, Bio Science Department, S.P. University, Vallabh Vidyanagar– 388120. |
| 25 | Pramod A.F, Kuvempu University, Shankaraghatta, Shimoga. |
| 26 | Santosh Pingale, IIT Roorkee, Haridwar – 246667, UA. |
| 27 | Sudip banerjee, Maulana Azad College, University of Calcutta, Calcutta. |
| 28 | Shravanakumar S, Department of PG Studies and Research in Applied Botany, Kuvempu University, Shankaraghatta, Shimoga |
| 29 | Priyadarshini J Shetty, Bangalore University, Bangalore |
| 30 | Dr.Preetha Panikkar, Central Inland Fisheries Research Institute, Regional Centre of CIFRI, Bangalore |
| 31 | Rohini. J, CDD Society, Bangalore |
| 32 | Shashikala. V, Bangalore University, Bangalore |
| 33 | Lakshmi T Kumar, Indian Institute of Ecology & Environment, New Delhi |

We are grateful to the Ministry of Environment and Forests, Government of India, the Ministry of Science and Technology, GOI, Commonwealth of Learning, Canada and Indian Institute of Science for the sustained financial and infrastructure support.

Conservation & Management of Urban Wetlands: Strategies and Challenges

| Sl. No | Content | Page No. |
|---------------|--|-----------------|
| | Preamble | 2 |
| 1 | Brainstorming Session on Conservation and Management of Urban Lakes, 26 th September 2009 | 3 |
| 2 | Lake 2008: Conservation and Management of River and Lake Ecosystems, 22 nd -24 th December 2008 | 24 |
| 3 | Lake 2006: Symposium on Environment Education & Ecosystem Conservation, 28 th to 30 th December 2006 | 29 |
| 4 | Lake 2004: International Conference on Conservation, Restoration & Management of Lakes and Coastal Wetlands 9-13 December 2004 | 33 |
| 5 | Lake 2002 : Symposium On Conservation, Restoration And Management Of Aquatic Ecosystems, 9 th to 13 th December 2002 | 35 |
| 6 | LimGis2001 - Winter School: Essentials in Limnology and Geographic Information System, December 5-13, 2001 | 48 |
| 7 | Lake 2000 and 1998: Symposium on Restoration of Lakes and Wetlands, 27-29, November 2000 | 50 |
| 8 | Annexure I | 56 |
| 9 | Annexure II | 58 |
| | Regulatory framework for wetlands | 59 |
| | Indian Fisheries Act 1897 | 71 |
| | Indian Forest Act 1927 | 77 |
| | The Wildlife Protection Act 1972 | 103 |
| | Water (Prevention and Control of Pollution) Act, 1974 | 177 |
| | The Water (Prevention And Control Of Pollution) CESS Act, 1977 | 196 |
| | The Forest (Conservation) Act, 1980 | 208 |
| | Coastal Zone Regulation | 210 |
| | The Environment (Protection Act), 1986 | 214 |
| | National Environment Policy, 2006 | 228 |
| | National Conservation strategy and Policy Statement on environment and Development | 286 |
| | Wildlife Protection (Regulation of Exports and Imports) Amendment Act 1999 | 316 |
| | Convention on Wetlands (Ramsar, Iran) 1971 | 321 |
| | National Policy for Hydro Power Development | 355 |
| | National Water Policy, 2002 | 363 |

Conservation & Management of Urban Wetlands: Strategies and Challenges

Preamble

Wetlands are vital parts of the hydrological cycle, highly productive, support exceptionally large biological diversity and provide a wide range of ecosystem services, such as food and fibre; waste assimilation; water purification; flood mitigation; erosion control; groundwater recharge; microclimate regulation; enhance aesthetics of the landscape; support many significant recreational, social and cultural activities, besides being a part of our cultural heritage. In this context, the Brain Storming Session focused on the current trends in aquatic ecosystem conservation, restoration and management including the hydrological and the biophysical aspects, peoples' participation and the role of non-governmental, educational and governmental organisations and future research needs for the restoration, conservation and management. It was acknowledged that most of urban wetlands are seriously threatened by conversion to non wetland purposes, encroachment of drainage, through landfill, pollution (discharge of domestic and industrial effluents, disposal of solid wastes), hydrological alterations (water withdrawal and inflow changes), and over-exploitation of their natural resources resulting in loss of biodiversity and disruption in goods and services provided by wetlands. This report compiles the strategies for conservation and sustainable management of urban wetlands based on the discussions during the Brain storming session (26th September 2009) and recommendations of Lake Symposiums (Lake 2008, Lake 2006, Lake 2004, Lake 2002, LimGIS 2001, Lake 2000, 1998 symposium). Annexure II documents the draft notification of the Regulatory Framework for Wetlands Conservation of The Ministry of Environment and Forests, Government of India apart from various legal instruments that are relevant for the conservation and management of wetland ecosystems. We hope that the strategies suggested in this report based on the interactions with all stakeholders during the last decade (1998-2009) will play a *catalytic role in activating the Policy Makers* of this country towards appropriate policy framework to conserve, restore and manage our fragile ecosystems.

Brainstorming Session on Conservation & Management of Urban Lakes

26th Sept 09

Conference Hall, Centre for Infrastructure, Sustainable Transport and Urban Planning [CiSTUP], Indian Institute of Science

Brainstorming session for evolving the strategies for the conservation and management of urban lakes was organized on 26th Sept 2009 at Centre for Infrastructure, Sustainable Transport and Urban Planning [CiSTUP], Indian Institute of Science. This Brainstorming session was organized jointly by The Energy and wetlands Research Group at Centre for Ecological Sciences, Centre for Sustainable Technologies and Centre for Infrastructure, Sustainable Transport and Urban Planning [CiSTUP], Indian Institute of Science. Participants of the brainstorming session included **Environmentalists** (Dr. Yellappa Reddy, Harish Bhat, Shyamal, Dr. B K Chakrapani), **Researchers** (Dr. Ramachandra T.V., Dr. Sitharam T G, Dr. Mohan Kumar M S, Dr. Chanakya H N, Dr. Gururaja K V, Mr.Karthick B, Ms. Supriya G, Ms. Alakananda, Dr. Nandini, Mr.Shivashaktivel, Durgesh R (Bangalore University), Harshavardhan (UVCE), Harish (SVCE), Ms.Ananya (CST, IISc)), **members of the State level Environment Appraisal Committee** (Dr. Raghavendra Rao, Chairman, SEAC, Dr. Ramachandra T.V., Member, SEAC), **Government Officials** (Dr. Ramakrishna N R (Joint Director, Department of Fisheries), Jagadish B R, Dr. Vikas J J (Asst Director, Department of Fisheries), Dr. Basappa (Director General, Environmental Management Policy Research Institute), Uzra Sultana (EMPRI), Dr. U V Singh (CCF, Lake Development Authority), J R Gopalakrishna Rao (Cauvery Niravari Nigam Limited), Dr. K S R Shankar Reddy (Bangalore Development Authority), Dr. Ramakantha (CCF, Karnataka Forest Department), Mr. Suresh (ACF, Bruhat Bangalore Mahanagara Palike) Dr. Syed Aajiz Ahmed and Narahari S (Bangalore Water Supply and Sewerage Board), Dr. Mohan Kumar M S and Shiva Kumar A R (Karnataka State Council for Science and Technology)), **School** (Khan M A, Ali Rani (K K English School, Varthur)), **College** (Mr.Yathiraju, Kalidas Junior College; Dr. B K Chakrapani, BHS College of Science, Amit Yadav, Mumbai), **Media personnel** (Mr. R Manjunath (Vijay Karnataka), Ms.Bosky Khanna (DNA), Mr.Amit Upadhye (Deccan Chronicle)), **Non Governmental Organisation's representatives** (Paveena Sreedhar and Abby Brown (Argyam Foundation), Sanjay Vijayraghavan (Praja.in)) and **32 participants of workshop on urban lake monitoring** (this workshop was conducted during 23-25th Sept 2009; participants list is provided in Annexure I).

The main objective of the Brain storming session was to evolve appropriate strategies for conservation and sustainable management of urban lakes. The August forum discussed the recommendations of Lake Symposiums (Lake 2008, Lake 2006, Lake 2004, Lake 2002, LimGIS 2001, Lake 2000, 1998 symposium) apart from discussing the draft notification of the Regulatory Framework for Wetlands Conservation of The Ministry of Environment and Forests, Government of India. As a part of the Brain storming session a panel discussion was held and the key recommendations are:

1. **Carrying capacity studies for all macro cities:** Unplanned concentrated urbanisation in many cities has telling impacts on local ecology and biodiversity, evident from decline of waterbodies, vegetation, enhanced pollution levels (land, water and air), traffic bottlenecks, lack of appropriate infrastructure, etc. There is a need to adopt holistic approaches in regional planning considering all components (ecology, economic, social aspects). In this regard, this forum recommends carrying capacity studies before implementing any major projects in rapidly urbanizing macro cities such as Greater Bangalore, etc.
2. **Demarcation of the boundary of water bodies:** The existing regulations pertaining to boundary demarcations within different states need to be reviewed according to updated norms and based on geomorphology and other scientific aspects pertaining to individual water bodies. Maximum Water Level mark should form the boundary line of the water body. In addition, a specified width, based on historical records/ survey records etc. may be considered for marking a buffer zone around the water body. In case such records are not available, the buffer zones may be marked afresh considering the flood plain level and also maximum water levels. The width of the buffer zone should be set considering the geomorphology of the water body, the original legal boundaries, etc. The buffer zone should be treated as inviolable in the long term interests of the water body and its biodiversity.
 - The existing regulations pertaining to boundary demarcations within different states need to be reviewed according to updated norms and based on geomorphology and other scientific aspects pertaining to individual water bodies.
 - Maximum Water Level mark should form the boundary line of the water body.
 - In addition, a specified width, based on historical records/ survey records etc. may be considered for marking a buffer zone around the water body. In case

such records are not available, the buffer zones may be marked afresh considering the flood plain level and also maximum water levels.

- The width of the buffer zone should be set considering the geomorphology of the water body, the original legal boundaries, etc.
- The buffer zone should be treated as inviolable in the long term interests of the water body and its biodiversity.
- Declare and maintain floodplains and valley zones of lakes as no activity regions
- Remove all encroachments – free flood plains, valley zones, storm water drains, etc. of encroachments of any kind.
- Ban conversion of lake, lake bed for any other purposes.
- Urban wetlands, mostly lakes to be regulated from any type of encroachments.
- Regulate the activity which interferes with the normal run-off and related ecological processes – in the buffer zone (200 m from lake boundary / flood plains is to be considered as buffer zone)

3. **Mapping of water-bodies:** The mapping of water bodies should also include smaller wetlands, particularly hill streams, Myristica swamps of the Western Ghats, springs etc. The neglect of these hydrological systems could cause considerable impoverishment of water flow in the river systems as well as turn out to be threats to rare kinds of biodiversity. As most of the streams originate in forest areas they come under the legal authority of the forest departments. At the same time the waters of many of these streams are being diverted for private uses. This causes diminished water flow especially in the non Himalayan Rivers during the summer months. A judicious water sharing mechanism has to be worked out at the local level taking into account also the broader national interest as well as conservation of dependent biodiversity. The mapping of these smaller water-bodies, along with their catchments needs to be conducted involving also the local Biodiversity Management Committees. The jurisdictional agreements on the water usage and watershed protection need to be arrived at on a case to case basis involving all the stakeholders.

- Spatial Extent of Water bodies
- Spatial extent of its catchment (watershed/basin)
- Demarcate Flood plains
- Demarcate buffer zone – with a list of regulated activities
- Land cover in the catchment
- Ensure at least 33% of land cover is covered with natural vegetation (to ensure the lake perennial)

- Identify the natural areas in the catchment
- Biodiversity inventory – capture entire food chain
- The jurisdictional agreements on the water usage and watershed protection need to be arrived at on a case to case basis involving all the stakeholders.
- Develop a comprehensive database (spatial with attribute information)
- Identify and demarcate the region around the lake where all activities are to be prohibited (Flood plain)
- The biodiversity of every water body should form part of the Biodiversity Registers (BR).
- The local Biodiversity Management Committees (BMC) should be given necessary financial support and scientific assistance in documentation of diversity.
- The presence of endemic, rare, endangered or threatened species and economically important ones should be highlighted.
- A locally implementable conservation plan has to be prepared for such species.

4. **Holistic and Integrated Approaches – Conservation and Management:** Integration of the activities with the common jurisdiction boundaries of Government para-statal Agencies for effective implementation of activities related to management, restoration, sustainable utilization and conservation.

This necessitates:

- Common Jurisdictional boundary for all para-statal agencies
- To minimise the confusion of ownership – assign the ownership of all natural resources (lakes, forests, etc.) to a single agency – **Lake Protection and Management Authority** (or Karnataka Forest Department). This agency shall be responsible for protection, development and sustainable management of water bodies).
- Custodian shall manage natural resources - let that agency have autonomous status with all regulatory powers to protect, develop and manage water bodies.
- All wetlands to be considered as common property resources and hence custodians should carefully deal with these ensuring security.
- Management and maintenance of lakes to be decentralised involving stakeholders, local bodies, institutions and community participation without any commercialization or commoditization of lakes.
- Integrated aquatic ecosystem management needs to be implemented to ensure sustainability, which requires proper study, sound understanding and effective management of water systems and their internal relations.

- The aquatic systems should be managed as part of the broader environment and in relation to socio-economic demands and potentials, acknowledging the political and cultural context.
- Wetlands lying within the protected area of National Parks and Wildlife Sanctuaries shall be regulated under the Wildlife Protection Act, 1972. Wetlands lying within the notified forest areas shall be regulated by the Indian Forest Act, 1927 and the Forest Conservation Act, 1980; and the relevant provisions of the Environment (Protection) Act, 1986. The Wetlands outside protected or notified forest areas shall be regulated by the relevant provisions of the Environment (Protection) Act, 1986.
- Immediate implementation of the regulatory framework for conservation of wetlands by the Ministry of Environment and Forests, GOI.
- Formulation and implementation of the National wetlands policy both at state and at national levels.
- Socio-economic studies & land use planning in & around the lakes can help in providing ecological basis for improving the quality of lakes.
- Prohibit activities such as conversion of wetlands for non-wetland purposes, dumping of solid wastes, direct discharge of untreated sewage, hunting of wild fauna, reclamation of wetlands.
- Maintain Catchment Integrity to ensure lakes are perennial and maintain at least 33% land cover should be under natural Vegetation.
- Plant native species of vegetation in each lake catchment.
- Create new water bodies considering the topography of each locality.
- Establish laboratory facility to monitor physical, chemical and biological integrity of lakes.
- Maintain physical integrity - Free storm water drains of any encroachments. Establish interconnectivity among water bodies to minimise flooding in certain pockets . The process of urbanization and neglect caused disruption of linkages between water bodies such as ancient lake systems of many cities. Wherever such disruptions have taken place alternative arrangements should be provided to establish the lost linkages.
- Encroachment of lake beds by unauthorized /authorized agencies must be immediately stopped. Evict all unauthorized occupation in the lake beds as well as valley zones.
- Any clearances of riparian vegetation (along side lakes) and buffer zone vegetation (around lakes) have to be prohibited
- Penalise polluters dumping solid waste in the lake bed.

- Implement polluter pays principle for polluters letting liquid waste in to the lake either directly or through storm water drains.
 - Lake privatised recently to be taken over and handed over to locals immediately thus restoring the traditional access to these lakes by the stakeholders.
 - Restore surviving lakes in urban areas strengthening their catchment area and allowing sloping shorelines for fulfilling their ecological function.
 - Alteration of topography in lake / river catchments should be banned.
 - Appropriate cropping pattern, water harvesting, urban development, water usage, and waste generation data shall be utilized and projected for design period for arriving at preventive, curative and maintenance of aquatic ecosystem restoration action plan (AERAP).
 - Desilting of lakes for removal of toxic sediment, to control nuisance macrophytes; further silting in the catchment be checked by suitable afforestation of catchment areas and the provision of silt traps in the storm water drains.
 - Maintaining the sediment regime under which the aquatic ecosystems evolve including maintenance, conservation of spatial and temporal connectivity within and between watersheds.
 - Conversion of land around the lakes particularly in the valley zones and storm water drains for any kind of development must be totally banned.
 - Flora in the catchment area should be preserved & additional afforestation programmes undertaken.
 - Check the overgrowth of aquatic weeds like *Eichhornia*, *Azolla*, *Alternanthera* etc. through manual operations.
 - Aquatic plants greatly aid in retarding the eutrophication of aquatic bodies; they are the sinks for nutrients & thereby play a significant role in absorption & release of heavy metals. They also serve as food and nesting material for many wetland birds. Therefore, knowledge of the ecological role of aquatic species is necessary for lake preservation.
 - Adopt biomanipulation (Silver carp and Catla– surface phytoplankton feeders, Rohu – Column zooplankton feeder Gambusia and Guppies – larvivorous fishes for mosquito control), aeration, shoreline restoration (with the native vegetation) in the management of lakes.
 - Environmental awareness programmes can greatly help in the protection of the water bodies.
- Government Agencies, Academies, Institutions and NGO's must co-ordinate grass-root level implementation of policies and activities related to conservation of lakes and wetlands (both Inland and Coastal), their sustainable utilization, restoration and

development including human health. There is also a need for management and conservation of aquatic biota including their health aspects. Traditional knowledge and practices have to be explored as remedial measures. Cost-intensive restoration measures should be the last resort after evaluating all the cost-effective measures of conservation and management of the wetlands.

- A National Committee be constituted consisting of Experts, Representatives of Stakeholders (researchers, industrialists, agriculturists, fishermen, etc.) and Line Agencies, in addition to the existing Committee(s), if any, in order to evolve policies and strategies for reclamation, development, sustainable utilization and restoration of the wetlands and socio-economic development of the local people.
- At regional level, **Lake Protection and Management Authority (LPMA)** with autonomy, corpus funds from plan allocations of state and center and responsibility and accountability for avoiding excessive cost and time over runs. LPMA shall have stakeholders-representatives from central and state and local body authorities, NGO's and eminent people and experts shall be constituted
- Generous funds shall be made available for such developmental works through the National Committee, as mentioned above. Local stakeholders be suggested to generate modest funds for immediate developmental needs in the aquatic systems in their localities.
- Provisions be made for adoption of lakes and wetlands by the NGO's and Self-help groups for their conservation, management, sustainable utilization and restoration.
- Aquatic ecosystem restoration works taken up by any agency, Govt. or NGO's should have 10% of restoration costs (per annum) spent or set off for creating awareness , research and monitoring compulsorily in future.
- Public education and outreach should be components of aquatic ecosystem restoration. Lake associations and citizen monitoring groups have proved helpful in educating the general public. Effort should be made to ensure that such groups have accurate information about the causes of lake degradation and various restoration methods.

5. **Documentation of biodiversity:** The biodiversity of every water body should form part of the School, College, People's Biodiversity Registers (SBR, CBR, PBR). The local Biodiversity Management Committees (BMC) should be given necessary financial support and scientific assistance in documentation of diversity. The presence of endemic, rare, endangered or threatened species and economically important ones should be highlighted. A locally implementable conservation plan has to be prepared for such species.

- All kinds of introduction of Exotic species and Quarantine measures be done in consultation with the concerned Authorities and the data bank
 - There is an urgent need for creating a 'Data Bank' through inventorisation and mapping of the aquatic biota.
 - Identify water bodies of biodiversity importance and declare them as wetland conservation reserves (WCR)
6. **Preparation of management plans for individual water bodies:** Most large water bodies have unique individual characteristics. Therefore it is necessary to prepare separate management plans for individual water bodies.
- Greater role and participation of women in management and sustainable utilisation of resources of aquatic ecosystems.
 - Impact of pesticide or fertilisers on wetlands in the catchment areas to be checked.
 - Regulate illegal sand and clay mining around the wetlands.
7. **Implementation of sanitation facilities:** It was noted with grave concern that the water bodies in most of India are badly polluted with sewage, coliform bacteria and various other pathogens. This involves:
- Preserving the purity of waters and safeguarding the biodiversity and productivity, dumping of waste has to be prohibited;
 - In addition to this, all the settlements alongside the water body should be provided with sanitation facilities so as not to impinge in anyway the pristine quality of water.
8. **Management of polluted lakes:** This programme needs priority attention. This involves:
- Implementation of bioremediation method for detoxification of polluted water bodies.
 - The highly and irremediably polluted water bodies may be fenced off to prevent fishing, cattle grazing and washing, bathing and collection of edible or medicinal plants to prevent health hazards.
 - Warning boards should be displayed around such water bodies.
 - Collection of any biomaterials from such water bodies should be prohibited.
 - Based on the concept of **polluter pays**, a mechanism be evolved to set up efficient effluent treatment plants [ETP], individual or collective, to reduce the pollution load. Polluting industries be levied **Environmental Cess**, which can be

utilised for conservation measures by the competent authorities. A 'waste audit' must be made compulsory for all the industries and other agencies.

9. **Restoration of lakes:** The goals for restoration of aquatic ecosystems need to be realistic and should be based on the concept of expected conditions for individual eco-regions. Further development of project selection and evaluation technology based on eco-region definitions and description should be encouraged and supported by the national and state government agencies.

- Ecosystem approach in aquatic ecosystem restoration endeavour considering catchment land use plan as of pre-project status and optimal land use plan shall first be prepared for short term (10 years and 30 years) and long term periods keeping in view developmental pressure over time span.
- Research and development is needed in several areas of applied limnology, and this programme should take an experimental approach which emphasizes manipulation of whole ecosystems.
- Appropriate technologies for point and non-point sources of pollution and *in situ* measures for lake restoration shall be compatible to local ethos and site condition as well as objectives of Aquatic Ecosystem Restoration Action Plan (AERAP).
- Traditional knowledge and practices have to be explored as remedial measures. Cost-intensive restoration measures should be the last resort after evaluating all the cost-effective measures of conservation and management of ecosystems.
- Public needs to be better informed about the rational, goal and methods of ecosystem conservation and restoration. In addition, the need was realized for scientist and researchers with the broad training needed for aquatic ecosystem restoration, management and conservation.
- Improved techniques for littoral zone and aquatic microphytes management need to be developed. Research should go beyond the removal of nuisance microphytes to address the restoration of native species that are essential for waterfowl and fish habitat. Basic research is necessary to improve the understanding of fundamental limnological processes in littoral zones and the interactions between littoral and pelagic zones of lakes.
- Biomanipulation (foodweb management) has great potential for low-cost and long-term management of lakes, and research in this emerging field must be stimulated.
- Innovative and low-cost approaches to contaminant clean up in lakes need to be developed.

- The relations between loadings of stress-causing substances and responses of lakes need to be understood more precisely. Research should be undertaken to improve predictions of trophic state and nutrient loading relationships.
- Improved assessment programmes are needed to determine the severity and extent of damage in lakes and wetlands and a change in status over time. Innovative basic research is required to improve the science of assessment and monitoring. There is a great need for cost effective, reliable indicators of ecosystems function, including those that would reflect long-term change and response to stress. Research on indicators should include traditional community and ecosystem measurements, paleoecological trend assessments and remote sensing. Effective assessment and monitoring programme would involve network of local schools, colleges and universities.
- Procedures such as food web manipulation, introduction of phytophagous, insects and fish lining, and reintroduction of native species show promise for effective and long-lasting results when used alone or in combination with other restoration measures. Further research and development needs to be undertaken on these aspects.
- Paleolimnological approaches should be used to infer the past trophic history of lakes and wetlands and to decide whether these systems should be restored. Paleolimnological approaches could also be used to infer whether a lake has been restored to its predisturbance condition.

10. Valuation of goods and services: Goods and services provided by the individual water bodies and the respective species to be documented, evaluated through participatory approach and be made part of the Biodiversity Registers (PBR: People's Biodiversity Registers, SBR: School Biodiversity Registers). If in any case the traditional fishing rights of the local fishermen are adversely affected by lake conservation or by declaring it as a bird sanctuary, etc they should be adequately compensated.

- Ecological values of lands and water within the catchment / watershed shall be internalised into economic analysis and not taken for granted. Pressure groups shall play as watchdogs in preventing industrial and toxic and persistent pollutants by agencies and polluters.

11. Regulation of boating: Operation of motorized boats should not be permitted within lakes of less than 50 ha. In larger lakes the number of such boats should be

limited to restricted area and carrying capacity of the water body. In any case boating during the periods of breeding and congregations of birds should be banned. .

12. **Protection of riparian and buffer zone vegetation:** Any clearances of riparian vegetation (along side rivers) and buffer zone vegetation (around lakes) have to be prohibited.
13. **Restoration of linkages between water bodies:** The process of urbanization and neglect caused disruption of linkages between water bodies such as ancient lake systems of many cities. Wherever such disruptions have taken place alternative arrangements should be provided to establish the lost linkages.
14. **Rainwater harvesting:** Intensive and comprehensive implementation of rain water harvesting techniques can reduce taxation of water bodies and also minimize electricity requirements. The country needs in principle a holistic rainwater harvesting policy aimed at directing water literally from “roof-tops to lakes” after catering to the domestic needs.
15. **Protection of sacred grove-water body system:** National water policy shall recognize the ecological, environmental, economic and socio-cultural values of the aquatic systems. Sacred groves have been integral part of traditional watershed protection systems. Ponds, lakes, springs, streams and rivers associated with the sacred groves were integral to the landscape management systems of traditional societies of especially Indian highlands. Most of these groves lost their significance due to merger of them with the state reserved forests or due to cultural changes. There still exist thousands of sacred groves along the Indian countryside. If these groves are recognized, ecologically restored and brought under appropriate management mechanisms in collaboration with local communities, a fresh revival can happen of the water bodies associated with them.
16. **Environment Education:** It was felt among the participants that public needs to be better informed about the rational, goal and methods of ecosystem conservation and restoration. In addition, the need was realized for scientist and researchers with the broad training needed for aquatic ecosystem restoration, management and conservation. Public education and outreach should include all components of ecosystem restoration. Lake associations and citizen monitoring groups have proved helpful in educating the general public. Effort should be made to ensure that such

groups have accurate information about the causes of lake degradation and various restoration methods. Funding is needed for both undergraduate and graduate programmes in ecosystem conservation and restorations. Training programmes should cross traditional disciplinary boundaries such as those between basic and applied ecology: water quality management and fisheries or wildlife management: among lakes, streams, rivers, coastal and wetland ecology. In this regard the brainstorming session proposes:

- Environmental education program should be more proactive, field oriented and experiential (with real time examples) for effective learning.
- Environmental education should be made mandatory at all levels – schools, colleges, universities, professional courses, teachers and teacher educators at the teachers' training institutes (Tch, B Ed, D Ed)

17. Adopt Inter-disciplinary Approach: Aquatic ecosystem conservation and management requires collaborated research involving natural, social, and inter-disciplinary study aimed at understanding various components, such as monitoring of water quality, socio-economic dependency, biodiversity and other activities, as an indispensable tool for formulating long term conservation strategies. This requires multidisciplinary-trained professionals who can spread the understanding of ecosystem's importance at local schools, colleges, and research institutions by initiating educational programmes aimed at rising the levels of public awareness of aquatic ecosystems' restoration, goals and methods. Actively participating schools and colleges in the vicinity of the water bodies may value the opportunity to provide hands-on environmental education, which could entail setting up of laboratory facilities at the site. Regular monitoring of water bodies (with permanent laboratory facilities) would provide vital inputs for conservation and management.

- Funding is needed for both undergraduate and graduate programmes in aquatic ecosystem conservation and restorations. Training programmes should cross traditional disciplinary boundaries such as those between basic and applied ecology: water quality management and fisheries or wildlife management: among lakes, streams, rivers, coastal and wetland ecology.
- Aquatic sanctuaries be created and tanks of religious places be declared as heritage centers for *in situ* conservation.

WETLAND PROTECTION LAWS AND GOVERNMENT INITIATIVES

The primary responsibility for the management of these ecosystems is in the hands of the Ministry of Environment and Forests. Although some wetlands are protected after the formulation of the Wildlife Protection Act, the others are in grave danger of extinction. Effective coordination between the different ministries, energy, industry, fisheries revenue, agriculture, transport and water resources, is essential for the protection of these ecosystems. Thus, wetlands were not delineated under any specific administrative jurisdiction. Recently the Ministry of Environment and Forests of the Government of India issued draft Notification 2008 Regulatory Framework for Wetlands Conservation (Wetland Conservation Rules). Wetlands in India are indirectly protected by an array of laws given below:

- The Indian Fisheries Act - 1857
- The Indian Forest Act - 1927
- Wildlife (Protection) Act - 1972
- Water (Prevention and Control of Pollution) Act - 1974
- Territorial Water, Continental Shelf, Exclusive Economic Zone and other Marine Zones Act - 1976
- Water (Prevention and Control of Pollution) Act - 1977
- Maritime Zone of India (Regulation and fishing by foreign vessels) Act - 1980
- Forest (Conservation act) - 1980
- Environmental (Protection) Act - 1986
- Coastal Zone Regulation Notification - 1991
- Wildlife (Protection) Amendment Act - 1991
- National Conservation Strategy and Policy Statement on Environment and Development – 1992.
- Draft Notification 2008 Regulatory Framework for Wetlands Conservation (Wetland Conservation Rules)

In addition to the above laws, India is a signatory to the Ramsar Convention on Wetlands and the Convention of Biological Diversity. According to these formulations India is expected to conserve the ecological character of these ecosystems along with the biodiversity of the flora and fauna associated with these ecosystems. Despite these, there is no significant development towards sustaining these ecosystems due to the lack of awareness of the values of these ecosystems among the policymakers and implementation agencies. The effective management of these wetlands requires a thorough appraisal of the existing laws, institutions and practices. The involvement of various people from different sectors is essential in the sustainable management of these wetlands.

Apart from government regulation, development of better monitoring methods is needed to increase the knowledge of the physical and biological characteristics of each wetland resources, and to gain, from this knowledge, a better understanding of wetland dynamics and their controlling processes. Discussions based on accurate knowledge and increased awareness of wetland issues can then begin to develop management strategies (to protect, restore and/or mitigate) that account for the function and value of all wetland resources in the face of natural and socioeconomic factors, while continuing to satisfy critical resource needs of the human population.

The Legal framework for the conservation and management of Wetland Ecosystems is provided by the following National and International Legal instruments:

The Wildlife Protection Act, 1972: This act provides for the protection of wild animals, birds and plants. For the purpose of this act, the state government constitutes the **Wildlife Advisory board**, which performs the following functions: It advises the state government:

- In the selection of areas to be declared as Sanctuaries, National Parks and Closed Areas.
- In the formulation of policy of protection and conservation of wildlife and specified plants.
- In relation to the measures to be taken for harmonizing the needs of the tribals and forest dwellers with the protection and conservation of wildlife.

This Act imposes prohibition on hunting of wild animals, their young ones as well as their eggs except with prior permission of the Chief Wildlife Warden. This act prohibits the picking, uprooting, destroying, damaging, possessing of any plant in a protected area, except with prior permission of the Chief Wildlife Warden. The State government may declare any area; which it considers to have adequate ecological, faunal, geomorphological, natural or zoological significance for the purpose of protecting, propagating or developing wildlife or its environment; to be included in a sanctuary or a National Park. No person shall, destroy, exploit or remove any wildlife from a National Park and Sanctuary or destroy or damage the habitat or deprive any wild animal or plant its habitat within such National Park and Sanctuary. The State government may also declare any area closed to hunting for a designated period of time if it feels the ecosystem of that area is disturbed by hunting.

Water (Prevention and Control of Pollution) Act, 1974: It is an Act to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water. To carry out the purposes of this act, the Central and the State government constitutes the Central Pollution Control Board (CPCB) and State Pollution

Control Board (SPCB) respectively. The main functions of the pollution control boards include:

- Advise the government on any matter concerning the prevention and control of water pollution.
- Encourage, conduct and participate in investigations and research relating to problems of water pollution and prevention, control or abatement of water pollution.
- Lay down or modify standards on various parameters for the release of effluents into streams.
- Collect and examine effluent samples as well as examine the various treatment procedures undertaken by the industries releasing the effluent.
- Examine the quality of streams.
- Notify certain industries to either stop, restrict or modify their procedures if it feels that the present procedure is deteriorating the water quality of streams.
- Establish or recognize laboratories to perform its functions including the analysis of stream water quality and trade effluents.

Forest (Conservation) Act, 1980: Without the permission of the Central government, no State government or any other authority can :

- Declare that any reserved forest shall cease to be reserved.
- Issue permit for use of forest land for non-forest purpose.
- Assign any forest land or portion thereof by way of lease or otherwise to any private person, authority, corporation, agency or any other organization, not owned, managed or controlled by government.
- Clear off natural trees from a forest land for the purpose of reafforestation.

The Biological Diversity Act, 2002: India is a signatory to the United Nations Convention on Biological Resources, 1992 and in accordance with that convention, brought into force The Biological Diversity Act, 2002. This act prohibits biodiversity related activities as well as transfer of the results of research pertaining to biodiversity to certain persons. It also necessitates the approval of National Biodiversity Authority before applying for Intellectual Property Rights on products pertaining to biological diversity. This act emphasizes the establishment of National Biodiversity Authority to carry out various functions pertaining to the Act, viz guidelines for approving collection, research and patents pertaining to biological diversity. It also notifies the central government on threatened species. The central government to develop plans, programmes and strategies for the conservation, management and sustainable use of the biodiversity. Where the Central Government has reason to believe that any area rich in biological diversity, biological resources and their habitats is being threatened by overuse, abuse or

neglect, it shall issue directives to the concerned State Government to take immediate ameliorative measures.

Convention on Wetlands of International Importance, especially as Waterfowl habitats, (Ramsar) 1971: To stem the progressive destruction of the wetlands, Ramsar convention was signed. Waterfowls are birds ecologically dependent on the wetlands. The various points agreed under Ramsar convention includes:

- Each contracting party should nominate at least one wetland having significant value in terms of ecology, botany, zoology, limnology or hydrology to be included in the List of Wetlands of International Importance (Ramsar sites) and precisely describe its boundaries.
- The contracting parties will have right to add further wetland sites to the list, expand the boundaries of the existing sites and also to delete or minimize the boundaries of the existing sites.
- Each contracting party shall strive for the conservation, management and restoration of the wetlands in the list.
- Establishment of nature reserves in the area of wetlands thereby protecting it as well as the biological diversity it supports.
- Restriction of boundaries or deletion of a wetland listed as Ramsar sites, should be immediately compensated by the creation of additional nature reserves for the protection of waterfowls and other species habiting that wetland.

International convention for the protection of Birds, 1950: To abate the ever dwindling number of certain bird species (particularly the migratory ones) as well as the other birds, this convention was made. This is an amendment to the “International Convention for the Protection of Birds useful to Agriculture, 1902”. The objectives of this convention include:

- Protection to all birds, their young ones and their eggs especially in their breeding season.
- Prohibit hunting, killing, mass capture or captivating birds, except those causing intense damage to crops or other components of the ecosystem, such so that the above said components is in the danger of extinction.
- Adopt measures to prohibit industries and other processes causing contamination of air and water that has adverse effects on the survival of birds.
- Adopt measures to prohibit the destruction of suitable breeding grounds and the bird habitat and also encourage the creation of suitable land and water habitat for the birds.

Bonn Convention on Conservation of Migratory Species, 1979: According to the Bonn Convention on Conservation of Migratory Species, the participating parties :

- Should promote, co-operate in and support research relating to migratory species.
- Shall endeavour to provide immediate protection for migratory species which are endangered.
- Shall strive to conserve and restore those habitats of the endangered species in an effort to eliminate the chances of extinction of that species.
- Shall prohibit or minimize those activities or obstacles that seriously impede or prevent the migration of the species.

Convention on Biological Diversity, 1992: The main objectives of this convention are the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of benefits arising out of the utilization of genetic resources. In accordance with this convention, each contracting party shall –

- Identify places supporting immense biological diversity.
- Monitor through sampling or other means the components of biological diversity identified and strive for the conservation of those components requiring urgent attention.
- Develop new or adapt existing strategies, plans and programmes for the conservation and sustainable use of biological diversity.
- Identify activities which have or may have significant adverse impact on the sustainability of the biodiversity in an area.
- It prescribes conservation of biological diversity by either *In situ* conservation mechanisms or *Ex situ* conservation mechanisms or both.

***In situ* conservation :** Each contracting parties shall declare a region harbouring immense biological diversity as a protected area and develop various plans and strategies for the establishment, conservation and management of these protected areas and also strive to conserve biodiversity beyond these protected areas.

- Promote environmentally sound and sustainable development in the areas adjacent to the protected areas so as to further enhance the development and protection of these protected areas.
- Promote the protection of ecosystems, prevent the introduction of alien species likely to have an adverse effect on the existing ecosystem and also rehabilitate & restore degraded ecosystems.
- Enforce legislative measures for the protection of threatened species and population.

***Ex situ* conservation :** Each contracting party shall establish facilities for ex situ conservation and for research on plants, animals and micro-organisms, especially the threatened species, augment their number and take steps for their reintroduction in their own natural habitat.

Relative merits and scope of the respective Indian laws with respect to the wetlands protection and conservation is given in Table 1.

Table 1: Sections applicable to Wetlands in the various environmental laws

| No. | Act | Relevant Sections |
|------------|---|--|
| 1 | The Wildlife (Conservation) Act, 1972 | Prohibits hunting of wild animals, their young ones as well as their eggs Prohibits the picking, uprooting, destroying, damaging, possessing of any plant in a protected area Can declare any area with high ecological significance as a national park, sanctuary or a closed area. |
| 2 | The Biological Diversity Act, 2002 | Prior approval needed from National Biodiversity Authority for collection of biological materials occurring in India as well as for its commercial utilization. Prior approval from NBA needed before applying for intellectual property rights on products pertaining to Biological diversity. The NBA advises the concerned state government in selection of areas with immense biological diversity as National Heritage Site. |
| 3 | Forest (Conservation) Act, 1980 | Without the permission of the Central government, no State government or any other authority can : <ul style="list-style-type: none"> ▪ Declare that any reserved forest shall cease to be reserved. ▪ Issue permit for use of forest land for non-forest purpose. ▪ Assign any forest land by way of lease or otherwise to any private person, authority, corporation, agency or any other organization, not owned, managed or controlled by government. ▪ Clear off natural trees from a forest land for the purpose of reafforestation. |
| 4 | Water (Control and Prevention of Pollution) Act, 1974 | It is based on the “Polluter pays” principle. The Pollution Control Boards performs the following functions : <ul style="list-style-type: none"> ▪ Inspects sewage and effluents as well as the efficiency of the sewage treatment plants. ▪ Lay down or modifies existing effluent standards for the sewage. ▪ Lay down standards of treatment of effluent and sewage to be discharged into any particular stream. ▪ Notify certain industries to either stop, restrict or modify their procedures if the present procedure is deteriorating the water quality of streams. |

| | | |
|---|--|---|
| 5 | Wetlands (Conservation and Management) Rules, 2008 | <p>Prohibited Activities</p> <ul style="list-style-type: none"> ▪ Conversion of wetland to non-wetland use ▪ Reclamation of wetlands ▪ Solid waste dumping and discharge of untreated effluents. <p>Regulated activities</p> <ul style="list-style-type: none"> ▪ Withdrawal of water, diversion or interruption of sources ▪ Treated effluent discharges – industrial/domestic/agro-chemical. ▪ Plying of motorized boats ▪ Dredging ▪ Constructions of permanent nature within 50 m ▪ Activity which interferes with the normal run-off and related ecological processes – up to 200 m |
| 6 | Declaration of Coastal stretches as “CRZ”, 1991 | <p>Prohibited activities :</p> <ul style="list-style-type: none"> ▪ Setting up of new industries and expansion of existing industries in the CRZ. ▪ Discharge of untreated wastes and effluents from industries, cities or towns and other human settlements. ▪ Dumping of city or town waste for the purposes of landfilling. ▪ Land reclamation and disturbing the natural course of sea water. ▪ Mining of sands, rocks and other substrata materials, except those rare minerals not available outside the CRZ areas and exploration and extraction of Oil and Natural Gas. ▪ Harvesting or drawal of ground water and construction of mechanisms thereof within 200 m of HTL; in the 200m to 500m zone it shall be permitted only when done manually through ordinary wells. ▪ Any construction activity between the Low Tide Line and High Tide Line. |
| 7 | National Environment Policy, 2006 | <p>The principal objectives of NEP includes :</p> <ul style="list-style-type: none"> ▪ Protection and conservation of critical ecological systems and resources, and invaluable natural and man made heritage. ▪ Ensuring judicious use of environmental resources to meet the needs and aspirations of the present and future generations. ▪ It emphasizes the “Polluter Pays” principle, which states the polluter should, in principle, bear the cost of pollution, with due regard to the public interest. |

| | | |
|----|--|--|
| 8 | Eco – sensitive zones | <p>Industries shall be located only within the Industrial estates and strictly as per the guidelines issued by the concerned state government.</p> <p>As far as possible, no fresh mining lease shall be granted in the eco sensitive zone. However, quarrying and mining are totally banned in the core area of the eco sensitive zone.</p> <p>Tourism activities shall be as per a tourism development plan prepared by the Department of Tourism.</p> <p>The sites of natural heritage in the zone would be identified and plans for conserving in the natural setting would be made.</p> <p>All the gene pools in the zone would be preserved.</p> |
| 9 | The Environment (Protection) Act, 1986 | <p>Lays down standards for the quality of environment in its various aspects.</p> <p>Laying down standards for discharge of environmental pollutants from various sources and no persons shall discharge any pollutant in excess of such standards.</p> <p>Restrictions of areas in which industries, operations or processes shall not be carried out or carried out subject to certain safeguards.</p> |
| 10 | National Water Policy, 2002 | <p>Water is a scarce and precious national resource and requires to be conserved and management.</p> <p>Watershed management through extensive soil conservation, catchment-area treatment, preservation of forests and increasing the forest cover and the construction of check-dams should be promoted.</p> <p>The water resources should be conserved by retention practices such as rain water harvesting and prevention of pollution.</p> |

Table 2 lists Indian Laws applicable to Conservation of Wetlands (with web link to the source documents). All these web sites were accessed on 4th Oct 2009. Annexure II lists all documents listed in table 2.

Table 2: Indian laws applicable to the conservation of Wetlands with web URL's

| Sl. No. | Indian Laws | Source (Web URL) |
|---------|--|---|
| 1 | The Indian Wildlife (Protection) Act, 1972 | http://wbbs.gov.in/.../The%20Wildlife%20(Protection)%20Act,%201972.pdf |
| 2 | The Indian Fisheries Act, 1897 | http://faolex.fao.org/docs/pdf/ind42223.pdf |
| 3 | The Indian Forest Act, 1927 | http://www.envfor.nic.in/legis/forest/forest4.pdf |
| 4 | The Territorial Waters, | http://www.icsf.net/.../pdf/.../1112177359709***Territorial_Wat |

| | | |
|----|---|---|
| | Continental Shelf, Exclusive Economic Zone | ers_Continental_Shelf_Act,_1976.PDF |
| 5 | The Water (Prevention And Control Of Pollution) Act, 1977 | http://envis.mse.ac.in/lawspdf/WATER%20PREVENTION%2019771.pdf |
| 6 | Water (Prevention And Control Of Pollution) Act, 1974 | http://www.kerenvi.nic.in/.../Water%20_Prevention%20and%20Control%20of%20Pollution_%20Act,%201974... |
| 7 | The Maritime Zones Of India (Regulation Of Fishing By Foreign Vessels) | http://www.icsf.net/.../legalIndia/pdf/.../1112181428778***Maritime_Zones_of_India_Rules,_1982.PDF |
| 8 | Forest Conservation Act 1980 | http://karnatakaforest.gov.in/English/Acts_Rules/acts/FC_Act_1980.pdf |
| 9 | The Environment (Protection) Act, 1986 | http://www.envfor.nic.in/legis/env/eprotect_act_1986.pdf |
| 10 | Coastal Zone Regulation (Crz) Notification | http://www.alakal.net/CRZNotification25.07.06.pdf |
| 11 | Wildlife (Protection) Amendment Act, 1999 | http://www.envfor.nic.in/legis |
| 12 | National Conservation Strategies On Environment & Development | http://www.envfor.nic.in/divisions/csurv/csps.pdf |
| 13 | Draft Ministry Of Environment and Forests, GOI – Notification | http://www.kerenvi.nic.in/legislation/draft_on_regulatory_framework.pdf |
| 14 | The Biological Diversity Act 2002 | http://www.ces.iisc.ernet.in/biodiversity/.../pdfs/Biodiversity%20Act%20and%20Rules,%20basic%20note.pdf |
| 15 | Convention On Wetlands (Ramsar, Iran, 1971) | http://www.med-ina.org/article%2010.pdf |
| 16 | Convention On Biological Diversity, June 1992 | http://www.fao.org/ag/AGP/AGPS/Pgrfa/pdf/cbde.pdf |
| 17 | Bonn Convention On The Conservation Of Migratory Species Of Wild Animals. | http://www.unep-aewa.org/meetings/en/mop/mop2.../pdf/.../georgia.pdf |
| 18 | International Convention For The Protection Of Birds | http://www.cbd.gov.tr/contracts/paris_convention.pdf |
| 19 | National water policy, 2002 | http://wrmin.nic.in/writereaddata/linkimages/nwp20025617515534.pdf |
| 20 | National Policy for Hydro Power Development | http://www.nhpcindia.com/writereaddata/English/PDF/hydro-policy.pdf |



Lake 2008: Conservation and Management of River and Lake Ecosystems

22nd -24th December 2008

Venue: Satish Dhawan Auditorium, Indian Institute of Science, Bangalore

ORGANISED BY

Energy & Wetlands Research Group, Centre for Ecological Sciences (CES),
Indian Institute of Science (IISc), Bangalore

Centre for Sustainable Technologies (CST), Indian Institute of Science

Commonwealth of Learning (COL), Canada

Karnataka State Council for Science and Technology (KSCST), Bangalore

Karnataka Environment Research Foundation [KERF], Bangalore

K.K. English School, Varthur, Bangalore

Vidyaniketan Public School, Ullal, Bangalore

**Panel Members: M.D. Subash Chandran, Harish Bhat, Amit Yadav, Ramachandra T V,
Parameshwar, Umesh D, Shivakumar A R,**

Recommendations of Lake 2008 Symposium

Water, the elixir of life, is the most precious resource on the planet earth. Life originated and evolved in water before it appeared on the land. The unit of life whether on land or water is the living cell, the major bulk of which is water itself. Ultimately it is the delicate balance of chemicals within the cellular water that determines the quality of life and forms a fragile barrier between life and death itself. No wonder, water as an element and water bodies in general have been revered as holy by traditional human societies all over the world.

The elemental water is venerated as one of the *Panchabhuthas* in the scriptures of India. Water- bodies ranging from springs, streams, ponds and lakes to the mighty ocean are sacred in the Indian culture. *Tirthayatra*, literally pilgrimage to the holy waters, became an important part of Indian life through millennia to this day; and it causes major movements and congregations of humans within this country and is one of the most unifying factors of the society.

India is basically an agricultural country; bulk of the Indian population in one way or the other is connected with growing of an amazing variety of crops, domestication of animals, trading in the agricultural and dairy products, and in allied industries such as cotton textiles, sugar, soaps and oils and scores of others. Despite the tremendous technological progress the country has achieved, water and soil still form the core of the Indian life and have given the much needed resilience and strength to the Indian economy in these days of global economic crisis.

Recent times, sadly enough, have witnessed a drastic change in our attitude towards water and water-bodies, the reverence towards which is more becoming a matter of ritualism. Water is being used with gay abandon and water-bodies are being destroyed for alternative uses or have turned out to be receptacles of filth and pollutants including of life threatening chemicals and deadly pesticides. These pollutants through the process of bio-magnification have turned out to be major threats to the very fabric of life on the planet.

The Scope:

The symposium has covered water-bodies of all kinds on the land including the estuaries, which are the places where the freshwater of the rivers mingle with the saltwater of the sea and create unique habitats of intermediate salinity and high productivity. Over 200 persons from all over the country, from scientists, hydrologists, policy makers, legal experts and NGO's to students and teachers participated in the symposium, which saw the presentation of around 100 research papers. These papers encompassed an array of topics related to the past and present status of water-bodies, biodiversity associated with them ranging from bacteria and diatoms to the endangered mighty trees in the Myristica swamps of the Western Ghats and from protozoans to fishes, birds and aquatic

mammals. The value of sacred groves in watershed conservation, the importance of preparing management plans for individual estuaries, rainwater harvesting, sedimentation in water-bodies, water chemistry etc were among the notable topics discussed.

Recommendations:

Lake 2008 reviewed the Draft Notification 2008 Regulatory Framework for Wetlands Conservation (Wetland Conservation Rules) of the Ministry of Environment and Forests of the Government of India and has recommended the following:

1. **Mapping of water-bodies:** The mapping of water bodies should also include smaller wetlands, particularly hill streams, Myristica swamps of the Western Ghats, springs etc. The neglect of these hydrological systems could cause considerable impoverishment of water flow in the river systems as well as turn out to be threats to rare kinds of biodiversity. As most of the streams originate in forest areas they come under the legal authority of the forest departments. At the same time the waters of many of these streams are being diverted for private uses. This causes diminished water flow especially in the non Himalayan Rivers during the summer months. A judicious water sharing mechanism has to be worked out at the local level taking into account also the broader national interest as well as conservation of dependent biodiversity. The mapping of these smaller water-bodies, along with their catchments needs to be conducted involving also the local Biodiversity Management Committees. The jurisdictional agreements on the water usage and watershed protection need to be arrived at on a case to case basis involving all the stakeholders.
2. **Documentation of biodiversity:** The biodiversity of every water body should form part of the People's Biodiversity Registers (PBR). The local Biodiversity Management Committees (BMC) should be given necessary financial support and scientific assistance in documentation of diversity. The presence of endemic, rare, endangered or threatened species and economically important ones should be highlighted. A locally implementable conservation plan has to be prepared for such species.
3. **Preparation of management plans for individual water bodies:** Most large water bodies have unique individual characteristics. Therefore it is necessary to prepare separate management plans for individual water bodies.
4. **Preparation of estuary based management plans:** Estuaries are ranked among the highest productive ecosystems of the world. These are dynamic ecosystems of highly variable environmental factors and therefore require preparation of management plans for individual estuary.

5. **Demarcation of the boundary of water bodies:** The existing regulations pertaining to boundary demarcations within different states need to be reviewed according to updated norms and based on geomorphology and other scientific aspects pertaining to individual water bodies. Maximum Water Level mark should form the boundary line of the water body. In addition, a specified width, based on historical records/ survey records etc. may be considered for marking a buffer zone around the water body. In case such records are not available, the buffer zones may be marked afresh considering the flood plain level and also maximum water levels. The width of the buffer zone should be set considering the geomorphology of the water body, the original legal boundaries, etc. The buffer zone should be treated as inviolable in the long term interests of the water body and its biodiversity.
6. **Implementation of sanitation facilities:** It was noted with grave concern that the water bodies in most of India are badly polluted with sewage, coliform bacteria and various other pathogens. To preserve the purity of waters and to safeguard the biodiversity and productivity, dumping of waste has to be prohibited. In addition to this, all the settlements alongside the water body should be provided with sanitation facilities so as not to impinge in anyway the pristine quality of water.
7. **Management of polluted lakes:** This programme needs priority attention. Bioremediation method may be preferred for detoxification of polluted water bodies. The highly and irretrievably polluted water bodies may be fenced off to prevent fishing, cattle grazing and washing, bathing and collection of edible or medicinal plants to prevent health hazards. Warning boards should be displayed around such water bodies. Collection of any biomaterials from such water bodies should be prohibited.
8. **Valuation of goods and services:** Goods and services provided by the individual water bodies to be documented, evaluated through participatory approach and be made part of the People Biodiversity Registers (PBR). If in any case the traditional fishing rights of the local fishermen are adversely affected by lake conservation or by declaring it as a bird sanctuary, etc they should be adequately compensated.
9. **Regulation of boating:** Operation of motorized boats should not be permitted within lakes of less than 50 ha. In larger lakes the number of such boats should be limited to carrying capacity of the water body. In any case boating during the periods of breeding and congregations of birds should be regulated.

10. **Protection of riparian and buffer zone vegetation:** Any clearances of riparian vegetation (along side rivers) and buffer zone vegetation (around lakes) have to be prohibited.
11. **Restoration of linkages between water bodies:** The process of urbanization and neglect caused disruption of linkages between water bodies such as ancient lake systems of many cities. Wherever such disruptions have taken place alternative arrangements should be provided to establish the lost linkages.
12. **Rainwater harvesting:** Intensive and comprehensive implementation of rain water harvesting techniques can reduce taxation of water bodies and also minimize electricity requirements. The country needs in principle a holistic rainwater harvesting policy aimed at directing water literally from “roof-tops to lakes” after catering to the domestic needs.
13. **Protection of sacred grove-water body system:** Sacred groves have been integral part of traditional watershed protection systems. Ponds, lakes, springs, streams and rivers associated with the sacred groves were integral to the landscape management systems of traditional societies of especially Indian highlands. Most of these groves lost their significance due to merger of them with the state reserved forests or due to cultural changes. There still exist thousands of sacred groves along the Indian countryside. If these groves are recognized, ecologically restored and brought under appropriate management mechanisms in collaboration with local communities, a fresh revival can happen of the water bodies associated with them.
14. **Carrying capacity studies for all macro cities:** Unplanned concentrated urbanisation in many cities has telling impacts on local ecology and biodiversity, evident from decline of waterbodies, vegetation, enhanced pollution levels (land, water and air), traffic bottlenecks, lack of appropriate infrastructure, etc. There is a need to adopt holistic approaches in regional planning considering all components (ecology, economic, social aspects). In this regard, Lake 2008 recommends carrying capacity studies before implementing any major projects in macro cities.

These recommendations are in addition to or supplementing the Prohibited and Regulated activities given in the Rule 4 - Restriction on activities within wetlands of the Draft Notification of 2008 of Ministry of Environment and Forests, Govt. of India ‘REGULATORY FRAME WORK FOR WETLAND CONSERVATION’. The wetlands considered under the symposium recommendations are also applicable to wetland categories other than A, B and C given in the Draft Notification.



Lake 2006: Symposium on Environment Education & Ecosystem Conservation

28th to 30th December 2006

Rustum Choksi Hall, Indian Institute of Science, Bangalore

Lake 2006 was organised from 28th to 30th December 2006 at Rustum Choksi Hall, Indian Institute of Science, Bangalore. This symposium focused on Environmental Education and Ecosystem Conservation to bring in awareness among school students, teachers and the public. The symposium was organised by the Energy and Wetlands Research Group, Centre for Ecological Sciences, Indian Institute of Science in collaboration with the Commonwealth of Learning (COL), Canada, Karnataka Environment Research Foundation (KERF), Bangalore, K.K. English School, Varthur and Vidya Niketan Public School, Ullal upanagara, Bangalore. As a part of the symposium there were paper and poster presentations and model displays from school and college students apart from many presentations from research scholars across the country. The symposium attracted more than 200 participants from different walks of life. This provided a forum for 120 students along with 80 researchers, technologists, economists, sociologists and others to meet and discuss issues regarding ecosystem conservation. The main objective of the symposium was to bring out the current trends in aquatic ecosystem conservation, restoration and management including the hydrological and the biophysical aspects, peoples' participation and the role of non-governmental, educational and governmental organisations and future research needs for the restoration, conservation and management. As a part of the symposium a panel discussion was held with about 22 panelists who came out with the following key recommendations:

- Environmental education program should be more proactive, field oriented and experiential (with real time examples) for effective learning
- Environmental education should be made mandatory for teachers and teacher educators at the teachers' training institutes (Tch, B Ed, D Ed)
- Experts to be involved in the preparation of resource material related to ecosystem studies and the same to be disseminated to educational institutions for monitoring surrounding ecosystems through electronic or print form in local/bilingual language (materials need to be in self learning format with the objective of learning need to move away from content centric approach)

- Implement solid waste management effectively at educational institutions level towards zero waste
- A taxonomic inventory of taxa like birds, fishes, amphibians, reptiles, aquatic plants and insects of wetlands to be prepared and periodically revised for respective wetlands through local schools and colleges and this is to be made available as reference for each wetlands
- Ecosystem conservation and management requires collaborated research involving natural, social, and inter-disciplinary study aimed at understanding various components, such as monitoring of ecosystems, socio-economic dependency, biodiversity and other activities, as an indispensable tool for formulating long term conservation strategies. This requires multidisciplinary-trained professionals who can spread the understanding of ecosystem's importance at local schools, colleges, and research institutions by initiating educational programmes aimed at raising the levels of public awareness of aquatic ecosystems' restoration, goals and methods. Actively participating schools and colleges in the vicinity of the water bodies may value the opportunity to provide hands-on environmental education, which could entail setting up of laboratory facilities at the site. Regular monitoring of water bodies (with permanent laboratory facilities) would provide vital inputs for conservation and management. Potential of students in educational institutions to be tapped for interacting and contributing to monitor the status of ecosystem, in and around their locality.
- Government Agencies, Academics, Institutions and NGO's must co-ordinate grass-root level implementation of policies and activities related to conservation of ecosystems (both Inland and Coastal), their sustainable utilisation, restoration and development including human health. There is also a need for management and conservation of aquatic and terrestrial biota including their health aspects. Traditional knowledge and practices have to be explored as remedial measures. Cost-intensive restoration measures should be the last resort after evaluating all the cost-effective measures of conservation and management of ecosystems.
- Ecosystem approach in aquatic ecosystem restoration endeavour considering catchment land use plan as of pre-project status and optimal land use plan shall first be prepared for short term (10 years and 30 years) and long term periods keeping in view developmental pressure over time span.
- Soil conservation measures based on designated and actual land use plans, compatible to climate, topography, soil type and hydro-geology of the catchment and impact of siltation on productivity of land and ecosystem values.
- Catchment areas of wetlands in general with lakes and riverine ecosystems in particular, to be protected. Land cover / land use changes should be curtailed / minimized with immediate effect
- Impact of pesticide or fertilisers on wetlands in the catchment areas to be checked
- Regulate illegal sand and clay mining around the wetlands

- Immediate steps to conserve endangered wetlands such as Myristica swamps
- National Wetlands Policy both at state and national level to be formulated and enforced
- Identify water bodies of biodiversity importance and declare them as Wetland Conservation Reserves (WCR)
- Marine and Coastal areas to be considered as fragile ecosystems and hence should be comprehensively protected from any industrial and power generation activities.
- Lake management should involve all stakeholders like public, local non-governmental agencies, etc.
- Management and maintenance of lakes to be decentralised involving stakeholders, local bodies, institutions and community participation without any commercialization or commoditization of lakes.
- Lake monitoring and management to be assigned to neighborhood schools so that school children can learn the ecological process
- All wetlands to be considered as Common Property Resources and hence custodians should carefully deal with these ensuring security
- Urban wetlands, mostly lakes to be regulated from any type of encroachments
- Lake privatised recently to be taken over and handed over to locals immediately thus restoring the traditional access to these lakes by the stakeholders
- Restore surviving lakes in urban areas strengthening their catchment area and allowing sloping shorelines for fulfilling their ecological function
- Alteration of topography in lake / river catchments should be banned
- Provisions to be made for adoption of wetlands by the NGO's and self-help groups for their conservation, management, sustainable utilisation and restoration.
- Centre for Ecological Sciences (CES) be the Nodal Agency for capacity building at all levels: Formal and Non-formal and Govt. officials. Students should be involved in participatory management of the wetlands. Due impetus be given on equipping the institutions with qualified environmental specialists. Teachers of the local institutions shall be trained for in-turn capacity building in their own areas, in which, aquatic ecosystems especially wetlands could serve as 'field laboratories'.
- It was felt among the participants that public needs to be better informed about the rational, goal and methods of ecosystem conservation and restoration. In addition, the need was realized for scientist and researchers with the broad training needed for aquatic ecosystem restoration, management and conservation. In this regard Lake 2006 proposes:

- Public education and outreach should include all components of ecosystem restoration. Lake associations and citizen monitoring groups have proved helpful in educating the general public. Effort should be made to ensure that such groups have accurate information about the causes of lake degradation and various restoration methods.
- Funding is needed for both undergraduate and graduate programmes in ecosystem conservation and restorations. Training programmes should cross traditional disciplinary boundaries such as those between basic and applied ecology: water quality management and fisheries or wildlife management: among lakes, streams, rivers, coastal and wetland ecology. This could be achieved through capacity building exercises and in this regard Lake 2006 suggests Organising two weeks training course on “Integrated watershed management with emphasis on conservation and restoration of aquatic ecosystems”. Organising an International symposium (sequel to Lake 2006) and a national seminar to prioritise research needs for the conservation, restoration and sustainable management of ecosystems.

Members of the Panel - Lake 2006

| | |
|-----------------------|------------------------------|
| Dr. T.V. Ramachandra | Dr. Prasanta Kumar Behera |
| Dr. H.N. Chanakya | Dr. Ramakrishnan N. |
| Dr. S.P. Hosmani | Mr. M.A. Khan |
| Dr. B.K. Chakrapani | Ms. Intisar Elnour Elteraifi |
| Dr. H.S. Patil | Dr. Keerthi |
| Dr. M.N.V. Prasad | Dr. K.M. Jayaramaiah |
| Er. V. Jagannath | Dr. K.V. Gururaja |
| Dr. G.V. Gopal | Dr. S.K. Sujith |
| Cdr John Jacob Puthur | Dr. K. A. Subramanian |
| Mr. Harish R. Bhat | Mr. Sreekantha |
| Mr. Susanto Sen | Mr. H. S. Sudhira |
| Mr. B. Karthick | Mr. G. R. Rao |
| Dr. N. Ahalya | Mr. Sameer Ali |

Contact Address:

**Dr. T.V. Ramachandra,
Convenor - Lake 2006**

Energy & Wetlands Research Group
Centre for Ecological Sciences
Indian Institute of Science
Bangalore 560 012, India

Tel: 91-080- 22933099 / 22932786 / 2293 2506 / 23600985 (Extn: 215/232)

Fax: 91-080- 23601428 / 23600683/ 23600085 [CES-TVR]

E mail: lake2006@ces.iisc.ernet.in , cestvr@ces.iisc.ernet.in , energy@ces.iisc.ernet.in

Web: <http://ces.iisc.ernet.in/energy>, <http://ces.iisc.ernet.in/biodiversity>

Lake 2004: International Conference on Conservation, Restoration & Management of Lakes and Coastal Wetlands

9-13 December 2004
Bhubaneswar, Orissaa

The symposium Lake 2004 focused on the conservation, restoration and management of lakes including the estuaries, which are the places where the freshwater of the rivers mingle with the saltwater of the sea and create unique habitats of intermediate salinity and high productivity. Over 180 persons from all over the country, from scientists, hydrologists, policy makers, legal experts and NGO's to students and teachers participated in the symposium, which saw the presentation of around 88 research papers. These papers encompassed an array of topics related to the aquatic ecosystems, biodiversity associated with them ranging from protozoans to fishes, birds and aquatic mammals. Recommendations of Lake 2004 include an action oriented conservation and protection plan for Chilika Lake:

- Declare Chilika Lake, with its watershed, the national heritage site and strict implementation of time bound conservation and restoration measures. Integrated water resource management of Chilika watershed and integrated coastal management.
- Interdisciplinary, intensive monitoring and modeling of hydrological, meteorological, limnological and coastal oceanographic studies be taken by CDA.
- Declare a buffer zone of wetlands as a protected area devoid of any developmental activities.
- Ecosystem approach with integrated holistic approaches in the management considering all biotic and abiotic components of the ecosystem, with its functional aspects to ensure sustainability.
- Establish a permanent laboratory with research facilities at wetlands site (with the sensors to characterize: biological, physical and chemical, hydrological, meteorological) and encourage local college and school students to carry out the dissertation work (part of the curriculum at degree and post graduate levels). Fully equipped live labs would help the younger generation to understand and learn the importance of the ecosystem.
- Capacity building - environment education by establishing eco-schools. Inclusion of field oriented environmental education in the school curriculum.
- Training of all stakeholders (at regular intervals - about wetlands importance, biotic and abiotic factors, sustainable management practice.....).
- Biological studies and regular stock assessment of important fauna (dolphin, shell fish, fin fish, etc.) needs to be undertaken for a better understanding and

utilization of natural resources. Developing a biodiversity register involving schools and colleges for Chilika.

- Reconstitution of CDA involving all stakeholders - local people (who depend on the lake for their livelihood), academicians and researchers. Constitution of a task force involving local people for regular monitoring.
- Reduction of siltation: improvement in land cover in a phased manner with appropriate land use practices. Catchment treatment with the species locally preferred (or could meet the food, fodder and fuel requirement of the local population as well as fauna).
- Measures to protect coral reefs and other aquatic flora and fauna.
- Improvement in riparian vegetation based on local hydrology and native species.
- Protection of breeding grounds of fauna (fish, birds, etc.) - banning hunting, fishing in breeding area. (Captive breeding of Dolphins.)
- Pollution prevention (through an appropriate design of sewage treatment plant up to tertiary level, if possible).
- Ban on use of plastics and implementation of integrated solid waste management as per the guidelines of the national SWM committee (constituted as per the Supreme Court verdict).
- Implementation of best engineered wetlands: prevention of non point source pollution.
- Rehabilitation of the local population (with proper housing, drinking water, drainage and sanitation systems).
- Ban on encroachment (illegal occupants to be evicted).
- Ban on aquaculture (that is unsustainable from the ecosystem point of view).
- The constitution of cooperative societies involving all local fishermen and ban on over harvesting of fish resources (restriction on the size of the net, number of licenses, immediate removal of non local fishermen with unsustainable harvesting practices). Removal of contract system (middle men) and sharing of resources equitably by local people. Constitution of local self help groups.
- Prevention of oil spillage (motor boats, etc.).
- Restoration of mangroves ecosystems in the coastal belt to avert the impact of natural calamities.
- Inventory, mapping and monitoring of the coastal and marine biodiversity.
- Conservation of forests and restoration of natural forests (deforestation is the prime cause for declining water resources, etc.).
- Strict law enforcement to our waters for their preservation (life).

LAKE 2002 : SYMPOSIUM ON CONSERVATION, RESTORATION AND MANAGEMENT OF AQUATIC ECOSYSTEMS

9th to 13th December 2002

Satish Dhawan Auditorium, Indian Institute of Science campus

LAKE 2002, a five day **Symposium on Conservation, Restoration and Management of Aquatic Ecosystems** second in the series, (first being Lake 2000 symposium, held between 27-29, Dec. 2000) was organised by the Centre for Ecological Sciences, Indian Institute of Science, Bangalore; Karnataka Environment Research Foundation, Bangalore and Commonwealth of Learning, Canada, between 9th and 13th December 2002 at the Satish Dhawan Auditorium, IISc. The objective of this symposium was to provide a forum to discuss the current trends in aquatic ecosystem conservation, restoration and management; the hydrological and biophysical aspects; peoples participation; role of governmental and non-governmental organizations; role of educational and research institutions; role of a responsible citizen; future research needs, etc. *Two hundred participants* of the symposium included students, teachers, scientists, technologists, economists, sociologists, administrators, NGO representatives, Government Departmental representatives, planners, managers, policy makers, journalists, environment consultants and interested citizens. This also provided a forum for researchers, technologists, economists, sociologists and others to discuss water related issues, including:

- The major types of aquatic ecosystem and the type and diversity of organisms characteristic of and important to each other;
- The main physical and biological processes that are important in several major types of aquatic ecosystems, and their consequences for community structure and function; and
- Problems of management and conservation in aquatic ecosystems

With firm confidence that the recommendations will lay a strong foundation for watershed conservation and restoration efforts in the days to come, Lake 2002 was successful in collecting/concluding the recent trends in conservation and restoration of lentic and lotic water system, including peoples' participation and the role of NGO's, educational and government organizations. Based on the presentations, active interaction of the presenter and the audience, and the views of the panelists at the panel discussion on 13th Dec 2002, the following recommendations were proposed:

1. Water is 'life' and it is to be 'conserved'. A clean aquatic ecosystem with a healthy biological community is an indicator of the condition of the terrestrial habitats in the watershed.
2. Aquatic ecosystem conservation and management requires collaborated research involving natural, social, and inter-disciplinary study aimed at understanding various components, such as monitoring of water quality, socio-economic dependency, biodiversity and other activities, as an indispensable tool for formulating long term conservation strategies. This requires multidisciplinary-trained professionals who can spread the understanding of ecosystem's importance at local schools, colleges, and research institutions by initiating educational programmes aimed at rising the levels of public awareness of aquatic ecosystems' restoration, goals and methods. Actively participating schools and colleges in the vicinity of the water bodies may value the opportunity to provide hands-on environmental education, which could entail setting up of laboratory facilities at the site. Regular monitoring of water bodies (with permanent laboratory facilities) would provide vital inputs for conservation and management.
3. Government Agencies, Academies, Institutions and NGO's must co-ordinate grass-root level implementation of policies and activities related to conservation of wetlands (both Inland and Coastal), their sustainable utilization, restoration and development including human health. There is also a need for management and conservation of aquatic biota including their health aspects. Traditional knowledge and practices have to be explored as remedial measures. Cost-intensive restoration measures should be the last resort after evaluating all the cost-effective measures of conservation and management of the wetlands.
4. National water policy shall recognize the ecological, environmental, economic and socio-cultural values of the aquatic systems.
5. To be cost effective, lake quality classification using appropriate parameters and values assigned on the best designated use of lake or lake system shall be prescribed as a policy guideline.
6. Line Agencies at the National level, like UGC, DST, DBT, MoEF, ICAR, CSIR, etc.; and at the State level, like departments of Education, Science and Technology, Forest, Agriculture, Irrigation, etc.; be suggested to integrate their activities among themselves seeking assistance from the educational institutions and NGO's.

7. A National Committee be constituted consisting of Experts, Representatives of Stakeholders (researchers, students, industrialists, agriculturists, fishermen, etc.) and Line Agencies, in addition to the existing Committee(s), if any, in order to evolve policies and strategies for reclamation, development, sustainable utilization and restoration of the wetlands and socio-economic development of the local people.
8. At local level, Lake Management Authority (LMA) having stakeholders-representatives from central and state and local body authorities, NGO's and eminent people and experts shall be constituted with autonomy, corpus funds from plan allocations of state and center and responsibility and accountability for avoiding excessive cost and time over runs.
9. Generous funds shall be made available for such developmental works through the National Committee, as mentioned above. Local stakeholders be suggested to generate modest funds for immediate developmental needs in the aquatic systems in their localities.
10. Centre for Ecological Sciences (CES) be the Nodal Agency for capacity building at all levels: Formal and Non-formal and Govt. officials. Students should be involved in participatory management of the wetlands. Due impetus be given on equipping the institutions with qualified environmental specialists. Teachers of the local institutions shall be trained for in-turn capacity building in their own areas, in which, aquatic ecosystems especially wetlands could serve as 'field laboratories'.
11. It was felt among the participants that public needs to be better informed about the rational, goal and methods of aquatic ecosystem conservation and restoration. In addition, the need was realized for scientist and researchers with the broad training needed for aquatic ecosystem restoration, management and conservation. In this regard Lake 2002 proposes:
 - Public education and outreach should be components of aquatic ecosystem restoration. Lake associations and citizen monitoring groups have proved helpful in educating the general public. Effort should be made to ensure that such groups have accurate information about the causes of lake degradation and various restoration methods.
 - Funding is needed for both undergraduate and graduate programmes in aquatic ecosystem conservation and restorations. Training programmes should cross traditional disciplinary boundaries such as those between basic and applied ecology: water quality management and fisheries or wildlife

management: among lakes, streams, rivers, coastal and wetland ecology. This could be achieved through capacity building exercises and in this regard Lake 2002 suggests

- ☞ Organising two weeks training course on “Integrated watershed management with emphasis on conservation and restoration of aquatic ecosystems”.
- ☞ Organising an International symposium (sequel to Lake 2002) and a national seminar to prioritise research needs for the conservation, restoration and sustainable management of aquatic ecosystems.

12. Promote documentation of aquatic biodiversity and ensure the implementation of the recommendation towards protection of wetlands through network of schools, colleges and locals.
13. Provisions be made for adoption of wetlands by the NGO's and Self-help groups for their conservation, management, sustainable utilization and restoration.
14. Aquatic ecosystem restoration works taken up by any agency, Govt. or NGO's should have 10% of restoration costs (per annum) spent or set off for awareness building, research and monitoring compulsorily in future.
15. Aquatic sanctuaries be created and tanks of religious places be declared as heritage centers for *in situ* conservation.
16. Appropriate technologies for point and non-point sources of pollution and *in situ* measures for lake restoration shall be compatible to local ethos and site condition as well as objectives of Aquatic Ecosystem Restoration Action Plan (AERAP).
17. Conservation and management of the 'rain water' and 'ground water' including maintenance of water table elevation is recommended for integrated development. Appropriate technology including encouragement of 'aeration process' be evolved and implemented for efficient effluent treatment.
18. There is an urgent need for creating a 'Data Bank' through inventorisation and mapping of the aquatic biota. This task be networked through Centre for Ecological Sciences (CES) in collaboration with the sister organisations.
19. All kinds of introduction of Exotic species and Quarantine measures be done in consultation with the concerned Authorities and the data bank.

20. Continuous integrated monitoring of the Ecosystem health of the Aquatic domains and their biota to be made by the Working Groups. There should be strict enforcement of the existing laws not to use the wetlands as 'dumping grounds' for wastes, or for land-filling. Developmental activities should not be taken-up at the cost of the wetlands including their original open areas.
21. It is suggested that, an ecologically sound approach be practiced in reservoir / dam construction, keeping in view, the consequences to be faced by the rivers, wetlands, coastal areas, migrating aquatic biota and the beneficiaries.
22. Beneficiary participation from planning to operational stage be ensured including financial contribution.
23. Ecosystem approach in aquatic ecosystem restoration endeavour should consider catchment land use plan as of pre-project status and optimal land use plan shall first be prepared for short term (10 years and 30 years) and long term periods keeping in view developmental pressure over time span.
24. Soil conservation measures should be based on designated and actual land use plans, compatible to climate, topography, soil type and hydro-geology of the catchment and impact of siltation on productivity of land and lake values.
25. Appropriate cropping pattern, water harvesting, urban development, water usage, and waste generation data shall be utilized and projected for design period for arriving at preventive, curative and maintenance of Aquatic Ecosystem Restoration Action Plan (AERAP).
26. Ecological values of lands and water within the catchment / watershed shall be internalised into economic analysis and not taken for granted. Pressure groups shall play as watchdogs in preventing industrial and toxic and persistent pollutants by agencies and polluters.
27. A mechanism to disseminate information on wetlands, through publications be initiated. Print and electronic media be suggested to give wide coverage of environmental issues pertaining to aquatic ecosystem. Exposition of plans of maintenance and expansions be made mandatory for all industries.
28. Legislations be formulated at the earliest for efficient and sustainable management of aquatic ecosystems. Sustainable aquatic resources development and management depends mainly on proper planning, implementation, operation

- and maintenance, which is possible with GIS and Remote Sensing techniques, complementing and supplementing ground data collection in various facets of different kinds of water resource projects. Provisions should be made for easy access and transfer of accurate information to researchers working in the Aquatic systems including Survey of India maps, GIS software and Remote Sensing data.
29. It is recommended to maintain the sediment regime under which the aquatic ecosystems evolve including maintenance, conservation of spatial and temporal connectivity within and between watersheds.
 30. Intersectoral systems approach is suggested for decision making regarding river basin management and integrated catchment / watershed development.
 31. Greater role and participation of women in management and sustainable utilisation of resources of aquatic ecosystems.
 32. Based on the concept of **polluter pays**, a mechanism be evolved to set up efficient effluent treatment plants [ETP], individual or collective, to reduce the pollution load. Polluting industries be levied **Environmental Cess**, which can be utilised for conservation measures by the competent authorities. A 'waste audit' must be made compulsory for all the industries and other agencies.
 33. A project must be initiated to assess the practicality of using the information available for increasing the oxygen content by aerating raw sewage, which encourages proliferation of phyto and zoo species (hygienic agents of nature) and the eventual cleanup process. It is necessary to see how these processes can be expedited. The situation in Bangalore offers an ideal opportunity to try out the linear treatment plants along the channels flowing out from the city.
 34. Regularly monitored "Ambient water quality stations" need to be immediately established and run by responsive and responsible group or agencies.
 35. Long-term multidisciplinary team monitoring of at least some representative wetlands from geographically different micro regions be initiated.
 36. As far as possible, eco-friendly and cost effective technologies such as Phyto-remediation, Bio-manipulation and in-lake engineered system could be considered for AERAP, provided land constraints are taken care of.

37. Energy intensive, high cost mechanized systems for pollution control shall be weighed based on cost effectiveness vis-à-vis viability of operation and maintenance on a sustainable manner.
38. In view of the immense importance of mangroves and salt pan estuaries, the following measures have to be taken for their protection and restoration.
- Qualitative and quantitative survey and regular monitoring of the mangrove resources would help in
 - Listing of endangered, threatened, at risk, near extinct and extinct species.
 - Understanding composition, structure (forest inventories) and function of the habitat.
 - Long term data collections for growth biomass increase and removal of biomass for individual species from localities.
 - Alterations in the mangrove land use pattern.
 - Panchayat Raj institutions may be involved in the development of mangrove nurseries, afforestation, and protecting the luxuriant mangrove areas from illegal felling and poaching. High density plantation programme can be developed in the barren coastal wetlands which are under regular inundation for fodder, fuel and wood, for creating awareness. The necessary incentives may be provided for such people.
 - Compensatory mangrove rehabilitation for reclaimed mangrove habitats be made compulsory for the organizations involved.
 - Disaster management plans for accidental damage to the mangrove ecosystem should be made mandatory for the concerned organizations.
 - It is necessary to create awareness regarding the importance of mangroves at schools, colleges, post-graduate and other appropriate educational levels. The local people should be educated through various media like booklets, audio, video, documentary films, lectures, exhibitions, posters, postal stamps, stickers etc. of the mangroves.
 - A mangrove information center could be established at each coastal district. These centers would collect various types of information on mangroves such as area, composition, endangered species, fisheries, land-use pattern, reclamation etc. These centers would also be made responsible for educating and training the locals and creating awareness.
39. Project reports should be subject to public access and public hearings before approved by competent authority.
40. The goals for restoration of aquatic ecosystems need to be realistic and should be based on the concept of expected conditions for individual eco-regions. Further

development of project selection and evaluation technology based on eco-region definitions and description should be encouraged and supported by the national and state government agencies.

- Research and development is needed in several areas of applied limnology, and this programme should take an experimental approach which emphasizes manipulation of whole ecosystems.
- Improved techniques for littoral zone and aquatic microphytes management need to be developed. Research should go beyond the removal of nuisance microphytes to address the restoration of native species that are essential for waterfowl and fish habitat. Basic research is necessary to improve the understanding of fundamental limnological processes in littoral zones and the interactions between littoral and pelagic zones of lakes.
- Biomanipulation (foodweb management) has great potential for low-cost and long-term management of lakes, and research in this emerging field must be stimulated.
- Innovative and low-cost approaches to contaminant clean up in lakes need to be developed.
- The relations between loadings of stress-causing substances and responses of lakes need to be understood more precisely. Research should be undertaken to improve predictions of trophic state and nutrient loading relationships.
- Improved assessment programmes are needed to determine the severity and extent of damage in lakes and wetlands and a change in status over time. Innovative basic research is required to improve the science of assessment and monitoring. There is a great need for cost effective, reliable indicators of ecosystems function, including those that would reflect long-term change and response to stress. Research on indicators should include traditional community and ecosystem measurements, paleoecological trend assessments and remote sensing. Effective assessment and monitoring programme would involve network of local schools, colleges and universities.
- Procedures such as food web manipulation, introduction of phytophagous, insects and fish lining, and reintroduction of native species show promise for effective and long-lasting results when used alone or in combination with other restoration measures. Further research and development needs to be undertaken on these aspects.
- Paleolimnological approaches should be used to infer the past trophic history of lakes and wetlands and to decide whether these systems should be restored. Paleolimnological approaches could also be used to infer whether a lake has been restored to its predisturbance condition.

41. Integrated aquatic ecosystem management needs to be implemented to ensure sustainability, which requires proper study, sound understanding and effective management of water systems and their internal relations (soil, groundwater, surface water and return water; quantity and quality; biotic components; upstream and downstream). The aquatic systems should be managed as part of the broader environment and in relation to socio-economic demands and potentials, acknowledging the political and cultural context. Sustainable management helps in conservation that sustains the ecological and socio-economic functions, which depends on the following aspects:

- Should be applied at catchment level: The catchment is the smallest complete hydrological unit of analysis and management. Integrated catchment management (ICM), therefore, becomes the practical operating approach. Although this approach is obviously sound and finds wide acceptance, too narrow an interpretation should be avoided.
- Decentralised: Decentralisation should be pursued as much as possible in order to bring river basin management as close as possible to the individual citizens and facilitate local variation in response to differing local conditions and preferences. Decentralisation is also possible in case of tasks with a supra-local scope if the decentralised governments concerned co-operate (e.g. panchayaths in a river basin) or if they are supervised by a higher-level government body. The process should be transparent, phased and planned.
- It is critical to integrate water and environmental management: This principle is widely and strongly supported. Integrated aquatic ecosystem management can be strengthened through the integration of Environmental Impact Assessments (EIA's), water resources modeling and land use planning. It should also be understood that a catchment or watershed approach implies that water should be managed alongside the management of codependent natural resources, namely soil, forests, air and biota.
- Through a systems approach: A true systems approach recognizes the individual components as well as the linkages between them, and that a disturbance at one point in the system will be translated to other parts of the system. Sometimes the effect on another part of the system may be indirect, and may be damped out due to natural resilience and disturbance. Sometimes the effect will be direct, significant and may increase in degree as it moves through the system. While systems analysis is appropriate, analyses and models that are too complex to be translated into useful knowledge should be avoided.

- Operational management: The only form of river basin management that directly affects the river basin and its users is operational management (the application of regulatory, economic and communicative policy instruments and concrete activities such as infrastructure management). Consequently, it should play a pivotal role in any river basin management strategy. Planning, policies, analytical tools and institutional systems play an essential role as deciders and facilitators. They can improve operational management, promote a basin-wide, intersectoral long-term approach, and in this way further the sustained multi-functional use of the basins concerned.
- Full participation by all stakeholders, including workers and the community: This will involve new institutional arrangements. There must be a high level of autonomy, but this must at the same time be associated with transparency and accountability for all decisions. Care should be taken to ensure that those participating in any catchment management structure do indeed represent a designated group or sector of society. It is also important to ensure that representatives provide feedback to the constituencies they represent. Integrated Aquatic Ecosystem Management (IAEM) seeks to combine interests, priorities and disciplines as a multi-stakeholder planning and management process for natural resources within the catchment ecosystem, centered on water. Driven bottom-up by local needs and priorities, and top-down by regulatory responsibilities, it must be adaptive, evolving dynamically with changing conditions.
- Attention to social dimensions: This requires attention to, amongst other things, the use of social impact assessments, workplace indicators and other tools to ensure that the social dimension of a sustainable water policy is implemented. This will include the promotion of equitable access, enhanced role of women, and the employment and income implications of change.
- Capacity building: At many levels in the process – even at the governmental level - stakeholders lack the necessary knowledge and skills for full application of Integrated Aquatic Ecosystem Management. Community stakeholders may not be familiar with the concept of water resource management, catchment management, corporate governance, and their role in these. Capacity building categories include education and raising awareness about water; information resources for policy making; regulations and compliance; basic infrastructure; and market stability. Early and ongoing stakeholder collaboration and communication in capacity building is also important from the view point of “leveling the playing field” in anticipation of disputes that may arise. Filling strategic skills/capacity gaps supports integrated aquatic ecosystem management, facilitates dispute

resolution, and builds practical understanding of the scope of sustainable natural resource development challenges and opportunities.

- Capacity management: The capacity of all institutions needs to be maintained and/or developed by means of short-term and long-term programmes (including postgraduate education and curricula development).
- Availability of information and the capacity to use it to make policy and predict responses: This implies, firstly, sufficient information on hydrological, bio-physical, economic, social and environmental characteristics of a catchment to allow informed policy choices to be made; and secondly, some ability to predict the most important responses of the catchment system to factors such as effluent discharges, diffuse pollution, changes in agricultural or other land use practices and the building of water retaining structures. The latter hinges on the adequacy of scientific models. It is recognized that predicting ecosystem response to perturbation with reasonable confidence stimulates current scientific capabilities and hence ongoing research.
- Full-cost pricing complemented by targeted subsidies: This is essential as users do not value water provided free or almost free and have no incentives to conserve water. Wide support for this principle was engendered, but also significant opposition from those who felt that the interests of the poor might not be sufficiently protected, even under an associated subsidy system, however well designed. Opposing views held that full-cost pricing, when applied in its narrowest sense, offends the principle that water is a public good, a human right, and not simply an economic good.
- Effective Pricing: Charges are effective and efficient means to finance aquatic ecosystem management (cost recovery) and reduce water use and pollution if the basic water needs of the poor are safeguarded, e.g. by means of block tariffs.
- Central Government support through the creation and maintenance of an enabling environment: The role of central government in integrated catchment management should be one of leadership, aimed at facilitating and coordinating the development and transfer of skills, and assisting with the provision of technical advice and financial support, to local groups and individuals. Where specific areas of responsibility fall outside the mandate of a single government department, appropriate institutional arrangements are required to ensure effective inter-departmental collaboration.
- Traditional regimes and institutions should be recognised and integrated in aquatic ecosystem management.

- Adoption of the best existing technologies and practices - BMPs (best management practices).
- Equitable allocation of water resources: This implies improved decision-making, which is technically and scientifically informed, and can facilitate the resolution of conflicts over contentious issues. There are existing tools (e.g. multi-criteria analysis) to help decision-making in terms of balancing social, ecological and economic considerations. These should be tested and applied.
- The recognition of water as an economic good: The recognition of water as an economic good is central to achieving equitable allocation and sustainable usage. Water allocations should be optimized by benefit and cost, and aim to maximize water benefits to society per unit cost. For example, low value uses could be reallocated to higher value uses such as basic drinking water supplies, if water quality permits. Similarly, lower quality water can be allocated to agricultural or industrial use.
- Strengthening the role of women in water management: Women's participation in decision-making positively affects both project quality and sustainability.
- Floods not only cause suffering but also support life: Flood management should not be based solely on building dykes and dams. It needs to be based on strategies that use both structural and non-structural methods. The strategy should balance all interests involved and be based on an integrated assessment, of the environmental, economic and human costs and benefits of these alternatives, including their potential contribution to drought mitigation and including the possibilities that they offer for nature.
- Pollution prevention: The ultimate goal of pollution control is to close substance cycles and in this way prevent pollution. A mix of instruments for regulation and compliance can be used to move into this direction and solve urgent pollution problems: waste control, process and emission standards, and a water quality approach. The exact mix should reflect inter-alia the local management capacity and the availability of water quality data and other data.
- Analytical model: To support aquatic ecosystem management, a new analytical model should be developed that can aggregate socio-economic, political, institutional and technological potentials and hydrological constraints. This model should furthermore be capable of evaluating the actual management capacity.
- Strategic planning: To support strategic planning, methods for analytical support should be developed that:
 - ✓ cover the whole basin and all significant impacts;

- ✓ specifically consider the socio-economic processes that affect the basin;
 - ✓ predict the socio-economic effects of alternate strategies; and
 - ✓ present the issues in such a way that people can understand them.
- Information systems: There is a large role for appropriate decentralised information systems and networks that can promote interaction among sectors, provide a basis for consistent technical studies, help communication with the public, and stimulate participation.
 - Cyclic policy: To implement the general principles of the integrated aquatic ecosystem management requires a cyclic policy development approach. Such an approach would include the following steps - Assessment of institutions, needs and resources, planning, implementation, compliance monitoring and evaluation.

Experts involved in formulating and finalising Lake 2002 Recommendations are: Dr. Devashish Kar, Dr. Rajasekara Murthy, Dr. T.V. Ramachandra, Dr. S.N. Balasubramanyam, Dr. T. Ananda Rao, Dr. Madhyastha, Dr. H.S. Patil, Dr. K.Mohan, Dr. S.P. Hosmani, Dr. J. Pasupathi, Dr. B.K. Chakrapani, Dr. M.B. Krishna, Dr. Rajan Nair, Dr. S.A. Hussain, Dr. H.N. Chanakya, Dr. M.K. Ramesh, Dr. Yellappa Reddy, Mr. Vijay Kumar Gogi, Mr. S. Sridhar and Mr. Raushan Kumar.

LimGis2001 - Winter School

Essentials in Limnology and Geographic Information System

December 5-13, 2001

LimGis2001 – Winter school on ‘Essentials in Limnology and Geographic Information System (GIS)’ was organized by the Energy and Wetlands Research Group, Centre for Ecological Sciences, Indian Institute of Science (IISc), Bangalore and Karnataka Environment Research Foundation, Bangalore and Commonwealth of Learning (COL), Canada from 5th through 13th December 2001. The school was held at CES Seminar hall at IISc. Attendance of Winter school included research scholars and faculty (Mysore, Bangalore, Mangalore, Kuvempu, Karnataka and Gulbarga Universities, Christ College, Bangalore and Irinjalakuda), Postgraduate engineering Students (UVCE, Bangalore NIE, Mysore, MCC, Bangalore, Christ College, Bangalore and Irinjalakuda) and school kids (Poornaprajna Education Society, MES Education Society, Little Lilly Education Society, K.K. English high school, Udaya High school) and working professionals in the government and non-governmental organizations. Course faculty include. Hosmani (Mysore University), Giridhar (NIE, Mysore), G.V. Gopal (RIE, Mysore), Kulkarni (RIE, Mysore), Col. Vijaykanth (EHF, Bangalore), Vishwanath (Bangalore), Rajasekara Murthy (Environment Canada), and Ramachandra, T.V., Ahalya, N., Rajinikanth R., Anil Kumar Bhagath, Pankaj Kumar Mohanta, Mandy Payne, Pallav Julka, Hrishikesh Mahadev (Energy and Wetlands Research Group, CES, IISc).

A primary goal of this course is to use the aquatic ecosystems to assist in the teaching of core physical, chemical, biological, and mathematical principles, as well as modern computer technology, while also improving students' general understanding of water - the most fundamental substance necessary for sustaining life on our planet. The Lake Ecology section was intended to provide a general background by introducing the basic concepts necessary to understand how lake ecosystems function.

The course introduced the fundamentals of aquatic ecology (with an emphasis on lakes) from an ecosystem-level approach and essentials in GIS. General limnological principles as well as physical, chemical and biological parameters of lakes were discussed. Biological investigations include an introduction to the ecology and taxonomy of the algae, zooplankton, macro invertebrates, macrophytes, and fishes. Field studies included Sankey lake survey in which participants gained experience in field sampling, laboratory analysis of samples, statistical analysis and interpretation of data for several types of lakes. Apart from these, integrated watershed management with emphasis on restoration of lakes and wetlands was discussed. The school also stimulated interest among many of the attendees from schools and colleges in the field of limnology and GIS which was evident on concluding day by the participants presentations.

The winter school LimGis 2001 concluded on 13th December 2002, evening with the following recommendations towards sustainable management of aquatic habitats:

- ✓ Include environmental courses in educational curricula especially at high school and college levels.

- ✓ Enforcement of existing laws related to aquatic environment to maintain it as a community resource. Develop a legal framework that supports local rights to manage resources.
- ✓ Increase funding to NGO's and institutions to develop environmentally sound technologies. Channel government funds directly to decentralized local institutions.
- ✓ Create councils for the management of wetlands, by drawing members from areas like engineering, life sciences, physical sciences, social sciences, health and sanitation and economics along with local community representatives to overcome the conflicts of management goals.
- ✓ Create awareness through community education and institutions.
- ✓ Enforcement of rainwater harvesting methods atleast in governmental organization and recharging of ground water facility should be encouraged.
- ✓ Organise seminars, workshops, field trips and eco-clubs aimed towards capacity building.
- ✓ Encourage biological approach to mitigate pollution problems, in preference to chemical and mechanical methods.
- ✓ Increase and modernize the infrastructure facility for the collection and treatment of wastes.
- ✓ Scientific survey for the identification of solid waste dumping sites.
- ✓ Periodic monitoring of natural resources should be conducted so that precautionary measures can be adopted before any environmental problem becomes serious.
- ✓ Build information centre (database with regard to the ecosystem status, conservation aspects, management issues, etc.) for students and general public to encourage their participation in up-keeping the environmental health.
- ✓ Licensing of industries should be linked to environmental quality certification.
- ✓ Adopt an integrated watershed approach incorporating soil and water conservation, afforestation and ensuring people's participation in aquatic ecosystem management. Strengthen decentralised local institutions (panachayaths) to enable people's participation.
- ✓ Promote decision-making forums or "adalats", where the general public and persons from various organizations concerned with environmental health or regulatory bodies meet periodically and discuss the problems regarding environment and its sustainability.



Lake 2000: Symposium on Restoration of Lakes and Wetlands, 27-29, November 2000, CSIC Auditorium, IISc Campus.

Lake Monitoring & Management Symposium, 20-23 Dec 1998, CES Seminar Hall, IISc Campus

A number of scientific papers had been presented by scientists from India and abroad on different aspects of wetlands, including energetics, nutrient cycling, biodiversity, disease and health of the biota (particularly the fishes), sustainable utilization, management and conservation of the wetlands and their biota, reclamation & restoration of the wetlands & their modeling.

On the basis of discussions and deliberations held in the Symposium, the following recommendations are unanimously adopted:

- **Recommendation No 1:** The Symposium recommends integration of different Government Agencies for effective implementation of activities related to restoration of wetlands, their sustainable utilization & conservation.
- **Recommendation No 2:** It is recommended that a National Committee for Lakes and Wetlands reclamation, restoration & development be formed to formulate a National Policy to evolve strategies for their sustainable utilization and conservation. *(Funds be made available from National & International sources to the Centre for Ecological Sciences, Indian Institute of Science, to go ahead with the restoration of the Lakes in collaboration with National & International Organizations in view of the importance of Lakes and Wetlands in rural development).*
- **Recommendation No 3:** A Comprehensive Plan be prepared to study selective, representative Wetlands in a phased manner to create database with regard to their present status, sustainable use, management and conservation and to formulate strategies for their long term management. Regular monitoring of ecosystems through the involvement of Schools, Colleges & Universities. *(For this purpose, funds be made available to Centre for Ecological Sciences, Indian Institute of Science, Bangalore to implement proposal in collaboration with National and International Organizations.).*
- **Recommendation No 4:** A Comprehensive Action Plan be chalked out immediately for taking care of health, disease and quarantine aspects of the aquatic biota. The aspects assume importance in view of the still persisting virulent disease like Epizootic Ulcerative Syndrome (EUS) among the freshwater fishes of India. A National Committee be formed to tackle such health and disease problems among the aquatic biota which has been a concern to the society as a whole. The committee be entrusted to find ways and means to control the epidemic.
- **Recommendation No 5:** India being a Megadiversity region, with hotspots in Western Ghats and North Eastern regions, a comprehensive action plan be chalked out to study the aquatic

biodiversity of the inland water bodies of the country. Centre for Ecological Sciences (CES) be entrusted to co-ordinate the aspect with collaboration at National and International levels.

- **Recommendation No 6:** Mass awareness programme be chalked out and implemented through Governmental and Non-Governmental Organisations(NGO)for popularization of the importance of the lakes, wetlands and rivers, and their role in the aquatic biodiversity and sustenance of human civilization. CES be entrusted to co-ordinate the aspect with collaboration from Governmental and Non Governmental Organization at National and International levels.
- **Recommendation No 7:** Lakes & Ponds in each Zilla Panchayath area be identified and their streams recharged through peoples participation. People should be made aware of their significance so that reclamation and conservation of these water bodies be taken up effectively.
- **Recommendation No 8:** Temporary ponds be identified and their diversity explored to delineate their contribution to the society.
- **Recommendation No 9:** People's watchdog team to stop the dumping of wastes into water bodies and the catchment area protection. Steps should be taken to bring in aesthetic sense among the public which will help protect the lakes.
- **Recommendation No 10:** Fishermen socio - economic aspects to be taken into consideration while formulating wetland policies.
- **Recommendation No 11:** Students involvement including curriculum development concerning the protection of the ecosystem.
- **Recommendation No 12:** Ownership and legal status of lakes and the inhabitants around to be properly defined.
- **Recommendation No 13:** Easy access for scientists and students to investigate the status of wetlands in protected areas. Free access of data , Survey of India toposheets, along with GIS and Remote Sensing data be made available.
- **Recommendation No 14:** Introduction of exotic fishes into lakes to be permitted only after clearance from Fishery experts.
- **Recommendation No 15: Education and training:** Participants strongly felt that the public needs to be better informed about the rationale, goals and methods of aquatic ecosystem restorations. In addition, scientists and researchers with the broad training needed for aquatic ecosystem restoration, management and conservation are in short supply. The lake 2000 recommends are following :

Public education and outreach should be components of aquatic ecosystem restorations. Lake Associations and citizen monitoring groups have proved helpful in educating the general public, and effort should be made to ensure that such groups have accurate information about the causes of lake degradation and various restoration methods.

Funding is needed for both undergraduate and graduate programmes in aquatic ecosystem restorations. Training programmes should cause traditional disciplinary boundaries such as those between basic and applied ecology: between water quality management and fisheries or

wildlife management : among lakes, streams, river, coastal wetlands and wetland ecology.

In this regard Lake 2000 recommends:

- ✚ Organizing three to four week training course in the year 2001. Training modules include aspects of

- Limnology of lakes, reservoirs and wetlands
 - Coastal wetlands
 - Watershed hydrology/Urban hydrology.
 - Ground water and hydrogeology
 - Monitoring and modeling
 - Restoration methodologies and conservation strategies.
 - Remediation measures.
 - Integrated management of water quality and quantity with ecosystem protection.
 - Land use, urban planning, Geographic Information System, Remote sensing.
 - Sustainable water resources management and water resources policy.
 - Organizing an International Symposium in November/December 2002 to discuss research needs for the restoration conservation and management of wetlands.
- **Recommendation No 16:** The National and State Governments should support research and development, watershed-scale restorations that integrate lake, stream and wetland components. State agencies, Non-Governmental organizations and University researchers should participate in planning, implementing and evaluating restoration projects. In addition, an inter-agency programme under Karnataka State Council for Science and Technology could be formed to co-ordinate the selection, planning and evaluation of these pilot projects. The research and implementation of the projects could be managed by the participating agencies.
- **Recommendation No 17:** Lake 2000 believes that goals for restoration of lakes need to be realistic and should be based on the concept of expected conditions for individual eco-regions. Further development of project selection and evaluation technology based on eco-region definitions and description should be encouraged and supported by the national and state government agencies.
 - Research and development are needed in several areas of applied limnology, and this programme should take an experimental approach which emphasizes manipulation of whole ecosystems.
 - Improved techniques for littoral zone and aquatic microphytes management need to be developed. Research should go beyond the removal of nuisance microphytes to address the restoration of native species that are essential for waterfowl and fish habitat . Basic research is necessary to improve understanding of fundamental limnological processes in littoral

zones and the interactions between littoral and pelagic zones of lakes.

- Biomaniipulation (foodweb management) has great potential for low-cost and long- term management of lakes, and research in this emerging field must be stimulated. Innovative and low-cost approaches to contaminant clean up in lakes need to be developed. The relations between loadings of stress-causing substances and responses of lakes need to be understood more precisely. Research should be undertaken to improve predictions of trophic state and nutrient loading relationships.
- Improved assessment programmes are needed to determine the severity and extent of damage in lakes and wetlands and a change in status over time. Innovative basic research is required to improve the science of assessment and monitoring. There is a great need for cost effective, reliable indicators of ecosystems function, including those that would reflect long-term change and response to stress. Research on indicators should include traditional community and ecosystem measurements, paleoecological trend assessments and remote sensing. Effective assessment and monitoring programme would involve network of local schools , colleges and universities.
- Procedures such as food web manipulation, introduction of phytophagous, insects and fish lining, and reintroduction of native species show promise for effective and long-lasting results when used alone or in combination with other restoration measures. Further research and development needs to be undertaken on these aspects.
- Paleolimnological approaches should be used to infer the past trophic history of lakes and wetlands and to decide whether these systems should be restored.
- Paleolimnological approaches also could be used to infer whether a lake has been restored to its predisturbance condition.

Wetland Policy Guidelines

The objective of policy with respect to wetland conservation is to promote the conservation of wetlands to sustain their ecological and socio-economical functions , now and in the future. Towards this end, the goals are,

- **Maintenance** of the functions and values derived from wetlands;
- **No net loss** of wetland functions on regional lands and water;
- **Enhancement and rehabilitation** of wetlands where the continued loss or degradation of wetlands or their functions have reached critical levels;
- **Recognition** of wetland functions in resource planning, management and economic decision making with regard to all national/state programmes, policies and activities;
- **Securement** of wetlands of significance;
- **Recognition of sound, sustainable management practices** in sectors such as forestry and agriculture that make positive contribution to wetland conservation while also achieving wise use of wetland resources;
- **Utilization** of wetlands in a manner that enhances prospects;

The proposed strategies in this regard are,

- i) Developing public awareness.
- ii) Managing wetlands on State lands and water, and in other State programmes.
- iii) Promote the wetland conservation in State protected areas.
- iv) Enhancing co-operation among State, District, Regional and Non Government partners.
- v) Conserving wetlands of significance.
- vi) Ensuring a sound scientific basis for policy.

The wetland policy at State level provides:

- A signal of commitment to wetland conservation and adds as a catalyst for mutually supporting action across the region;
- A heightened profile for the issue to call attention to wetland, socio-economic and environmental benefits, to ensure that wetlands receive adequate consideration by the State government;
- Direction and support for individual decision makers to ensure that opportunity for the sustained wise use of wetlands is realized, to avoid or reserve wetland related conflicts;
- Clarification of specific State responsibility for wetlands, as well as a synthesis of existing legislation, policies and programmes which already contribute to wetland conservation;
- A consistent, co-ordinated approach among the many State agencies which influence wetlands, aimed at adjusting activities which conflict with wetland conservation and ensuring progress towards specific objectives and goals.

A comprehensive policy on wetlands needs to be formulated to enhance the quality and increase spatial coverage specific to the region, to offer some of the most environmentally productive and cost effective opportunities for wetland conservation. The objectives should focus on addressing the following aspects,

- To reverse the current decline in the wetland base, ensuring no net loss and long term net gain in the quality, quantity and permanence of wetlands.
- To encourage partnerships in restoration, management, usage, through co-operative planning efforts with the primary focus on wetland conservation.
- Draft procedures for administration of wetland usage and its conservation.
- The emphasis is placed on the formation of Regional Wetlands Forum, involving local educational, public and private organization (involved in wetland issue). For effective functioning, the forum should consist researchers, school and college-students and teachers, economists, policy makers, representatives from agricultural community, developmental concerns, conservation organizations, state and local agencies under the collaboration efforts from the Ministry of Forest and Environment, Ministry of Science and Technology, Indian Council for Agricultural Research and planning departments with the following responsibilities. The policy should address,

- i. Defining wetlands, classification (based on degree of saturation, type of vegetation, usage, soil etc),inventory, planning, wetland regulation , and conservation approaches (i.e., acquisition, restoration, management and education).
- ii. Establish regional and state-wide goals to achieve long term increase in wetland acreage, functions and values in emphasizing the economic uses(fishing, agriculture, drinking water supply, etc.).
- iii. Draft programs for preservation, conservation, restoration, and enhance wetlands acreage and provide technical and adequate funding for wetlands program.
- iv. In the formulation/development of consistent standards and guidelines concerning wetland water quality, mitigation and monitoring of mitigation and restoration efforts.
- v. Encourage actions that promote efficiency of wetlands-related Permitting processes for the varied usage of wetlands for economic purposes (as fisheries, irrigation etc) by suitable policies and creation of concurrent permit review procedures.
- vi. Enhancing co-ordination of governmental (state, federal) and non- governmental organizations responsible in wetland development. Action oriented restoration and conservation programs could be initiated and monitored through discussion meetings of academicians, planning and implementing agencies for providing a platform for exchange of ideas.
- vii. Help in the development of internal policies within state agencies like irrigation departments, public works department, forest department, urban development and others that will encourage wetland conservation activities which are compatible with programmatic goals of flood control, ground water recharge, water management, water pollution control, recreation and others.
- viii. Establishment of inter-agency task force responsible for co- ordinating and information exchange among the agencies, boards, and departments as necessary to ensure co-ordinated development and implementation of wetland conservation program.
- ix. Integrate wetland policy and planning with other environmental and land use processes.
- x. Cost-benefit analysis of the wetland resources derived by the society and economic evaluation caused due to the loss of wetlands.
- xi. The forum could act as an advisory to the government in providing funds for wetland research and conservation programs.
- xii. Formulate Wetland Protection Act as a legislative vehicle to restrict any disturbance of wetlands leading to loss in biodiversity dependent on them.

**Participants of Workshop on Urban Lake Monitoring &
Management (23rd-25th Sept 09)**

| Participant Name | Address | E-mail |
|--------------------------------|--|-------------------------------------|
| Aditi Kashinath Kale | Abasaheb Garware College, Pune - 411004, Maharashtra. | aditikale122@gmail.com |
| Arivoli .A | Department of Environmental Management, Bharathidasan University, Trichy – 24, Tamil Nadu. | arivoli82@gmail.com |
| Debayan Bose | Vellore Institute of Technology, Vellore-632014, Tamil Nadu. | mail2debayan@gmail.com |
| Deepthi .S | Department of Studies in Zoology, University of Mysore, Mysore - 6, Karnataka. | guru.deepthi@yahoo.co.in |
| Divya .K | VIT University, VIT Vellore – 632014, Tamil Nadu. | kota.divya@gmail.com |
| Dindegave Nagnath Annarao | D.B.F. Dayanand College of Art and Science, Solapur - 413002, Maharashtra. | jagtapsm@yahoo.com |
| Gitanjali Kanwar | Wildlife Institute of India, Dehradun, Uttarkhand. | gitanjalkanwar@gmail.com |
| Hariharan .T | Department of Environmental Sciences, Bishop Heber College, Trichy - 17, Tamil Nadu. | anbudanhari2005@gmail.com |
| Jomet Sebastian .K | Department of Studies in Zoology, University of Mysore, Mysore - 6, Karnataka. | jometk@yahoo.com |
| Joseph Salve | Abasaheb Garware College, Pune - 4, Maharashtra. | josephsalve@gmail.com |
| Kavitha .C | Bharathiar University, Coimbatore, Tamil Nadu. | kavichokkan83@yahoo.co.in |
| Lakshmi T. Kumar | Indian Institute of Ecology and Environment, New Delhi. | lakshmikumr@gmail.com |
| Mridula B. Ram | North Maharashtra University, Jalgaon, Maharashtra. | mrudu.80@rediffmail.com |
| Muralidharan .G | Kongunadu Arts and Science College, Coimbatore, Tamil Nadu. | gene.murali09@yahoo.co.in |
| Nita Shashidharan | Institute of Science, Mumbai - 401101, Maharashtra. | buddie17@rediffmail.com |
| Prajapati Sujit Kumar Ramanlal | Bio Science Department, Sardar Patel University, Vallabh Vidyanagar – 388120, Gujarat. | mail2sujitprajapati@yahoo.co.in |
| Pramod A.F. | Dept of Wildlife and Management, Kuvempu University, Shimoga, Karnataka. | pramod.ambrose@gmail.com |
| Priyadarshini J. Shetty | Bangalore University, Bangalore, Karnataka. | priyadarshini_shetty@rediffmail.com |
| Dr. Preetha Panikkar | Central Inland Fisheries Research Institute, Regional Centre of CIFRI, Bangalore - 560 040, Karnataka. | preetha23@gmail.com |
| Ramkumar .V | Kongunadu Arts and Science College, Coimbatore, Tamil Nadu. | ram.kasc138@gmail.com |

| | | |
|--------------------|---|-------------------------------|
| Sangeetha .M | Bharathiar University, Coimbatore, Tamil Nadu. | sangeegiri_06@yahoo.co.in |
| Santhiya .M | Bharthidasan University, Trichy, Tamil Nadu. | santhiyaebt@yahoo.com |
| Santosh Pingale | Dept. of Water Resources Development and Management, IIT Roorkee, Haridwar - 246667, Uttarakhand. | pingalesm@gmail.com |
| Satyavati | Allahabad University, Allahabad – 211015, Uttar Pradesh. | satya_gis@rediffmail.com |
| Savitha .N | DOS in Zoology Aquatic Microbial Ecology Laboratory, University of Mysore, Mysore - 570006, Karnataka. | savinanjaiah@gmail.com |
| Shashikala .V | Bangalore University, Bangalore, Karnataka. | shashigowda.v@gmail.com |
| Shravanakumar .S | Department of PG studies and research in Applied Botany, Kuvempu University, Shimoga, Karnataka. | k.shravanakumar@yahoo.co m |
| Shruti R. Bhargava | The Institute of Science, Mumbai, Maharashtra. | bhargava_shruti@yahoo.co.in |
| Smitha R.B. | Department of Botany, University of Calicut, Calicut, Kerala. | rbsmitha@gmail.com |
| Sudip Banerjee | Maulana Azad College, University of Calcutta, Kolkata - 700070, West Bengal. | sudipba1@gmail.com |
| Vidya Gurkar | Yuvaraja College, Mysore, Karnataka. | vidyagurkar@gmail.com |
| Rohini .J | CDD Society, Bangalore - 43, Karnataka. | rohinishilpa@gmail.com |

MINISTRY OF ENVIRONMENT AND FORESTS**NOTIFICATION**

New Delhi the , 2008

Regulatory Framework for Wetlands Conservation

WHEREAS the wetlands, which are vital parts of the hydrological cycle, are highly productive, support exceptionally large biological diversity and provide a wide range of ecosystem services, such as food and fibre; waste assimilation; water purification; flood mitigation; erosion control; groundwater recharge; microclimate regulation; enhance aesthetics of the landscape; support many significant recreational, social and cultural activities, besides being a part of our cultural heritage;

AND WHEREAS many wetlands are seriously threatened by reclamation through drainage and landfill, pollution (discharge of domestic and industrial effluents, disposal of solid wastes), hydrological alterations (water withdrawal and inflow changes), and over-exploitation of their natural resources resulting in loss of biodiversity and disruption in goods and services provided by wetlands;

AND WHEREAS India is a signatory to the Ramsar Convention for management of wetland, for conserving their biodiversity and wise use extending its scope to a wide variety of habitats, including rivers and lakes, coastal lagoons, mangroves, peatlands, coral reefs, and numerous human-made wetland, such as fish and shrimp ponds, farm ponds, irrigated agricultural land, salt pans reservoirs, gravel pits, sewage farms, and canals;

AND WHEREAS the Ministry of Environment and Forests has identified a number of wetlands for conservation and management under the National Wetland Conservation Programme and some financial assistance is being provided to State Governments for various conservation activities through approval of the Management Action Plans;

AND WHEREAS the National Environment Policy (NEP) recognizes the numerous ecological services provided by wetlands and emphasizes on the need for setting up of a legally enforceable regulatory mechanism for the identified wetlands;

Now, therefore, in exercise of the powers conferred by Section 25 read along with sub-section (1) and clause (v) of sub-section (2) of Section 3 of the Environment (Protection) Act, 1986 (29 of 1986), the Central Government hereby makes the following rules for conservation and management of wetlands, namely:-

1. Short Title and Commencement:

- (i) These Rules may be called the Wetlands (Conservation and Management) Rules, 2008.

- (ii) They shall come into force on the date of their publication in the Official Gazette.

2. Definitions: In these Rules unless the context otherwise requires:

- (a) “Act” means the Environment (Protection) Act, 1986 (29 of 1986);
- (b) “Wetland” means an area of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary with water that is static or flowing, fresh, brackish or salt, including areas of marine water, the depth of which at low tide does not exceed six meters;

Explanation: For the purpose of this section wetland does not include main river channels; paddy fields; coastal wetlands such as mangroves, marine algal beds and coral reefs; and other entities covered under the notification on Coastal Regulation Zone under the Environment (Protection) Act, 1986;

- (c) “National Parks” means an area declared, whether under section 35 or section 38 or deemed, under sub-section (3) of section 66 of Wildlife (Protection) Act, 1972 to be declared, as a National Park;
- (d) “Wildlife Sanctuary” means an area declared, whether under sec. [26(A)5] or sec 38, or deemed, under sub section (3) of Sec.66 of Wildlife (Protection) Act, 1972 to be declared, as a Wildlife Sanctuary;
- (e) “Dredging” means an excavation activity or operation usually carried out at least partly underwater, in shallow sea or fresh water areas with the purpose of gathering up bottom sediments and disposing them off at a different location, mostly to keep waterways navigable.
- (f) “Regulatory Authority” means the Ministry of Environment & Forests at the Central level and State Environment Impact Assessment Authority constituted at the State level, as the case may be in accordance with notification no. 1067 dated 14/09/2006 under Environment (Protection) Act, 1986.
- (g) Committee means the Central Wetlands Conservation Committee (CWCC) at the Centre Government level, State Wetlands Conservation Committee (SWCC) at the State/UT Government level and the District Wetland Conservation Committee (DWCC) at the District level respectively;
- (h) “Person” shall include any company or association or body of individuals, whether incorporated or not;
- (i) “Chairperson” means the chairperson of the CWCC or as the case may be, of the SWCC or of the DWCC;

- (j) “Member-Secretary” means the Member-Secretary of the CWCC or as the case may be, of the SWCC and DWCC;
- (k) “Government” means the Central Government or the State/UT Government as the case may be;
- (l) “Member” means a member of the CWCC or as the case may be, of the SWCC and includes the Chairperson;
- (m) “Local bodies” mean Panchayats and Municipalities, by whatever name called, within the meaning of clause 1) of article 243B and clause (1) of article 243 of the Constitution and in the absence of any Panchayats or Municipalities, institutions of self- government constituted under any other provision of the Constitution or any Central Act or State Act;
- (n) “Professional body”- means professional organization, or a professional association or professional society, usually non-profit, that exists to further a particular profession, to protect both the public interest and the interests of professionals maintaining and enforcing standards of training and ethics in their profession and may also act like a cartel.
- (o) “Comprehensive Document” – A document depicting completely or broadly all the components related to management/regulation of wetlands.
- (p) “Rule” unless otherwise specified, means a Rule of these Rules.
- (q) “Notification” means a notification published in the Official Gazette;
- (r) “Public Consultation” refers to the process by which the concerns of local affected persons and others who have plausible stake in the ecological and economic aspects of the site proposed to be designated under regulatory frame work are taken into account.

3. Application

These Rules shall be applicable to all wetlands identified and notified in accordance with the procedure detailed therein.

4. Restriction on Activities within Wetlands

1) Prohibited Activities

- Conversion of wetland to non-wetland use.
- Reclamation of wetlands
- Solid waste dumping and discharge of untreated effluents.

- Any other activity to be specified in writing, which according to the Committee constituted in accordance with section 9,10 and 11 of these Rules, may have adverse impact on the ecosystem of the wetland.

2) Regulated activities

- Withdrawal of water/impoundment /diversion/interruption of sources
- Harvesting (including grazing) of living/non-living resources (may be permitted to the level that the basic nature and character of the biotic community is not adversely affected.)
- Treated effluent discharges – industrial / domestic/agro-chemical.
- Plying of motorized boats
- Dredging (need for dredging may be considered, on merit on case to case basis, only in cases of wetlands impacted by siltation)
- Constructions of permanent nature within 50 m of periphery except boat jetties.
- Activity which interferes with the normal run-off and related ecological processes – upto 200 m (*Facilities required for temporary use such as pontoon bridges and approach roads, will be exempted.*)
- Any other activity to be specified in writing which according to the Committee constituted in accordance with section 9,10 and 11 of these Rules, may have adverse impact on the ecosystem of the wetland.

Any of the regulated activities mentioned in 4(2) shall be undertaken only after a proposal for the activities is cleared by the concerned Regulatory Authority after going through the environment impact assessment procedure.

Notwithstanding the provisions above under Rule 4 (1) & (2), any intervention intended for the restoration and/or enhancement of the functions and values of the wetland, in deviation of the prescriptions of the management action plan shall be allowed only with the prior permission of the EAC (for Category 'A'), SEIAA (for category 'B') and DWCC(for category 'C') is obtained.

Further notwithstanding the provisions above under Rules 4 (1) & (2), the power to convert a wetland under Category 'A' to non-wetland use shall vest with the Central Government, conversion of wetland under category 'B' shall vest with the State Government after seeking prior approval of the Central Government and for conversion of wetland under category 'C' shall vest with the District Magistrate after seeking prior approval of the State Government.

No wetland will be converted to non-wetland use unless it is in public interest and detailed reasons are mentioned.

Provided further any change in category of land use shall be in accordance with the Town and Country Planning Acts, of the respective States/UTs.

6. Penal provisions:

Whoever fails to comply with or contravenes any of the provisions of these Rules or order issued thereunder, shall be liable for action under the provisions of the Environment (Protection) Act, 1986

7. Categories of wetlands for Regulation

Based on the relative significance of the functions performed by wetlands for overall well being of the people; and for determining the extent and level of regulation, wetlands shall be identified and categorised as given below.

i) Category 'A'

Wetlands shall be categorised under this category based upon all or any one of the following criteria:

- a) Wetlands listed under the Ramsar Convention
- b) Wetlands recognized as or lying within a world heritage site or a national heritage site
- c) Transboundary wetlands
- d) Inter-state wetlands which do not fall under category B or C;
- e) Wetlands with an area equivalent to or more than 1000 ha in arid regions, 5000 ha in semi-arid regions, 10,000 ha in sub-humid and 1,00,000 ha in humid tropic regions; and
- f) Wetland which is a major source of drinking water for 'Class A' cities.

ii) Category 'B'

Wetlands shall be identified & categorised under this category based upon all or any of the following criteria:

- a) Wetlands recognized as, or lying within, a state heritage site;
- b) Wetlands with an area of 25 ha but below 1000 ha in arid regions, 100 ha but below 5000 ha in semi-arid regions, 500 ha but below 10,000 ha in sub-humid; and 2,500 ha but below 1, 00,000 in humid tropic regions;
- c) High altitude wetland at 2,500 metres or more above mean sea level; and
- d) Wetland which is a major source of drinking water for 'Class B' towns.

iii) **Category 'C'**

Wetlands shall be identified & categorised under this category based upon all or any of the following criteria:

- a) Wetlands other than those covered under category A and B;
- b) Wetland with an area less than 25 ha in arid regions, less than 100 ha in semi-arid region, less than 500 ha in sub-humid and less than 2,500 ha in humid tropic regions;
- c) Wetland which is a major source of drinking water for local communities involving at least 100 households; and
- d) Wetland which is socially and/or culturally important to the local communities.

Explanation: A wetland proposed for identification should be free from 'Conflict of Interest'.

8. Categories of Proponents for Initiation of the Proposal

The categories of proponents initiating the proposal for identification of a particular wetland shall be as follows:

- (a) A Central/State or Local Public Organization
- (b) A recognized University/Research Institution
- (c) A recognized Community Based Organization (CBO)
- (d) A registered Industrial Association

9. The Constitution and Composition of Central/State/District Regulatory Authorities will be as follows:

- At the Central Government level, an Expert Appraisal Committee (EAC) constituted under the provisions of sub-section (3) of section (3) of the Environment (Protection) Act, 1986 vide Notification No.1067 dated 14.09.2006 will function as Regulatory Authority.
- The regulatory functions at State/UT level will be discharged by the State Environment Impact Assessment Authority (SEIAA) constituted under the provisions of sub-section (3) of section (3) of the Environment (Protection) Act, 1986 vide Notification No.1067 dated 14.09.2006 will function as Regulatory Authority.
- At the District level, the regulatory functions will be discharged by the District Wetland Conservation Committee (DWCC).

For assessing that the identified wetlands are conserved and to monitor and review the progress of implementation of these regulations, the constitution of the Committees at various levels will be as follows:

- 1) The Central Government shall, constitute a Committee to be called as Central Wetlands Conservation Committee (CWCC).
- 2) The Committee shall consist of the following members, namely:
 - a) a Chairperson, who shall be an eminent person having adequate knowledge and experience in wetland and lake conservation and other related issues, to be nominated by the Central Government;
 - b) The Chairperson shall nominate one of the members as the Vice-Chairperson who shall preside over the Committee meetings in the absence of the Chairperson.
 - c) a Member-Secretary, who shall be a representative of the Ministry of Environment and Forests, dealing with Wetland Conservation Programme in the Ministry; and nominated by the Secretary (E&F);
 - d) total number of members will not exceed seventeen including Chairman, Member Secretary and Professionals or Experts in various wetland related disciplines which include Aquatic Biology, Ecology, Hydrology, Limnology, Forestry, Soil Chemistry, Watershed Management (including ground water management), Sociology, Economics, Law and Public Administration.
 - e) The terms of conditions including payment of honorarium, etc., of the Chairperson, Member Secretary and other members shall be as per norms of the Government of India, issued from time to time for such Committees.

10. Constitution and Composition of State Wetlands Conservation Committee (SWCC)

- 1) The State Government shall, constitute a Committee to be called State Wetlands Conservation Committee (SWCC).
- 2) The Committee shall consist of the following members, namely:
 - (a) a Chairperson, who shall be an outstanding and experienced environmental policy expert or expert in environmental management or public administration, having national or international recognition, to be nominated by the State Government;
 - (b) The Chairperson shall nominate one of the members as the vice-chairperson who shall preside over the Committee meetings in the absence of the Chairperson;
 - (c) a Member-Secretary, who shall be a representative of the Department in the State, dealing with wetland related issues;

- (d) Total number of members shall not exceed twelve including the Chairman, Member Secretary and professionals or experts in various wetland related disciplines which include Aquatic Biology, Ecology, Hydrology, Limnology, Forestry, Soil Chemistry, Watershed Management (including ground water management), Sociology, Economics, Law and Public Administration.
- (e) The terms of conditions including payment of honorarium, etc., of the Chairperson, Member Secretary and other members shall be as per norms of the State Governments concerned, issued from time to time for such Committees.

11. Constitution and Composition of District Wetlands Conservation Committee (DWCC)

The State Government shall, constitute Committees at district level to be called District Wetlands Conservation Committee (DWCC).

- (a) It shall be chaired by the District Magistrate and shall be assisted by four experts in wetland related disciplines which include Hydrology, Forestry and Wildlife, Limnology, Sociology and other disciplines as mentioned under Section 9 (2)(c).
- (b) The Chairperson shall nominate one of the members as the vice-chairperson who shall preside over the committee meetings in the absence of the Chairperson
- (c) The Member-Secretary shall be a representative of the department in the district and nominated by District Magistrate.
- (d) Total number of members will not exceed nine including the Chairman, Member Secretary, experts and the three representatives, one from Zila Parishad, and one each by rotation from the village/block samities.
- (e) The terms of conditions including payment of honorarium, etc., for Vice-Chairperson, Member Secretary and other members shall be as per norms of the State Government, as issued from time to time.

12. Functions and Powers of the Committees

The Committee shall have the powers to:

- a) to recommend proposal for identification of wetlands;
- b) to finalize demarcation of the boundaries and zone of influence of the wetlands after determining the pre-existing rights, method of involvement of local communities in decision making, and responsibilities of local communities for conservation of the wetland ecosystems;
- c) to get the five year perspective Management Action Plan prepared for the identified wetlands and recommend to government for approval or otherwise

- d) to oversee activities as specified in the Management Action Plans of the particular wetland.
- e) to oversee implementation of the provisions of these Rules
- f) to promote research and disseminate findings of such research among stakeholders under clause (vi), (viii), (ix), (x), (xii) of sub section (2) of section (3) of E(P) Act., 1986
- g) to raise awareness about the utility of the wetlands in general and the designated wetlands in particular;
- h) to issue guidelines for the purpose of conservation and wise use of wetland;
- i) to advise Central Government, State Government and local bodies, as the case may be, on regulation of wetlands which are major source of drinking water for 'Class A', Class 'B' cities and local bodies, respectively.

13. Approval procedure for category 'A' wetlands

- 1) Proposal for identification of a wetland under these Rules shall be submitted at the Central Govt. Level to the CWCC containing information on:
 - 1) a broad geographic delineation of the wetland, and its zone of influence along with a map (not necessarily to the scale),
 - 2) the size of the wetland,
 - 3) threats to the wetland;
 - 4) activities needing regulation;
 - 5) account of pre-existing rights and privileges, consistent or not consistent with the ecological health of the wetland;
 - 6) the proposed regulatory measures
- 2) The Committee shall review the proposal in the next meeting convened within a period of **forty five days** from the date of receipt of the proposal.
- 3) The Committee may either reject the proposal which closes the case; or it may grant approval.
- 4) In the case of its finding merit in the proposal, the draft notification will be prepared by the Committee.
- 5) The wetland would be notified by the Central Government on the recommendation of the committee.
- 6) In case of approval, the Committee may request for preparation of a comprehensive document by a professional body in the light of the detailed TOR prescribed by the Committee
- 7) A professional body will prepare the Draft Comprehensive Document (DCD) as per the TOR.
- 8) Based on the DCD, an initial public consultation shall be held by the State Pollution Control Board.

- 9) The professional body will prepare the revised second DCD in the light of the outcomes of the initial public consultation.
- 10) The revised DCD will be reviewed by the Committee and approve the same as Management Action Plan (MAP) for the wetland.

14. Approval procedure for category 'B' and 'C' wetlands

- 1) The process for identification of category 'B' and 'C' wetlands and approval to the MAPs shall be as indicated in Section 13, except that the Committee in the case of the category 'B' wetlands will be SWCC and in the case of category 'C' will be DWCC.
- 2) The final notification for identification of wetlands shall be issued by the State Govt./UT Administration.

16. Terms of References for CWCC

- 1) The maximum tenure of the chairperson and experts members shall be for two terms of three years each.
- 2) The Committee shall be re-constituted after every three years.

17. Terms of References for SWCC

- 1) The maximum tenure of a Member shall be for two terms of three years each.
- 2) The Committee shall be re-constituted after every three years.

18. Terms of References for DWCC

- 1) The chairperson shall be assisted by locally available experts in one or more areas of conservation and other related disciplines.
- 2) The conservation and sustainable use of wetland resources at village level will be the responsibility of the village Panchayat.
- 3) The maximum tenure of a Member shall be for two terms of three years each.
- 4) The Committee shall be re-constituted after every three years.

19. Effect of overlapping Legal Provisions

- 1) A given wetland shall be regulated by one identified agency only.

- 2) Wetlands lying within the protected area of National Parks and Wildlife Sanctuaries shall be regulated under the Wildlife Protection Act, 1972.
- 3) Wetlands lying within the notified forest areas shall be regulated by the Indian Forest Act, 1927 and the Forest Conservation Act, 1980; and the relevant provisions of the Environment (Protection) Act, 1986 after the issuance of this notification under the Section 3(3).
- 4) The Wetlands outside protected or notified forest areas shall be regulated by the relevant provisions of the Environment (Protection) Act, 1986 after the issuance of this notification under the Section 3(3).
- 5) While the shortfalls, if any, under the Indian Forest Act, 1927; Wildlife Protection Act, 1972; and the Forest Conservation Act, 1980 may be plugged by invoking provisions of Environment (Protection) Act, 1986, the converse shall not be invoked. i.e. a wetland in protected or notified forests area shall be regulated both by Indian Forest Act, 1927; Wildlife Protection Act, 1972; and the Forest Conservation Act, 1980 as the case may be, and Environment (Protection) Act, 1986; however a wetland outside protected or notified forest area shall be regulated only under Environment (Protection) Act, 1986.

20. Enforcement of regulated activities

The precise enforcement agency shall be identified with reference to the activities to be regulated and the enforcement agencies shall vary from wetland to wetland as given below:

- (a) The identified activities for management and wise use of wetlands within forest and protected areas shall be enforced by the forest officers concerned.
- (b) The identified activities for management and wise use of wetlands outside the forest shall be enforced by the Department/ Institutions/Agencies dealing with the particular activity in the region which may include:
 - i) Local urban and rural body for the activities regarding conversion of wetlands to non-wetlands use, and reclamation and dredging;
 - ii) Department of Revenue for the activities like withdrawal or impoundment or diversion of water; and harvesting and grazing of living or non-living resources;
 - iii) State Pollution Control Board for activities such as. solid waste dumping, and effluent discharges;

- iv) Agency maintaining the wetland for eco-tourism for plying of motorized boats;

21. Obligation of Enforcement Agency

- 1) It shall be incumbent on the part of the Enforcement Agency to submit an Annual Report of enforcement functions performed in respect of the regulated wetlands to the concerned Committee and to EAC/SEIAA/DWCC.

22. Appeals against Regulatory Authority

The appeals against the decisions of the EAC/SEIAA/DWCC shall lie with the Environmental Tribunals.

23. Public Consultation

- 1) Public consultation shall be undertaken before a Management Action Plan for an identified wetland is prepared and/or finalised.
- 2) The public consultation shall ordinarily have two components comprising of:
 - (a) A public hearing at the site or in its close proximity-district wise, to be carried out in the manner prescribed in for ascertaining concerns of local affected persons;
 - (b) Obtain responses in writing from other concerned persons having a plausible stake in the environmental and economic aspects of the proposal.

24. Extent of Powers of Monitoring Committee

- 1) The powers of the Committee shall depend upon the extent and nature of activities to be regulated as per Notification of Regulatory frame work for wetlands.
- 2) The general framework of powers, however, shall be derived from the Environment Protection Act, 1986.

25. Monitoring Mechanism

- 1) MoEF shall institutionalize the process of environmental compliance taking into account the technical capacities and monitoring infrastructure and ensuring safeguards against the possible conflict of interests or collision with the monitoring entities.

- 2) The responsibility for monitoring shall vest with the CWCC, SWCC, DWCC and voluntary agencies.
- 3) Both the Central and the State Governments shall take measures including capacity development initiatives to enable Panchayati Raj institutions, urban local bodies and community-based organizations to undertake monitoring of compliance with conditions in respect of regulated activities.
- 4) The local and urban rural bodies shall be encouraged to annually report their environmental performance to their apex level executive bodies.

26. Process for Regulatory frame work of Wetlands

- 1) Committee makes list of potentially regulated wetlands.
- 2) The process shall begin with the submission of preliminary document by the proponents to CWCC, SWCC and DWCC.
- 3) The document shall be reviewed by concerned regulatory committees, viz., CWCC, SWCC and DWCC. These authorities shall also undertake preparation of detailed TOR for the document.
- 4) The professional body prepare the detailed document for the CWCC and send it to SWCC for their views.

27. Annual report

It shall be incumbent on the part of the Committee to submit an annual report of the functions performed in respect of the regulated wetlands to the concerned government.

28. Power to make rules

- 1) The powers of the Committee shall depend upon the extent and nature of activities to be regulated as per Notification of Regulatory frame work for wetlands.
- 2) The general framework of powers, however, shall be derived from the Environment Protection Act, 1986.
- 3) The provisions of the National Environment Policy, 2006 shall provide guidance on the powers of the said Regulatory Committees.

THE INDIAN FISHERIES ACT, 1897

ACT NO. 4 OF 1897 1*

[4th February, 1897.]

An Act to provide for certain matters relating to Fisheries 2***.

WHEREAS it is expedient to provide for certain matters relating to fisheries 2***;

It is hereby enacted as follows:--

1.

Title and extent.

1. Title and extent. (1) This Act may be called the Indian Fisheries Act, 1897.

(2) It extends to the whole of India except 3*[the territories which, immediately before the 1st November, 1956, were comprised in Part B States] 4***; 5***.

5* * * * *

Act to be read as supplemental to other Fisheries Laws.

2. Act to be read as supplemental to other Fisheries Laws. Subject to the provisions of sections 8 and 10 of the 6*General Clauses Act, 1887 (1 of 1887), this Act shall be read as supplemental to any other enactment 7* for the time being in force relating to fisheries in 8*[the territories to which this Act extends] 4***.

Definitions.

3. Definitions. In this Act, unless there is anything repugnant in the subject or context,--

(1) "fish" includes shell-fish;

Extended to Goa, Daman and Diu with modifications, by Reg. 12 of 1962, s. 3 & Sch. The Act comes into force in Pondicherry on 1.10.1963 vide Reg. 7 of 1963, s. 3 and Sch.

Extended to Laccadive, Minicoy and Amindivi islands (w.e.f. 1-10-1967): vide Reg. 8 of 1965, s. 3 & Sch. Madhya Pradesh by the C.P. and Berar Fisheries Act, 1948 (C.P. and B. Act 8 of 1948).

Repealed in its application to Ballary District by Mysore Act 14 of 1955.

Amendment in Andhra Pradesh by A. P. Act 5 of 1961.

Repealed in Bombay area by Maharashtra Act 1 of 1961.

Amendment in Pondicherry by Pondy. Act 18 of 1965.

1. This Act has been rep. in Madhya Pradesh by the C. P. and Berar Fisheries Act, 1948 (C. P. and B. Act 8 of 1948).
2. The words "in the Provinces" omitted by the A. O. 1950.
3. Subs. by the Adaptation of Laws (No. 2) Order, 1956, for "Part B States".
4. The words "except Burma" rep. by the A. O. 1937.
5. The word "and" at the end of sub-section (2), and sub-section (3), rep. by Act 10 of 1914, s. 3 and Sch. II.
6. See now ss. 4 and 26 of the General Clauses Act, 1897 (10 of 1897).
7. For law relating to Fisheries in--

- (1) Assam, see the Assam Land and Revenue Regulation, 1886 (1 of 1886), ss. 16 and 155;
- (2) Bengal and Assam (Private Fisheries), see the Private Fisheries Protection Act, 1889 (Ben. 2 of 1889);
- (3) Nilgiris District, as to acclimatised fish, see the Nilgiris

Game and Fish Preservation Act, 1879 (Mad. 2 of 1879);
(4) Punjab, see the Punjab Fisheries Act, 1914 (Pun. 2 of 1914).

8. Subs. by the Adaptation of Laws (No. 2) Order, 1956, for "a Part A State or a Part C State".

2

- (2) "fixed engine" means any net, cage, trap or other contrivance for taking fish, fixed in the soil or made stationary in any other way; and
- (3) "private water" means water which is the exclusive property of any person or in which any person has for the time being an exclusive right of fishery whether as owner, lessee or in any other capacity.

Explanation.--Water shall not cease to be "private water" within the meaning of this definition by reason only that other persons may have by custom a right of fishery therein.

4.

Destruction of fish by explosives in inland waters and on coasts.

4. Destruction of fish by explosives in inland waters and on coasts. (1) If any person uses any dynamite or other explosive substance in any water with intent thereby to catch or destroy any of the fish that may be therein, he shall be punishable with imprisonment for a term which may extend to two months, or with fine which may extend to two hundred rupees.

(2) In sub-section (1) the word "water" includes the sea within a distance of one marine league of the sea-coast; and an offence committed under that sub-section in such sea may be tried, punished and in all respects dealt with as if it had been committed on the land abutting on such coast.

Destruction of fish by poisoning of waters.

5. Destruction of fish by poisoning of waters. (1) If any person puts any poison, lime or noxious material into any water with intent thereby to catch or destroy any fish, he shall be punishable with imprisonment for a term which may extend to two months, or with fine which may extend to two hundred rupees.

(2) The State Government may, by notification in the Official Gazette, suspend the operation of this section in any specified area, and may in like manner modify or cancel any such notification.

6.

Protection of fish in selected waters by rules of State Government.

6. Protection of fish in selected waters by rules of State Government. (1) The State Government may make rules 1* for the purposes hereinafter in this section mentioned, and may by notification in the Official Gazette apply all or any of such rules to such waters, not being private waters, as the State Government may specify in the said notification.

(2) The State Government may also, by like notification, apply such rules or any of them to any private water with the consent in writing of the owner thereof and of all persons having for the time being any exclusive right of fishery therein.

(3) Such rules may prohibit or regulate all or any of the following matters, that is to say:-

(a) the erection and use of fixed engines;

1. For rules under s. 6, see different local Rules and Orders.

3

(b) the construction of weirs; and

(c) the dimension and kind of the nets to be used and the modes of using them.

(4) Such rules may also prohibit all fishing in any specified water for a period not exceeding two years.

(5) In making any rule under this section the State Government may--

(a) Direct that a breach of it shall be punishable with fine which may extend to one hundred rupees, and, when the breach is a continuing breach, with a further fine which may extend to ten rupees for every day after the date of the first conviction during which the breach is proved to have been persisted in; and

(b) provide for--

(i) the seizure, forfeiture and removal of fixed engines, erected or used, or nets used, in contravention of the rule, and

(ii) the forfeiture of any fish taken by means of any such fixed engine or net.

(6) The power to make rules under this section is subject to the condition that they shall be made after previous publication.

7.

Arrest without warrant for offences under this Act.

7. Arrest without warrant for offences under this Act. (1) Any police-officer, or other person specially empowered by the State Government in this behalf, either by name or as holding any office, for the time being, may, without an order from a Magistrate and without warrant, arrest any person committing in his view any offence punishable under section 4 or 5 or under any rule under section 6--

(a) if the name and address of the person are unknown to him, and

(b) if the person declines to give his name and address, or if there is reason to doubt the accuracy of the name and address if given.

(2) A person arrested under this section may be detained until his name and address have been correctly ascertained:

Provided that no person so arrested shall be detained longer than may be necessary for bringing him before a Magistrate, except under the order of a Magistrate for his detention.

THE INDIAN FOREST ACT, 1927

CONTENTS

ARRANGEMENT OF SECTIONS

CHAPTER I **PRELIMINARY**

1. Short title and extent
2. Interpretation clause

CHAPTER II **OF RESERVED FORESTS**

3. Power to reserve forests
4. Notification by State Government
5. Bar of accrual of forest-rights
6. Proclamation by Forest Settlement-officer
7. Inquiry-by Forest Settlement-officer
8. Powers of Forest Settlement-officers
9. Extinction of rights
10. Treatment of claims relating to practice of shifting cultivation
11. Power to acquire land over which right is claimed
12. Order on claims to rights of pasture or to forest-produce
13. Record to be made by Forest Settlement-officer
14. Record where he admits claim
15. Exercise of rights admitted
16. Commutation of rights
17. Appeal from order passed under section 11, section 12, section 15 or section 16
18. Appeal under section 17
19. Pleadings
20. Notification declaring forest reserved
21. Publication of translation of such notification in neighbourhood of forest
22. Power to revise arrangement made under section 15 or section 18
23. No right acquired over reserved forest, except as here provided
24. Rights not to be alienated without sanction
25. Power to stop ways and water-courses in reserved forests
26. Acts prohibited in such forests
27. Power to declare forest no longer reserved

CHAPTER III **OF VILLAGE-FORESTS**

28. Formation of village-forests

CHAPTER IV
OF PROTECTED FORESTS

- 29. Protected forests
- 30. Power to issue notification reserving trees, etc.
- 31. Publication of translation of such notification in neighbourhood
- 32. Power to make rules for protected forests
- 33. Penalties for acts in contravention of notification under section 30 or of rules under section 32
- 34. Nothing in this Chapter to prohibit acts done in certain cases

CHAPTER V
**OF THE CONTROL OVER FORESTS AND LANDS NOT BEING THE PROPERTY
GOVERNMENT**

- 35. Protection of forests for special purposes
- 36. Power to assume management of forests
- 37. Expropriation of forests in certain cases
- 38. Protection of forests at request of owners

CHAPTER VI
OF THE DUTY ON TIMBER AND OTHER FOREST-PRODUCE

- 39. Power to impose duty' on timber and other forest-produce
- 40. Limit not to apply to purchase-money or royalty

CHAPTER VII
OF THE CONTROL OF TIMBER AND OTHER FOREST-PRODUCE IN TRANSIT

- 41. Power to make rules to regulate transit of forest-produce
- 41A. Powers of Central Government as to movements of timber across customs frontiers
- 42. Penalty for breach of rules made under section 41
- 43. Government and Forest-officers not liable for damage to forest-produce at depot
- 44. All persons bound to aid in case of accidents at depot.

CHAPTER VIII
OF THE COLLECTION OF DRIFT AND STRANDED TIMBER

- 45. Certain kinds of timber to be deemed property of Government until title thereto proved, and may be collected accordingly
- 46. Notice to claimants of drift timber
- 47. Procedure on claim preferred to such timber
- 48. Disposal of unclaimed timber
- 49. Government and its officers not liable for damage to such timber
- 50. Payments to be made by claimant before timber is delivered to him

51. Power to make rules and prescribe penalties

CHAPTER IX
PENALTIES AND PROCEDURE

52. Seizure of property liable to confiscation
53. Power to release property seized under section 52
54. Procedure thereupon
55. Forest-produce, tools, etc., when liable to confiscation
56. Disposal on conclusion of trial for forest-offence, of produce in respect of which it was committed
57. Procedure when offender not known, or cannot be found
58. Procedure as to perishable property seized under section 52
59. Appeal from orders under section 55, section 56 or section 57
60. Property when to vest in Government
61. Saving of power to release property seized
62. Punishment for wrongful seizure
63. Penalty for counterfeiting or defacing marks on trees and timber and for altering boundary marks
64. Power to arrest without wan-ant
65. Power to release on a bond a person arrested
66. Power to prevent commission of offence
67. Power to try offences summarily
68. Power to compound offences
69. Presumption that forest-produce belongs to Government

CHAPTER X
CATTLE-TRESPASS

70. Cattle-trespass Act, 187 1, to apply
71. Power to alter fines fixed under that Act

CHAPTER XI
OF FOREST-OFFICERS

72. State Government may invest Forest-officers with certain powers
73. Forest-officers deemed public servants
74. Indemnity for acts done in good faith
75. Forest-officers not to trade

CHAPTER XII
SUBSIDIARY RULES

76. Additional powers to make rules
77. Penalties for breach of rules

78. Rules when to have force of law

CHAPTER XIII **MISCELLANEOUS**

79. Persons bound to assist Forest-officers and Police-officers
80. Management of forests the joint property of Government and other persons
81. Failure to perform service for which a share in produce of Government forest is employed
82. Recovery of money due to Government
83. Lien on forest-produce for such money
84. Land required under this Act to be deemed to be needed for a public purpose under the Land Acquisition Act, 1894
85. Recovery of penalties due under bond
85A. Saving for rights of Central Government
86. [Repealed.]

THE INDIAN FOREST ACT, 1927 **(16 of 1927)**

[21st September, 1927]

An Act to consolidate the law relating to forests, the transit of forest-produce and the duty leviable on timber and other forest-produce.

Whereas it is expedient to consolidate the law relating to forests, the transit of forest produce and the duty leviable on timber and other forest-produce; It is hereby enacted a follows:

CHAPTER I **PRELIMINARY**

1. Short title and extent.—(1) This Act may be called the Indian Forest Act, 1921

¹[(2) It extends to the whole of India except the territories which, immediately before the 1st November, 1956, were comprised in Part B States.

(3) It applies to the territories which, immediately before the 1st November, 1956, were comprised in the States of Bihar, Bombay, Coorg, Delhi, Madhya Pradesh, Orissa, Punjab, Uttar Pradesh and West Bengal; but the Government of any State may by notification in Official Gazette bring this Act into force² in the whole or any specified part of that State which this Act extends and where it is not in force.]

2. Interpretation clause.—In this Act, unless there is anything repugnant in the subject or context—

(1) “cattle” includes elephants, camels, buffaloes, horses, mares, geldings, ponies, colts, fillies, mules, asses, pigs, rams, ewes, sheep, lambs, goats and kids;

(2) “Forest-officer” means, any person whom ³ [* * *] the State Government or any office empowered by ³ [* * *] the State Government in this behalf, may appoint to carry out all any of the purposes of this Act or to do anything required by this Act or any rule thereunder to be done by a Forest-officer;

(3) “forest-offence” means an offence punishable under this Act under any rule made thereunder;

(4) “forest-produce” includes—

- (a) the following whether found in, or brought from, a forest or not, that is to say timber, charcoal, caoutchouc, catechu, wood-oil, resin, natural varnish, bark, lac, mahua flowers, mahua seeds,⁴[kuth] and myrabolams, and
- (b) the following when found in, or brought from a forest, that is to say
 - (i) trees and leaves, flowers and fruits, and all other parts or produce not herein before mentioned, of trees,
 - (ii) plants not being trees (including grass, creepers, reeds and moss), and all parts or produce of such plants,
 - (iii) wild animals and skins, tusks, horns, bones, silk, cocoons, honey and wax, and all other parts or produce of animals, and
 - (iv) peat, surface soil, rock and minerals (including lime-stone, laterite, mineral oils, and all products of mines or quarries);

⁵[(4A) “ownee” includes a Court of Wards in respect of property under the superintendence or charge of such Court;]

(5) “river” includes any stream, canal, creek or other channels, natural or artificial;

(6) “timber” includes trees, when they have fallen or have been felled, and all wood whether cut up or fashioned or hollowed out for any purpose or not; and

(7) “tree” includes palms, bamboos, skumps, brush-wood and canes.

CHAPTER II

OF RESERVED FORESTS

3. Power to reserve forests.—The State Government may constitute any forest-land or waste-land which is the property of Government, or over which the Government has proprietary rights, or to the whole or any part of the forest-produce of which the Government is entitled, a reserved forest in the manner hereinafter provided.

4. Notification by State Government.—(1) Whenever it has been decided to constitute any land a reserved forest, the State Government shall issue a notification in the Official Gazette—

- (a) declaring that it has been decided to constitute such land a reserved forest;
- (b) specifying, as nearly as possible, the situation and limits of such land; and
- (c) appointing an officer (hereinafter called “the Forest Settlement-officer”) to inquire into and determine the existence, nature and extent of any rights alleged to exist in favour of any person in or over any land comprised within such limits or in or over any forest-produce, and to deal with the same as provided in this Chapter.

Explanation.—For the purpose of clause (b), it shall be sufficient to describe the limits of the forest by roads, rivers, ridges or other well-known or readily intelligible boundaries.

(2) The officer appointed under clause (c) of sub-section (1) shall ordinarily be a person not holding any forest-office except that of Forest Settlement-officer.

(3) Nothing in this section shall prevent the State Government from appointing any number of officers not exceeding three, not more than one of whom shall be a person holding any forest-office except as aforesaid, to perform the duties of a Forest Settlement-officer under this Act.

5. Bar of accrual of forest-rights.—After the issue of a notification under section 4, no right shall be acquired in or over the land comprised in such notification, except by succession or under a grant or contract in writing made or entered into by or on behalf of the Government or some person in whom such right was vested when the notification was issued; and no fresh clearings for cultivation or for any other purpose shall be made in such land except in accordance with such rules as may be made by the State Government in this behalf.

6. Proclamation by Forest Settlement-officer.—When a notification has been issued under section 4, the Forest Settlement-officer shall publish in the local vernacular in every town and village in the neighbourhood of the land comprised therein, a proclamation

- (a) specifying, as nearly as possible, the situation and limits of the proposed forest;
- (b) explaining the consequences which, as hereinafter provided, will ensue on the reservation of such forest; and
- (c) fixing a period of not less than three months from the date of such proclamation, and requiring every person claiming any right mentioned in section 4 or section, 5 within such period either to present to the Forest Settlement-officer a written notice specifying or to appear before him and state, the nature of such right and the amount and particulars of the compensation (if any) claimed in respect thereof.

7. Inquiry by Forest Settlement-officer.—The Forest Settlement-officer shall take down in writing all statements made under section 6, and shall at some convenient place inquire into all claims duly preferred under that section, and the existence of any rights mentioned in section 4 or section 5 and not claimed under section 6 so far as the same may be ascertainable from the records of Government and the evidence of any persons likely to be acquainted with the same.

8. Powers of Forest Settlement-officers.—For the purpose of such inquiry, the Forest Settlement-officer may exercise the following powers, that is to say:

- (a) power to enter, by himself or any officer authorised by him for the purpose, upon any land, and to survey, demarcate and make a map of the same; and
- (b) the powers of a Civil Court in the trial of suits.

9. Extinction of rights.—Rights in respect of which no claim has been preferred under section 6, and of the existence of which no knowledge has been acquired by inquiry under section 7, shall be extinguished, unless before the notification under section 20 is published, the person claiming them satisfies the Forest Settlement-officer that he had sufficient cause for not preferring such claim within the period fixed under section 6.

10. Treatment of claims relating to practice of shifting cultivation.—(1) In the case of a claim relating to the practice of shifting cultivation, the Forest Settlement-officer shall record a statement setting forth the particulars of the claim and of any local rule or order under which the practice is allowed or regulated, and submit the statement to the State Government, together with his opinion as to whether the practice should be permitted or prohibited wholly or in part.

(2) On receipt of the statement and opinion, the State Government may make an order permitting or prohibiting the practice wholly or in part.

(3) If such practice is permitted wholly or in part, the Forest Settlement-officer may arrange for its exercise

- (a) by altering the limits of the land under settlement so as to exclude land of sufficient extent, of a suitable kind, and in a locality reasonably convenient for the purposes of the claimants, or
- (b) by causing certain portions of the land under settlement to be separately demarcated, and giving permission to the claimants to practise shifting cultivation therein under such conditions as he may prescribe.

(4) All arrangements made under sub-section (3) shall be subject to the previous sanction of the State Government.

(5) The practice of shifting cultivation shall in all cases be deemed a privilege subject to control, restriction and abolition by the State Government.

11. Power to acquire land over which right is claimed.—(1) In the case of a claim to a right in or over any land, other than a right of way or right of pasture, or a right to forest produce or a water-course, the Forest Settlement-officer shall pass an order admitting or rejecting the same in whole or in part.

(2) If such claim is admitted in whole or in part, the Forest Settlement-officer shall either

- (i) exclude such land- from the limits of the proposed forest; or
- (ii) come to an agreement with the owner thereof for the surrender of his rights; or
- (iii) proceed to acquire such land in the manner provided by the Land Acquisition Act, 1894 (1 of 1894).

(3) For the purpose of so acquiring such land

- (a) the Forest Settlement-officer shall be deemed to be a Collector proceeding under the Land Acquisition Act, 1894 (1 of 1894);
- (b) the claimant shall be deemed to be a person interested and appearing before him in pursuance of a notice given under section 9 of that Act;
- (c) the provisions of the preceding sections of that Act shall be deemed to have been complied with; and
- (d) the Collector, with the consent of the claimant, or the Court, with the consent of both parties, may award compensation in land, or partly in land and partly in money.

12. Order on claims to rights of pasture or to forest-produce.—In the case of a claim to rights of pasture or to forest-produce, the Forest Settlement-officer shall pass an order admitting or rejecting the same in whole or in part.

13. Record to be made by Forest Settlement-officer.—The Forest Settlement officer, when passing any order under section 12, shall record, so far as may be practicable,—

- (a) the name, father's name, caste, residence and occupation of the person claiming the right; and
- (b) the designation, position and area of all fields or groups fields (if any), and the designation and position of all buildings (if any) in respect of which the exercise of such rights is claimed.

14. Record where he admits claim.—If the Forest Settlement-officer admits in whole or in part any claim under section 12, he shall also record the extent to which the claim is so admitted, specifying the number and description of the cattle which the claimant is from time to time entitled to graze in the forest, the season during which such pasture is permitted, the quantity of timber and other forest produce which he is from time to time authorised to take or receive, and such other particulars as the case may require. He shall also record whether the timber or other forest-produce obtained by the exercise of the rights claimed may be sold or bartered.

15. Exercise of rights admitted.—(1) After making such record the Forest Settlement officer shall, to the best of his ability, having due regard to the maintenance of the reserved forest in respect of which the claim is made, pass such orders as will ensure the continued exercise of the rights so admitted.

(2) For this purpose the Forest Settlement-officer may

- (a) set out some other forest-tract of sufficient extent, and in a locality reasonably convenient, for the purposes of such claimants, and record an order conferring upon them a right of pasture or to forest-produce (as the case may be) to the extent so admitted; or
- (b) so alter the limits of the proposed forest as to exclude forest-land of sufficient extent, and in a locality reasonably convenient, for the purposes of the claimants; or
- (c) record an order, continuing to such claimants a right of pasture or to forest-overpage produce, as the case may be, to the extent so admitted, at such seasons, within such portions of the proposed forest, and under such rules, as may be made in this behalf by the State Government.

16. Commutation of rights.—In case the Forest Settlement-officer finds it impossible having due regard to the maintenance of the reserved forest, to make such settlement under section 15 as shall ensure the continued exercise of the said rights to the extent so admitted, he shall, subject to such rules as the State Government may make in this behalf, commute such rights, by the payment to such persons of a sum of money in lieu thereof, or by the grant of land, or in such other manner as he thinks fit.

17. Appeal from order passed under section 11, section 12, section 15 or section 16.—Any person who has made a claim under this Act, or any Forest-officer or other person generally or specially empowered by the State Government in this behalf, may, within three months from the date of the order passed on such claim by the Forest Settlement-officer under section 11, section 12, section 15 or section 16, present an appeal from such order to such officer of the Revenue Department of rank not lower than

that of a Collector, as the State Government may, by notification in the Official Gazette, appoint to hear appeals from such orders:

Provided that the State Government may establish a Court (hereinafter called the Forest Court) composed of three persons to be appointed by the State Government, and when the Forest Court has been so established, all such appeals shall be presented to it.

18. Appeal under section 17.—(1) Every appeal under section 17 shall be made by petition in writing, and may be delivered to the Forest Settlement-officer, who shall forward it without delay to the authority competent to hear the same.

(2) If the appeal be to an officer appointed under section 17, it shall be heard in the manner prescribed for the time being for the hearing of appeals in matters relating to land-revenue.

(3) If the appeal be to the Forest Court, the Court shall fix a day and a convenient place in the neighbourhood of the proposed forest for hearing the appeal, and shall give notice thereof to the parties, and shall hear such appeal accordingly.

(4) The order passed on the appeal by such officer or Court, or by the majority of the members of such Court, as the case may be, shall, subject only to revision by the State Government, be final.

19. Pleadings.—The State Government, or any person who has made a claim under this Act, may appoint any person to appear, plead and act on its or his behalf before the Forest Settlement-officer, or the appellate officer or Court, in the course of any inquiry or appeal under this Act.

20. Notification declaring forest reserved.—(1) When the following events have occurred, namely:—

- (a) the period fixed under section 6 for preferring claims have elapsed and all claims (if any) made under that section or section 9 have been disposed of by the Forest Settlement-officer;
- (b) if any such claims have been made, the period limited by section 17 for appealing from the orders passed on such claims has elapsed, and all appeals (if any) presented within such period have been disposed of by the appellate officer or Court; and
- (c) all lands (if any) to be included in the proposed forest, which the Forest Settlement-officer has, under section 11, elected to acquire under the Land Acquisition Act, 1894 (1 of 1894), have become vested in the Government under section 16 of that Act,

the State Government shall publish a notification in the Official Gazette, specifying definitely, according to boundary-marks erected or otherwise, the limits of the forest which is to be reserved, and declaring the same to be reserved from a date fixed by the notification.

(2) From the date so fixed such forest shall be deemed to be a reserved forest.

21. Publication of translation of such notification in neighbourhood of forest.—The Forest-officer shall, before the date fixed by such notification, cause a translation thereof into the local vernacular to be published in every town and village in the neighbourhood of the forest.

22. Power to revise arrangement made under section 15 or section 18.—The State Government may, within five years from the publication of any notification under section 20, revise any arrangement made under section 15 or section 18, and may for this purpose rescind or modify any order made under

section 15 or section 18, and direct that any one of the proceedings specified in section 15 be taken in lieu of any other of such proceedings, or that the rights admitted under section 12 be commuted under section 16.

23. No right acquired over reserved forest, except as here provided.—No right of any description shall be acquired in or over a reserved forest except by succession or under a grant or contract in writing made by or on behalf of the Government or some person in whom such right was vested when the notification under section 20 was issued.

24. Rights not to be alienated without sanction.—(1) Notwithstanding anything contained in section 23, no right continued under clause (c) of sub-section (2) of section 15 shall be alienated by way of grant, sale, lease mortgage or otherwise, without the sanction of the State Government:

Provided that, when any such right is appendant to any land or house, it may be sold or otherwise alienated with such land or house.

(2) No timber or other forest-produce obtained in exercise of any such right shall be sold or bartered except to such extent as may have been admitted in the order recorded under section 14.

25. Power to stop ways and water-courses in reserved forests.—The Forest-officer may, with the previous sanction of the State Government or of any officer duly authorised by it in this behalf, stop any public or private way or water-course in a reserved forest, provided that a substitute for the way or water-course so stopped, which the State Government deems to be reasonably convenient, already exists, or has been provided or constructed by the Forest-officer in lieu thereof.

26. Acts prohibited in such forests.—(1) Any person who—

- (a) makes any fresh clearing prohibited by section 5, or
- (b) sets fire to a reserved forest, or, in contravention of any rules made by the State Government in this behalf, kindles any fire, or leaves any fire burning, in such manner as to endanger such a forest;

or who, in a reserved forest—

- (c) kindles, keeps or carries any fire except at such seasons as the Forest-officer may notify in this behalf,
- (d) trespasses or pastures cattle, or permits cattle to trespass;
- (e) causes any damage by negligence in felling any tree or cutting or dragging any timber;
- (f) fells, girdles, lops, or bums any tree or strips off the bark or leaves from, or otherwise damages, the same;
- (g) quarries stone, bums lime or charcoal, or collects, subjects to any manufacturing process, or removes, any forest-produce;
- (h) clears or breaks up any land for cultivation or any other purpose;
- (i) in contravention of any rules made in this behalf by the State Government hunts, shoots, fishes, poisons water or sets traps or snares; or

- (j) in any area in which the Elephants' Preservation Act, 1879 (6 of 1879), is not in force, kills or catches elephants in contravention of any rules so made,

shall be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both, in addition to such compensation for damage done to the forest as the convicting Court may direct to be paid.

(2) Nothing in this section shall be deemed to prohibit

- (a) any act done by permission in writing of the Forest-officer, or under any rule made by the state Government; or
- (b) the exercise of any right continued under clause (c) of sub-section (2) of section 15, or created by grant or contract in writing made by or on behalf of the Government under section 23.

(3) Whenever fire is caused wilfully or by gross negligence in a reserved forest, the State Government may (notwithstanding that any penalty has been inflicted under this section) direct that in such forest or any portion thereof the exercise of all rights of pasture or to forest produce shall be suspended for such period as it thinks fit.

27. Power to declare forest no longer reserved.—(1) The State Government may, [* * *] by notification in the Official Gazette, direct that, from a date fixed by such notification, any forest or any portion thereof reserved under the Act shall cease to be a reserved forest.

(2) From the date so fixed, such forest or portion shall cease to be reserved; but the rights (if any) which have been extinguished therein shall not revive in consequence of such cessation.

CHAPTER III

OF VILLAGE-FORESTS

28. Formation of village-forests.—(1) The State Government may assign to any village-community the rights of Government to or over any land which has been constituted a reserved forest, and may cancel such assignment. All forests so assigned shall be called village-forests.

(2) The State Government may make rules for regulating the management of village forests, prescribing the conditions under which the community to which any such assignment is made may be provided with timber or other forest-produce or pasture, and their duties for the protection and improvement of such forest.

(3) All the provisions of this Act relating to reserved forests shall (so far as they are not inconsistent with the rules so made) apply to village-forests.

CHAPTER IV

OF PROTECTED FORESTS

29. Protected forests.—(1) The State Government may, by notification in the Official Gazette, declare the provisions of this Chapter applicable to any forest-land or waste-land which, is not included

in a reserved forest but which is the property of Government, or over which the Government has proprietary rights, or to the whole or any part of the forest produce of which the Government is entitled.

(2) The forest-land and waste-lands comprised in any such notification shall be called a “protected forest”.

(3) No such notification shall be made unless the nature and extent of the rights of Government and of private persons in or over the forest-land or waste-land comprised therein have been inquired into and recorded at a survey or settlement, or in such other manner as the State Government thinks sufficient. Every such record shall be presumed to be correct until the contrary is proved:

Provided that, if, in the case of any forest-land or waste land, the State Government thinks that such inquiry and record are necessary, but that they will occupy such length of time as in the meantime to endanger the rights of Government, the State Government may, pending such inquiry and record, declare such land to be a protected forest, but so as not to abridge or affect any existing rights of individuals or communities.

30. Power to issue notification reserving trees, etc.—The State Government may, by notification in the Official Gazette,

- (a) declare any trees or class of trees in a protected forest to be reserved from a date fixed by, the notification;
- (b) declare that any portion of such forest specified in the notification shall be closed for such term, not exceeding thirty years, as the State Government thinks fit, and that the rights of private persons, if any, over such portion shall be suspended during such terms, provided that the remainder of such forest be sufficient, and in a locality reasonably convenient, for the due exercise of the right suspended in the portion so closed; or
- (c) prohibit, from a date fixed as aforesaid, the quarrying of stone, or the burning of lime or charcoal, or the collection or subjection to any manufacturing process, or removal of, any forest-produce in any such forest, and the breaking up or clearing for cultivation, for building, for herding cattle or for any other purpose, of any land in any such forest.

31. Publication of translation of such notification in neighbourhood.—The Collector shall cause a translation into the local vernacular of every notification issued under section 30 to be affixed in a conspicuous place in every town and village in the neighbourhood of the forest comprised in the notification.

32. Power to make rules for protected forests.—The State Government may make rules to regulate the following matters, namely:

- (a) the cutting, sawing, conversion and removal of trees and timber, and the collection, manufacture and removal of forest-produce, from protected forests;
- (b) the granting of licences to the inhabitants of towns and villages in the vicinity of protected forests to take trees, timber or other forest-produce for their own use, and the production and return of such licences by such persons;
- (c) the granting of licences to persons felling or removing trees or timber or other forest-produce from such forests for the purposes of trade, and the production

- d) the payments, if any, to be made by the persons mentioned in clauses (b) and (c) for permission to cut such trees, or to collect and remove such timber or other forest-produce;
- (e) the other payments, if any, to be made by them in respect of such trees, timber and produce, and the places where such payment shall be made;
- (f) the examination of forest-produce passing out of such forests;
- (g) the clearing and breaking up of land for cultivation or other purposes in such forests;
- (h) the protection from fire of timber lying in such forests and of trees reserved under section 30;
- (i) the cutting of grass and pasturing of cattle in such forests;
- (j) hunting, shooting, fishing, poisoning water and setting traps or snares in such forests and the killing or catching of elephants in such forests in areas in which the Elephants' Preservation Act, 1879 (6 of 1879), is not in force;
- (k) the protection and management of any portion of a forest closed under section 30; and
- (l) the exercise of rights referred to in section 29.

33. Penalties for acts in contravention of notification under section 30 or of rules under section 32.--(1) Any person who commits any of the following offences, namely:—

- (a) fells, girdles, lops, taps or bums any tree reserved under section 30, or strips off the bark or leaves from, or otherwise damages, any such tree;
- (b) contrary to any prohibition under section 30, quarries any stone, or bums any lime or charcoal or collects, subjects to any manufacturing process, or removes any forest-produce;
- (c) contrary to any prohibition under section 30, breaks up or clears for cultivation or any other purpose any land in any protected forest;
- (d) sets fire to such forest, or kindles a fire without taking all reasonable precautions to prevent its spreading to any tree reserved under section 30, whether standing fallen or felled, or to say closed portion of such forest;
- (e) leaves burning any fire kindled by him in the vicinity of any such tree or closed portion;
- (f) fells any tree or drags any timber so as to damage any tree reserved as aforesaid;
- (g) permits cattle to damage any such tree;
- (h) infringes any rule made under section 32,

shall be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both.

(2) Whenever fire is caused wilfully or by gross negligence in a protected forest, the State Government may, notwithstanding that any penalty has been inflicted under this section, direct that in such forest or any portion thereof the exercise of any right of pasture or to forest-produce shall be suspended for such period as it thinks fit.

34. Nothing in this Chapter to prohibit acts done in certain cases.—Nothing in this Chapter shall be deemed to prohibit any act done with the permission in writing of the Forest-officer, or in accordance with rules made under section 32, or, except as regards any portion of a forest closed under section 30, or as regards any rights the exercise of which has been suspended under section 33, in the exercise of any right recorded under section 29.

CHAPTER V
**OF THE CONTROL OVER FORESTS AND LANDS NOT BEING
THE PROPERTY OF GOVERNMENT**

35. Protection of forests for special purposes.—(1) The State Government may, by notification in the Official Gazette, regulate or prohibit in any forest or waste-land

- (a) the breaking up or clearing of land for cultivation;
- (b) the pasturing of cattle; or
- (c) the firing or clearing of the vegetation;

when such regulation or prohibition appears necessary for any of the following purposes:—

- (i) for protection against storms, winds, rolling stones, floods and avalanches;
- (ii) for the preservation of the soil on the ridges and slopes and in the valleys of hilly tracts, the prevention of land slips or of the formation of ravines, and torrents, or the protection of land against erosion, or the deposit thereon of sand, stones or gravel;
- (iii) for the maintenance of a water-supply in springs, rivers and tanks;
- (iv) for the protection of roads, bridges, railways and other lines of communication;
- (v) for the preservation of the public health.

(2) The State Government may, for any such purpose, construct at its own expense, in or upon any forest or waste-land, such work as it thinks fit.

(3) No notification shall be made under sub-section (1) nor shall any work be begun under sub-section (2), until after the issue of a notice to the owner of such forest or land calling on him to show cause, within a reasonable period to be specified in such notice, why such notification should not be made or work constructed, as the case may be, and until his objections, if any, and any evidence he may produce in support of the same, have been heard by an officer duly appointed in that behalf and have been considered by the State Government.

36. Power to assume management of forests.—(1) In case of neglect of, or wilful disobedience to, any regulation or prohibition under section 35, or if the purposes of any work to be-constructed under that section so require, the State Government may, after notice in writing to the owner of such forest or land and after considering his objections, if any, place the same under the control of a Forest-officer, and may declare that all or any of the provisions of this Act relating to reserved forests shall apply to such forest or land.

(2) The net profits, if any, arising from the management of such forest or land shall be paid to the said owner.

37. Expropriation of forests in certain cases.—(1) In any case under this Chapter in which the State Government considers that, in lieu of placing the forest or land under the control of a Forest-Officer, the same should be acquired for public purposes, the State Government may proceed to acquire it in the manner provided by the Land Acquisition Act, 1894 (1 of 1894).

(2) The owner of any forest or land comprised in any notification under section 35 may, at any time not less than three or more than twelve years from the date thereof, require that such forest or land shall be acquired for public purposes, and the State Government shall require such forest or land accordingly.

38. Protection of forests at request of owners.—(1) The owner of any land or, if there more than one owner thereof, the owners of shares therein amounting in the aggregate at least two-thirds thereof may, with a view to the formation or conservation of forests thereon, represent in writing to the Collector their desire

- (a) that such land be managed on their behalf by the Forest-officer as a reserved or a protected forest on such terms as may be mutually agreed upon; or
- (b) that all or any of the provisions of this Act be applied to such land.

(2) In either case, the State Government may, by notification in the Official Gazette, apply to such land such provisions of this Act as it thinks suitable to the circumstances thereof and as may be desired by the applicants.

CHAPTER VI

OF THE DUTY ON TIMBER AND OTHER FOREST-PRODUCE

39. Power to impose duty on timber and other forest-produce.—(1) The ⁷[Central Government] may levy a duty in such manner, at such places and at such rates as it may declare by notification in the Official Gazette on all timber or other forest-produce

- (a) which is produced in ⁸[the territories to which this Act extends], and in respect of which the Government has any right;
- (b) which is brought from any place outside ⁸[the territories to which this Act extends].

⁹[* * *]

(2) In every case in which such duty is directed to be levied ad valorem the ⁷[Central Government] may fix by like notification the value on which such duty shall be assessed.

(3) All duties on timber or other forest-produce which, at the time when this Act comes into force in any territory, are levied therein under the authority of the State Government, shall be deemed to be and to have been duty levied under the provisions of this Act.

¹⁰[(4) Notwithstanding anything in this section, the State Government may, until provision to the contrary is made by ¹¹[Parliament], continue to levy any duty which it was lawfully levying before the commencement¹² of ¹³[the Constitution], under this section as then in force:

Provided that nothing in this sub-section authorises the levy of any duty which as between timber or other forest-produce of the State and similar produce of the locality outside the State, discriminates in favour of the former, or which, in the case of timber or other forest-produce of localities outside the State, discriminates between timber or other forest-produce of one locality and similar timber or other forest-produce of another locality.]

40. Limit not to apply to purchase-money or royalty.—Nothing in this Chapter shall be deemed to limit the amount, if any, chargeable as purchase-money or royalty on any timber or other forest-produce, although the same is levied on such timber or produce while in transit, in the same manner as duty is levied.

CHAPTER VII

OF THE CONTROL OF TIMBER AND OTHER FOREST-PRODUCE IN TRANSIT

41. Power to make rules to regulate transit of forest produce.—(1) The control of all rivers and their banks as regards the floating of timber, as well as the control of all timber and other forest-produce in transit by land or water, is vested in the State Government, and it may make rules to regulate the transit of all timber and other forest-produce.

(2) In particular and without prejudice to the generality of the foregoing power such rules may

- (a) prescribe the routes by which alone timber or other forest-produce may be imported, exported or moved into, from or within ¹⁴[the State];
- (b) prohibit the import or export or moving of such timber or other produce without a pass from an officer duly authorised to issue the same, or otherwise than in accordance with the conditions of such pass;
- (c) provide for the issue, production and return of such passes and for the payment of fees therefor;
- (d) provide for the stoppage, reporting, examination and marking of timber or other forest-produce in transit, in respect of which there is reason to believe that any money is payable to the Government on account of the price thereof, or on account of any duty, fee, royalty or charge due thereon, or, to which it is desirable for the purposes of this Act to affix a mark;
- (e) provide for the establishment and regulation of depots to which such timber or other produce shall be taken by those in charge of it for examination, or for the payment of such money, or in order that such marks may be affixed to it, and the conditions under which such timber or other produce shall be brought to, stored at and removed from such depots;
- (f) prohibit the closing up or obstructing of the channel or banks of any river used for the transit of timber or other forest-produce, and the throwing of grass, brushwood, branches or leaves into any such river or any act which may cause such river to be closed or obstructed;
- (g) provide for the prevention or removal of any obstruction of the channel or banks of any such river, and for recovering the cost of such prevention or removal from the person whose acts or negligence necessitated the same;

- (h) prohibit absolutely or subject to conditions, within specified local limits, the establishment of sawpits, the converting, cutting, burning, concealing or making of timber, the altering or effacing of any marks on the same, or the possession or carrying of marking hammers or other implements used for marking timber;
- (i) regulate the use of property marks for timber, and the registration of such marks; prescribe the time for which such registration shall hold good; limit the number of such marks that may be registered by any one person, and provide for the levy of fees for such registration.

(3) The State Government may direct that any rule made under this section shall not apply to any specified class of timber or other forest-produce or to any specified local area.

¹⁵**[41A. Powers of Central Government as to movements of timber across customs frontiers.--**Notwithstanding anything in section 41, the Central Government may make rules to prescribe the route by which alone timber or other forest-produce may be imported, exported or moved into or from ¹⁶[the territories to which this Act extends) across any customs frontier as defined by the Central Government, and any rules made under section 41 shall have effect subject to the rules made under this section.]

42. Penalty for breach of rules made under section 41.--(1) The State Government may by such rules prescribe as penalties for the contravention thereof imprisonment for a term which may extend to six months, or fine which may extend to five hundred rupees, or both.

(2) Such rules may provide that penalties which are double of those mentioned in subsection (1) may be inflicted in cases where the offence is committed after sunset and before sunrise, or after preparation for resistance to lawful authority, or where the offender has been previously convicted of a like offence.

43. Government and Forest-officers not liable for damage to forest-produce at depot.--The Government shall not be responsible for any loss or damage which may occur in respect of any timber or other forest-produce while at a depot established under a rule made under section 41, or while detained elsewhere, for the purposes of this Act; and no Forest-officer shall be responsible for any such loss or damage, unless he causes such loss or damage negligently, maliciously or fraudulently.

44. All persons bound to aid in case of accidents at depot.--In case of any accident or emergency involving danger to any property at any such depot, every person employed at such depot, whether by the Government or by any private person, shall render assistance to any Forest-officer or Police-officer demanding his aid in averting such danger or securing such property from damage or loss.

CHAPTER VIII

OF THE COLLECTION OF DRIFT AND STRANDED TIMBER

45. Certain kinds of timber to be deemed property of Government until title thereto proved, and may be collected accordingly.--(1) All timber found adrift, beached, stranded or sunk;

all wood or timber bearing marks which have not been registered in accordance with the rules made under section 41, or on which the marks have been obliterated, altered or defaced by fire or otherwise; and

in such areas as the State Government directs, all unmarked wood and timber,

shall be deemed to be the property of Government, unless and until any person establishes his right and title thereto, as provided in this Chapter.

(2) Such timber may be collected by any Forest-officer or other person entitled to collect the same by virtue of any rule made under section 51 and may be brought to any depot which the Forest-officer may notify as a depot for the reception of drift timber.

(3) The State Government may, by notification in the Official Gazette, exempt any class of timber from the provisions of this section.

46. Notice to claimants of drift timber.-Public notice shall from time to time be given by the Forest-officer, of timber collected under section 45. Such notice shall contain a description of the timber, and shall require any person claiming the same to present to such officer, within a period not less than two months from the date of such notice, a written statement of such claim.

47. Procedure on claim preferred to such timber.-(1) When any such-statement is presented as aforesaid, the Forest-officer may, after making such inquiry as he thinks fit, either reject the claim after according his reasons for so doing, or deliver the timber to the claimant.

(2) If such timber is claimed by more than one person, the Forest-officer may either deliver the same to any of such persons who he deems entitled thereto, or may refer the claimants to the Civil Courts, and retain the timber pending the receipt of an order from any such Court for its disposal.

(3) Any person whose claim has been rejected under this section may, within three months from the date of such rejection, institute a suit to recover possession of the timber claimed by him; but no person shall recover any compensation or costs against the Government, or against any Forest-officer on account of such rejection, or the detention or removal of any timber, or the delivery thereof to any other person under this section.

(4) No such timber shall be subject to process of any Civil, Criminal or Revenue Court until it has been delivered, or a suit has been brought, as provided in this section.

48. Disposal of unclaimed timber.-If no such statement is presented as aforesaid, if the claimant omits to prefer his claim in the manner and within the period fixed by the notice issued under section 46, or on such claim having been so preferred by him and having been rejected, omits to institute a suit to recover possession of such timber within the further period fixed by section 47, the ownership of such timber shall vest in the Government, or, when such timber has been delivered to another person under section 47, in such other person free from all encumbrances not created by him.

49. Government and its officers not liable for damage to such timber.-TN Government shall not be responsible for any loss or damage which may occur in respect any timber collected under section 45, and no Forest-officer shall be responsible for any such loss or damage, unless he causes such loss or damage negligently, maliciously fraudulently,

50. Payments to be made by claimant before timber is delivered to him.-No person shall be entitled to recover possession of any timber collected or delivered as aforesaid until he has paid to the Forest-officer or other person entitled to receive it such sum on account thereof as may be due under any rule made under section 51.

51. Power to make rules and prescribe penalties.-(1) The State Government in make rules to regulate the following matters, namely:

- (a) the salving, collection and disposal of all timber mentioned in section 45;
- (b) the use and registration of boats used in salving and collecting timber;
- (c) the amounts to be paid for salving, collecting, moving, storing or disposing such timber; and
- (d) the use and registration of hammers and other instruments to be used marking such timber.

(2) The State Government may prescribe, as penalties for the contravention of any rule made under this section, imprisonment for a term which may extend to six months, or fine which may extend to five hundred rupees, or both.

CHAPTER IX

PENALTIES AND PROCEDURE

52. Seizure of property liable to confiscation.-(1) When there is reason to believe that a forest-offence has been committed in respect of any forest-produce, such produce together with all tools, boats, carts or cattle used in committing any such offence, may be seized by any Forest-officer or Police-officer.

(2) Every officer seizing any property under this section shall place on such property a mark indicating that the same has been so seized, and shall, as soon as may be, make a - report of such seizure to the Magistrate having jurisdiction to try the offence on account which the seizure has been made:

Provided that, when the forest-produce with respect to which such offence is belie to have been committed is the property of Government, and the offender is unknown, it shall be sufficient if the officer makes, as soon as may be, a report of the circumstances to his official superior.

53. Power to release property seized under section 52.-Any Forest-officer of a rank not inferior to that of a Ranger who, or whose subordinate, has seized any tools, boats, carts or cattle under section 52, may release the same on the execution by the owner thereof a bond for the production of the property so released, if and when so required, before the Magistrate having jurisdiction to try the offence on account of which the seizure has been made.

54. Procedure thereupon.-Upon the receipt of any such report, the Magistrate shall, with all convenient despatch, take such measures as may be necessary for the arrest and trial of the offender and the disposal of the property according to law.

55. Forest-produce, tools, etc., when liable to confiscation.-(1) All timber or forest produce which is not the property of Government and in respect of which a forest-offence has been committed, and all tools, boats, carts and cattle used in committing any forest offence, shall be liable to confiscation.

(2) Such confiscation may be in addition to any other punishment prescribed for such offence.

56. Disposal on conclusion of trial for forest-offence, of produce in respect of which it was committed.-When the trial of any forest-offence is concluded, any forest-produce in respect of which such offence has been committed shall, if it is the property of Government or has been confiscated, be taken charge of by a Forest-officer, and, in any other case, may be disposed of in such manner as the Court may direct.

57. Procedure when offender not known or cannot be found.-When the offender is not known or cannot be found, the Magistrate may, if he finds that an offence has been committed, order the property in respect of which the offence has been committed to be confiscated and taken charge of by the Forest-officer, or to be made over to the person whom the Magistrate deems to be entitled to the same:

Provided that no such order shall be made until the expiration of one month from the date of seizing such property, or without hearing the person, if any, claiming any right thereto, and the evidence, if any, which he may produce in support of his claim.

58. Procedure as to perishable property seized under section 52.-The Magistrate may, notwithstanding anything hereinbefore contained, direct the sale of any property seized under section 52 and subject to speedy and natural decay, and may deal with the proceeds as he would have dealt with such property if it had not been sold.

59. Appeal from orders under section 55, section 56 or section 57.-The officer made the seizure under section 52, or any of his official superiors, or any person claim to be interested in the property so seized, may, within one month from the date of any order passed under section 55, section 56 or section 57, appeal therefrom to the Court to which orders made by such Magistrate are ordinarily appealable, and the order passed on an appeal shall be final.

60. Property when to vest in Government.-When an order for the confiscation of any property has been passed under section 55 or section 57, as the case may be, and the period limited by section 59 for an appeal from such order has elapsed, and no such an appeal has been preferred, or when, on such an appeal being preferred, the Appellate Court confirms such order in respect of the whole or a portion of such property, such property or such portion thereof, as the case may be, shall vest in the Government free from all incumbrances.

61. Saving of power to release property seized.-Nothing hereinbefore contained shall be deemed to prevent any officer empowered in this behalf by the State Government, from directing at any time the immediate release of any property seized under section 52.

62. Punishment for wrongful seizure.-Any Forest-officer or Police-officer who vexatiously and unnecessarily seizes any property on pretence of seizing property liable to confiscation under this Act shall be punishable with imprisonment for a term which extends to six months, or with fine which may extend to five hundred rupees, or with both.

63. Penalty for counterfeiting or defacing marks on trees and timber and for altering boundary marks.-Whoever, with intent to cause damage or injury to the public or to any person, or to cause wrongful gain as defined in the Indian Penal Code—

- (a) knowingly counterfeits upon any timber or standing tree a mark used by Forest-officers to indicate that such timber or tree is the property of Government or of some person, or that it may lawfully be cut or removed by some person; or
- (b) alters, defaces or obliterates any such mark placed on a tree or on timber by or under the authority of a Forest-officer; or
- (c) alters, moves, destroys or defaces any boundary-mark of any forest or waste land to which the provisions of this Act are applied,

shall be punishable with imprisonment for a term which may extend to two years, or fine, or with both.

64. Power to arrest without warrant.—(1) Any Forest-officer or Police-officer without orders from a Magistrate and without a warrant, arrest any person against whom a reasonable suspicion exists of his having been concerned in any forest-offence punishable with imprisonment for one month or upwards.

(2) Every officer making an arrest under this section shall, without unnecessary delay and subject to the provisions of this Act as to release on bond, take or send the person arrested before the Magistrate having jurisdiction in the case, or to the officer in charge of the nearest police station.

(3) Nothing in this section shall be deemed to authorise such arrest for any act which is an offence under Chapter IV unless such act has been prohibited under clause (c) of section 30.

65. Power to release on a bond a person arrested.—Any Forest-officer of a rank not inferior to that of a Ranger, who, or whose subordinate, has arrested any person under the provisions of section 64, may release such person on his executing a bond to appear, if and when so required, before the Magistrate having jurisdiction in the case, or before the officer in charge of the nearest police station.

66. Power to prevent commission of offence.—Every Forest-officer and Police officer shall prevent, and may interfere for the purpose of preventing, the commission of any forest-offence.

67. Power to try offences summarily.—The District Magistrate or any Magistrate of the first class specially empowered in this behalf by the State Government may try summarily, under the Code of Criminal Procedure, 1898, any forest-offence punishable with imprisonment for a term not exceeding six months, or fine not exceeding five hundred rupees, or both.

68. Power to compound offences.—(1) The State Government may, by notification in the Official Gazette, empower a Forest officer—

- (a) to accept from any person against whom a reasonable suspicion exists that he has committed any forest-offence, other than an offence specified in section 62 or section 63, a sum of money by way of compensation for the offence which such person is suspected to have committed, and
- (b) when any property has been seized as liable to confiscation, to release the same on payment of the value thereof as estimated by such officer.

(2) On the payment of such sum of money, or such value, or both, as the case may be, to such officer, the suspected person, if in custody, shall be discharged, the property, if any seized shall be released, and no further proceedings shall be taken against such person or property.

(3) A Forest-officer shall not be empowered under this section unless he is a Forest officer of a rank not inferior to that of a Ranger and is in receipt of a monthly salary amounting to at least one hundred rupees, and the sum of money accepted as compensation under clause (a) of sub-section (1) shall in no case exceed the sum of fifty rupees.

69. Presumption that forest-produce belongs to Government.—When in any proceedings taken under this Act, or in consequence of anything done under this Act, a question arises as to whether any forest-produce is the property of the Government, such produce shall be presumed to be the property of the Government until the contrary is proved.

CHAPTER X

CATTLE-TRESPASS

70. Cattle-trespass Act, 1871, to apply.-Cattle trespassing in a reserved forest any portion of a protected forest which has been lawfully closed to grazing shall be deemed to be cattle doing damages to a public plantation within the meaning of section II of Cattle-trespass Act, 1871 (1 of 1871), and may be seized and impounded as such by Forest-officer or Police-officer.

71. Power to alter fines fixed under that Act.-The State Government may, by notification in the Official Gazette, direct that, in lieu of the fines fixed under section I of the Cattle-trespass Act, 1871 (1 of 1871), there shall be levied for each head of cattle impounded under section 70 of this Act such fines as it thinks fit, but not exceeding following, that is to say:-

| | |
|---|-------------|
| For each elephant | ten rupees |
| For each buffalo or camel | two rupees |
| For each horse, mare, gelding, pony, colt, filly, mule, bull, bullock, cow, or heifer | one rupee |
| For each calf, ass, pig, ram, ewe, sheep, lamb, goat or kid | eight annas |

CHAPTER XI OF FOREST-OFFICERS

72. State Government may invest Forest-officers with certain powers.-(1) The State Government may invest any Forest-officer with all or of the following powers, that is to say:-

- (a) power to enter upon any land and to survey, demarcate and make a map of the same;
- (b) the powers of a Civil Court to compel the attendance of witnesses and production of documents and material objects;
- (c) power to issue a search-warrant under the Code of Criminal Procedure, 1898 (5 of 1898); and
- (d) power to hold an inquiry into forest-offences, and, in the course of such inquiry, to receive and record evidence.

(2) Any evidence recorded under clause (d) of sub-section (1) shall be admissible in subsequent trial before a Magistrate, provided that it has been taken in the presence of accused person.

73. Forest officers deemed public servants.-All Forest-officers shall be deemed to be public servants within the meaning of the Indian Penal Code, 1860 (45 of 1860).

74. Indemnity for acts done in good faith.-No suit shall lie against any public servant for anything done by him in good faith under this Act.

75. Forest-officers not to trade.-Except with the permission in writing of the State Government, no Forest-officer shall, as principal or agent, trade in timber or other forest produce, or be or become interested in any lease of any forest or in any contract for working any forest, whether in or outside ¹⁷[the territories to which this Act extends].

CHAPTER XII
SUBSIDIARY RULES

76. Additional powers to make rules.—The State Government may make rules

- (a) to prescribe and limit the powers and duties of any Forest-officer under this Act;
- (b) to regulate the rewards to be paid to officers and informers out of the proceeds of fines and confiscation under this Act;
- (c) for the preservation, reproduction and disposal of trees and timber belonging to Government, but grown on lands belonging to or in the occupation of private persons; and
- (d) generally, to carry out the provisions of this Act.

77. Penalties for breach of rules.—Any person contravening any rule under this Act, for the contravention of which no special penalty is provided, shall be punishable with imprisonment for a term which may extend to one month, or fine which may extend to five hundred rupees, or both.

78. Rules when to have force of law.—All rules made by the State Government under this Act shall be published in the Official Gazette, and shall thereupon, so far as they are consistent with this Act, have effect as if enacted therein.

CHAPTER XIII
MISCELLANEOUS

79. Persons bound to assist Forest-officers and Police-officers.—(1) Every person who exercises any right in a reserved or protected forest, or who is permitted to take any forest-produce from, or to cut and remove timber or to pasture cattle in, such forest, and every person who is employed by any such person in such forest, and

every person in any village contiguous to such forest who is employed by the Government or who receives emoluments from the Government for services to be performed to the community,

shall be bound to furnish without unnecessary delay to the nearest Forest-officer or Police officer any information he may possess respecting the commission of, or intention to commit, any forest-offence, and shall forthwith take steps, whether so required by any Forest-officer or Police officer or not,—

- (a) to extinguish any forest fire in such forest of which he has knowledge or information;
- (b) to prevent by any lawful means in his power any fire in the vicinity of such forest of which he has knowledge or information from spreading to such forest,

and shall assist any Forest-officer or Police-officer demanding his aid—

- (c) in preventing the commission in such forest of any forest-offence; and
- (d) when there is reason to believe that any such offence has been committed such forest in discovering and arresting the offender.

(2) Any person who, being bound so to do, without lawful excuse (the burden of proof which shall lie upon such person) fails—

- (a) to furnish without unnecessary delay to the nearest Forest-officer or Police officer any information required by sub-section (1);
- (b) to take steps, as required by sub-section (1), to extinguish any forest fire in reserved or protected forest;
- (c) to prevent, as required by sub-section (1), any fire in the vicinity of such forest from spreading to such forest or
- (d) to assist any Forest-officer or Police officer demanding his aid in preventing the commission in such forest of any forest-offence, or, when there is reason to believe that any such offence has been committed in such forest, in discovering and arresting the offender,

shall be punishable with imprisonment for a term which extends to one month, or with fine which may extend to two hundred rupees, or with both.

80. Management of forests the joint property of Government and other persons.—(1) If the Government and any person be jointly interested in any forest or waste-land, or in the whole or any part of the produce thereof, the State Government may either—

- (a) undertake the management of such forest, waste-land or produce, accounting to such person for his interest in the same; or
- (b) issue such regulations for the management of the forest, waste-land or produce by the person so jointly interested as it deems necessary for the management thereof and the interests of all parties therein.

(2) When the State Government undertakes under clause (a) of sub-section (1) the management of any forest, waste-land or produce, it may, by notification in the Official Gazette, declare that any of the provisions contained in Chapters III and IV shall apply to such forest, waste-land or produce, and thereupon such provisions shall apply accordingly.

81. Failure to perform service for which a share in produce of Government forest is employed.—If any person be entitled to a share in the produce of any forest which is the property of Government or over which the Government has proprietary rights or to any part of the forest-produce of which the Government is entitled upon the condition of duly performing any service connected with such forest, such share shall be liable to confiscation in the event of the fact being established to the satisfaction of the State Government that such service is no longer so performed:

Provided that no such share be confiscated until the person entitled thereto, and the evidence, if any, which he may produce in proof of the due performance of such service, have been heard by an officer duly appointed in that behalf by the State Government.

82. Recovery of money due to Government.—All money payable to the Government under this Act, or under any rule made under this Act, or on account of the price of any forest produce, or of expenses incurred in the execution of this Act in respect of such produce, may, if not paid when due, be recovered under the law for the time being in force as if it were an arrear of land-revenue.

83. Lien on forest-produce for such money.—(1) When any such money is payable for or in respect of any forest-produce, the amount thereof shall be deemed to be a first charge on such produce, and such produce may be taken possession of by a Forest-officer until such amount has been paid.

(2) If such amount is not paid when due, the Forest-officer may sell such produce by public auction, and the proceeds of the sale shall be applied first in discharging such amount.

(3) The surplus, if any, if not claimed within two months from the date of the sale by the person entitled thereto, shall be forfeited to Government.

84. Land required under this Act to be deemed to be needed for a public purpose under the Land Acquisition Act, 1894.—Whenever it appears to the State Government that any land is required for any of the purposes of this Act, such land shall be deemed to be needed for a public purpose within the meaning of section 4 of the Land Acquisition Act, 1894 (1 of 1894).

85. Recovery of penalties due under bond.—When any person, in accordance with any provision of this Act, or in compliance with any rule made thereunder, binds himself by any bond or instrument to perform any duty or act or covenants by any bond or instrument that he, or that he and his servants and agents will abstain from any act, the whole sum mentioned in such bond or instrument as the amount to be paid in case of a breach of the conditions thereof may, notwithstanding anything in section 74 of the Indian Contract Act, 1872 (9 of 1872), be recovered from him in case of such breach as if it were an arrear of land revenue.

¹⁸**[85A. Saving for rights of Central Government.**—Nothing in this Act shall authorise a Government of any State to make any order or do anything in relation to any property not vested in that State or otherwise prejudice any rights of the Central Government or the Government of any other State without the consent of the Government concerned.]

86. Repeals.— [Rep. by Repealing and Amending Act, 1947 (2 of 1948), sec.2 and Sch.]

THE SCHEDULE.—[Enactments Repealed.] Rep. by sec.2 and Sch., ibid.

¹ Subs. by the Adaptation of Laws (No. 3) Order, 1956, for sub-sections (2) and (3).

² This Act has been declared to be in force in the Khondmals District by the Khondmals Laws Regulation 1936 (4 of 1936), sec. 3 and Sch; and in the Angul District by the Angul Laws Regulation, 1936 (5 of 1936) sec. 3 and Sch.

This Act has been extended to :-

(1) Berar (partially) by the Berar Laws Act, 1941 (4 of 1941).

(2) The Province of Coorg, see Coorg Gazette, 1930, Pt. I p. 94.

(3) The Delhi Province, see Gazette of India, 1933, Pt. IIA, p. 293.

(4) The whole of Madhya Pradesh, by M.P. Act 23 of 1958.

(5) Dadra and Nagar Haveli, by Reg. 6 of 1963, sec. 2 and Sch. I (w.e.f. 1.7.1965).

(6) Pondicherry by Reg. 7 of 1963, sec. 3 and Sch. (w.e.f. 1.10.1963).

(7) Goa, Daman and Diu by Reg. II of 1963, sec. 3 and Sch.; and

(8) Laccadive, Minicoy and Amindivi Islands by the Reg. 8 of 1965, sec. 3 and Sch. (w.e.f. 1.10.1967).

(9) Sikkim by S.O. 1138 (E), dated 1st December, 1988 (w.e.f. 20.4.1989).

³ The words “the G.G. in C., or” omitted by the A.O. 1937.

⁴ Ins. by Act 26 of 1930, sec. 2.

⁵ Ins. by Act 3 of 1933, sec. 2.

⁶ The words “subject to the control of the G.G. in C.,” omitted by the A.O. 1937.

- ⁷ Subs. by the A.O. 1937, for “L.G.”
- ⁸ Subs. by the Adaptation of Laws (No. 3) Order, 1956, for “Part A States and Part C States”.
- ⁹ The proviso omitted by the A.O. 1937.
- ¹⁰ Ins. by the A.O. 1937 as amended by para. 2 and Sch. to the Government of India (Adaptation of Indian Laws) Supplementary Order, 1937.
- ¹¹ Subs. by the A.O. 1950, for “the Central Legislature”
- ¹² *i.e.* the 26th January, 1950.
- ¹³ Subs. by the A.O. 1950, for “Part III of the Government of India Act, 1935”.
- ¹⁴ Subs. by the A.O. 1937, for “British India”.
- ¹⁵ Ins. by the A.O. 1937.
- ¹⁶ Subs. by the Adaptation of Laws (No. 3) Order, 1956, for “Part A States and Part C States”.
- ¹⁷ Subs. by the Adaptation of Laws (No. 3) Order, 1956, for “Part A States and Part C States”
- ¹⁸ Subs. by the A.O. 1950, for the former section 85A which had been inserted by the A.O. 1937.

THE WILDLIFE (PROTECTION) ACT, 1972

(No. 53 of 1972)

(9th September, 1972)

An Act to provide for the protection of [Wild animals, birds and plants]¹ and for matters connected therewith or ancillary or incidental thereto.

² [***]

CHAPTER 1

Preliminary

1. Short title, extent, and commencement, - (1) This Act may be called the Wildlife (Protection) Act, 1972.

³[(2) It extends to the whole of India, except the State of Jammu and Kashmir.*]

⁴(3) It shall come into force in a State or Union Territory to which it extends, on such date as the Central Government may, by notification, appoint, and different dates may be appointed for different provision of this Act or for different States or Union Territories.

2. Definitions - In this Act, unless the context otherwise requires, -

(1) “animal” includes amphibians, birds, mammals, and reptiles, and their young, and also includes, in the cases of birds and reptiles, their eggs,

⁵(2) “animal article” means an article made from any captive animal or wild animal, other than vermin, and includes an article or object in which the whole or any part of such animal [has been used and ivory imported into India and an article made therefrom].

⁶(3) [Omitted 1991.1

(4) “Board means the Wildlife Advisory Board constituted under subsection (1) of Sec. 6;

(5) “captive animal” means any animal, specified in Schedule 1, Schedule II, Schedule III or Schedule IV, which is captured or kept or bred in captivity;

⁷(6) [Omitted 1991.1

(7) “Chief Wildlife Warden” means the person appointed as such under C1. (a) of sub-section (1) of Sec.4;

⁸[(7A) “Circus” means an establishment, whether stationary or mobile where animals are kept or used wholly or mainly for the purpose of performing tricks or manoeuvres;]

(8) “closed area” means the area which is declared under sub-section (1) of Sec.37 to be closed to hunting;

(9) “Collector” means the Chief Officer in charge of the revenue administration of a district;

(10) “commencement of this Act”, in relation to –

(a) a State, means commencement of this Act in that State.

(b) any provision of this Act, means commencement of that provision in the concerned State;

(11) “dealer” means any person who carries on the business of buying and selling any captive animal, animal article, trophy, uncured trophy, [⁹meat or specified plant];

(12) “Director” means the person appointed as Director of Wildlife Preservation under Cl (a). of sub-section (1) of Sec. 3;

[(12A) “Forest Officer” means the Forest Officer appointed under clause (2) of Sec.2 of the Indian Forest Act, 1927 (¹⁰16 of 1927);]

(13) [Omitted 1991. ¹¹]

(14) “Government property” means property, referred to in sec.39; [or sec. 17H¹²]

(15) “habitat” includes land, water, or vegetation which is the natural home of any wild animal;

(16) “hunting”, with its grammatical variations and cognate expressions, includes,

(a) capturing, killing, poisoning, snaring, and trapping or any wild animal and every attempt to do so,

(b) driving any wild animal for any of purposes specified in sub clause

(c) injuring or destroying or taking any part of the body of any such animal, or in the case of wild birds or reptiles, damaging the eggs of such birds or reptiles, or disturbing the eggs or nests of such birds or reptiles;

7) “land” includes canals, creeks, and other water channels, reservoirs, rivers, streams and lakes, whether artificial or natural, [marshes and wetlands and also includes boulders and rocks; ¹³]

(18) “licence” means a licence granted under this Act;

¹⁴[(18A) “Live-stock” includes buffaloes, bulls, bullocks, camels, cows, donkeys, goats, horses, mules, pigs, sheep, yak and also includes their young;*]

(19) “manufacturer” means a manufacturer of animal articles;

(20) “meat” includes blood, bones, sinew, eggs, fat and flesh, whether raw or cooked, of any wild animal other than vermin;

(21) “National Park” means an area declared, whether under sec.35. or sec.38 or deemed, under sub-section (3) of sec.66. to be declared, as a National Park

(22) “notification” means a notification published in the official Gazette;

(23) “permit” means a permit granted under this Act or any rule made thereunder;

(24) “Person” includes a firm;

(25) “prescribed” means prescribed by rules made under this Act;

¹⁵[(25A) “recognised zoo” means a zoo recognised under section 38H;

(25B) “reserve forest” means the forest declared to be reserved by the State Government under sec.20. of the Indian Forest Act, 1927 (16 of 1927);*]

(26)¹⁶ “sanctuary” means an area declared, whether under sec. [26(A)⁵] or sec 38, or deemed, under sub section (3) of Sec.66 to be declared, as a wildlife sanctuary;

¹⁷[(27) “specified plant “means any plant specified in Schedule VI;*]

(28) “special game” means any animal specified in Sec.II;

(29) “State Government”, in relation to a Union Territory, means the Administrator of that Union Territory appointed by the President under Art 239 of the Constitutions ;

(30) “taxidermy”, with its grammatical variations and cognate expressions, means the curing, preparation or preservation of trophies;

[(30A) “territorial waters” shall have the same meaning as in Sec.3. of Territorial waters, Continental Shelf, Exclusive Economic Zone and other Maritime Zones Act, 1976 (80 of 1976);¹⁸]

(31) “trophy” means the whole or any part of any captive animal or wild animal, other than vermin, which has been kept or preserved by any means, whether artificial or natural, and includes,

(a) rugs, skins, and specimens of such animals mounted in whole or in part through a process of taxidermy, and

(b) antler, horn, rhinoceros horn, feather, nail, tooth, musk, eggs, and nests;

(32) “uncured trophy” means the whole or any part of any captive animal, other than vermin, which has not undergone a process of taxidermy, and includes a [freshly killed wild animal ambergris, musk and other animal products];

(33) vehicle” means any conveyance used for movement on land, water or air, and includes buffalo, bull, bullock, camel, donkey, elephant, house, and mule;

(34) “vermin” means any wild animal specified in Sch.V;

(35) “weapon” includes ammunition, bows and arrows, explosives, firearms, hooks, knives, nets, poison, snares, traps, and any instrument or apparatus capable of anaesthetizing, decoying, destroying, injuring or killing an animal;

(36) “wild animal” means any animal found wild in nature and includes any animal specified in Schedule I, Schedule II, Schedule, IV or Schedule V, wherever found;

(37) “wildlife” includes any animal, bees butterflies, crustacean, fish and moths; and aquatic or land vegetation which forms part of any habitat;

(38) “Wildlife Warden” means the person appointed as such under C1. (b) of sub-section (1) of Sec.4;

[(39) “zoo” means an establishment, whether stationary or mobile, where captive animals are kept for exhibition to the public but does not include a circus and an establishment of a licenced dealer in captive animals.¹⁹]

The Act has been made applicable in various States and Union Territories as under:

1. Andaman and Nicobar, w.e.f. Ist July 1973, vide G.S.R.332 (E), dated Ist July, 1973.
2. Andhra Pradesh, w.e.f. Ist July 1973, vide G.S.R.371 (E), dated Ist August, 1973.
3. Arunachal Pradesh, w.e.f. 15th May 1973.

4. Assam, w.e.f. 25th January 1977, vide G.S.R.33 (E), dated 25th January, 1977.
5. Bihar, w.e.f. Ist February 1973, vide G.S.R.40 (E), dated Ist February, 1973.
6. Dadra and Nagar Haveli, w.e.f. Ist September 1973, vide G.S.R.441(E), dated Ist September, 1973.
7. Delhi, w.e.f. Ist June 1973,
8. Gao Daman and Diu, w.e.f. 16 July 1973, vide G.S.R.629 (E), dated 16th July, 1973.
9. Gujarat, w.e.f. Ist February 1973, vide G.S.R.62 (E), dated Ist February, 1973.
10. Haryana, w.e.f. 12th March July 1973, vide G.S.R.63 (E), dated 12 March, 1973.
11. Himachal Pradesh, w.e.f. 2nd April ly 1973, vide G.S.R.190 (E), dated 2nd April, 1973.
12. Kerala, w.e.f. Ist June 1973, vide G.S.R.293 (E), dated Ist June, 1973.
13. Lakshdweep, w.e.f. Ist November 1973, vide G.S.R.481(E), dated Ist November, 1973.
14. Madhya Pradesh, w.e.f. 25 January 1973, vide G.S.R.28 (E), dated 25 January, 1973.
15. Maharashtra, w.e.f. Ist June 1973, vide G.S.R.296 (E), dated Ist June, 1973.
16. Manipur, w.e.f. 15th May 1973, vide G.S.R.269 (E), dated 15th May, 1973.
17. Meghalaya, w.e.f. Ist April 1977
18. Mizoram, w.e.f. Ist October 1974, vide G.S.R.407 (E), dated Ist October, 1974.
19. Mysore, w.e.f. Ist July 1973, vide G.S.R.355 (E), dated Ist July, 1973.
20. Nagaland, w.e.f. 18th December 1981, vide G.S.R.668 (E), dated 18thDecember
21. Orissa, w.e.f. 14th August 1974, vide G.S.R.364 (E), dated 14th August, 1974.
22. Punjab, w.e.f. Ist April 1975.
23. Rajasthan, w.e.f. Ist September 1973, vide G.S.R.410 (E), dated Ist September, 1973.
24. Sikkim, w.e.f. Ist May 1976, vide G.S.R.311 (E), dated Ist May, 1976.
25. Tamil Nadu, w.e.f. Ist January, 1974.
26. Tripura, w.e.f. 2nd October 1973, vide GS.R.465 (E), dated 2nd October, 1973.
27. Union Territory of Chandigarh, w.e.f. 2nd December 1974, vide G.S.R.674 (E), dated 2nd December, 1974.
28. Union Territory of Pondicherry, w.e.f. Ist March 1975, vide G.S.R.62 (E), dated Ist March, 1975
29. Uttar Pradesh, w.e.f. Ist February 1973.
30. West Bengal, w.e.f. Ist May 1973, vide G.S.R.224 (E), dated Ist May, 1973.

¹ Substituted by Act 44 of 1991, sec. 2(w.e.f. 2.10.1991)

² Preamble omitted by Act 44 of 1991, sec. 3.

- ³ Sec. 1(2) It extends, in the first instance, , to the whole of the State of Andhra Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Madhya Pradesh, Manipur, Punjab, Rajasthan, Uttar Pradesh, and West Berigal, and to all the Union Territories, and it shall also extend to such other State as may adopt this Act by 44 of 1991, sec 4.
- ⁴ (3) “or may become extended in future”, after “to which it extends” omitted by Act 44 of 1991, sec 4
- ⁵ Sec. 2(2) “and Ivory imported into India and an article made therefrom;” appended by Act. 44 of 1991, sec 5.
- ⁶ Sec. 2 (3) “big game” means any animal specified in Schedule III;” omitted by Act 44 of 1991, sec 5.
- ⁷ Sec. 2 (6) “Cattle” includes buffaloes, bulls, bullocks, camels cows domestic, elephants, donkeys, goats, horses, mules, pigs and sheep, and also includes their young,” omitted by Act 44 of 1991, sec 5.
- ⁸ Sec.2 (7A) inserted by Act 44 of 1991, sec. 5.
- ⁹ Sec.2 (11) “meat or specified plant, “appended by Act 44 of 1991, sec.5.
- ¹⁰ Sec.2 (12A) “Inserted by Act 44 of 1991 sec. 5.
- ¹¹ Sec.2 (13) “game reserve” means an area declared under sec. 36 to be a game reserved;” omitted by Act 44 of 1991. sec. 5.
- ¹² Sec.2 (14) “or sec. 17H;” appended by Act 44 of 1991, sec.5.
- ¹³ Sec.2 (17) “marshes and wetlands” inserted after “whether artificial of natural,” by Act 44 of 1991, sec.5.
- ¹⁴ Sec.2 (18A) “inserted by Act 44 of 1991 sec. 5.
- ¹⁵ Sec.2 (25A) inserted by Act 44 of 1991 sec. 5.
- ¹⁶ Sec. 2 (26) “26(A)” substituted after “whether under sec. “ by Act 44 of 199 1, sec 5.
- ¹⁷ Sec.2 (26A) inserted by Act 44 of 1991 sec. 5.
- ¹⁸ Sec.2 (27) “small game” means any animal specified in sch. IV “substituted by Act 44 of 1991, sec.5.
Sec 2 (30A) inserted by Act 44 of 199 1, sec 5.
- ¹⁹ Sec.2 (39) inserted by Act 44 of 1991, sec 5.

CHAPTER II

Authorities to be appointed or constituted under this Act

3. Appointment of Director and other officers.— (1) The Central Government may, for the purposes of this Act appoint

- (a) a Director of Wildlife Preservation;
- (b) Assistant Directors of Wildlife Preservation; and
- (c) such other officers and employees as may be necessary.

(2) In the performance of his duties and exercise of his powers by or under this Act, the Director shall be subject to such general or special directions, as the Central Government may, from time to time, give.

(3) The Assistant, Directors of Wildlife Preservation and other officers and employees appointed under this section shall be subordinate to the Director.

4. Appointment of Chief Wildlife Warden and other officers – (1) The State Government may, for the purposes of this Act, appoint –

- (a) a Chief Wildlife Warden; [***¹]
- (b) Wildlife Wardens;
- [(bb) One Honorary Wildlife Warden in each district; and²]
- (c) such other officers and employees as may be necessary.

(2) In the performance of his duties and exercise of his powers by or under this Act, the Chief Wildlife Warden shall be subject to such general or special directions, as the State Government may, from time to time, give.

(3) ³ [The Wildlife Warden, the Honorary Wildlife Warden] and other officers and employees appointed under this section shall be subordinate to the Chief Wildlife Warden.

5. Power of delegate – (1) The Director may, with the previous approval of the Central Government, by order in writing delegate all or any of his powers and duties under this Act to any officer subordinate to him subject to such conditions, if any, as may be specified in the order.

(2) The Chief Wildlife Warden may, with the previous approval of the State Government by order in writing, delegate all or any of his powers and duties under this Act, except those under Cl.(a) of sub-section (1) of Sec.11, to any officer subordinate to him subject to such conditions, if any, be specified in the order.

(3) Subject to any general or special, direction given or condition imposed by the Director or the Chief Wildlife Warden, any person, authorised by the Director or the Chief Wildlife Warden to exercise any, powers, may exercise those powers in the same manner and to the same effect as if they had been conferred on that person directly by this Act and not by way of delegation.

6. Constitution of the Wildlife Advisory Board.— (1) The State Government, or, in the case of a Union Territory, the Administrator, shall, as soon as may be after the commencement of this Act, constitute a Wildlife Advisory Board consisting of the following member, namely:

- (a) the Minister in charge of Forest in the State or Union Territory, or, if there is no such Minister, the Chief Secretary to the State Government, or, as the case may be, the Chief Secretary to the Government or the Union Territory, who shall be the Chairman;
- (b) two members of the State Legislature or, in the case of a Union Territory having a Legislature, two members of the legislature of the Union Territory, as the case may be;
- (c) Secretary to the State Government, or the Government of the Union Territory, in charges of Forests;
- [(d) The Forest Officer in charge of the State Forest Department, by whatever designation called, ex-officio;⁴]
- (e) an officer to be nominated by the Director;
- (f) Chief Wildlife Warden, ex-officio;
- [(g) Officers of the State Forest Government not exceeding five⁵];
- (h) such other person, not exceeding ten, who, in the opinion of the State Government, are interested in the protection of Wildlife, including the representatives of tribals not exceeding three.]

[(1A) The State Government may appoint a Vice-Chairman of the Board from amongst the members referred to in clauses (b) and (h) of sub-section (1).⁶]

(2) The State Government shall appoint [the forest Officer incharge of the Forest Department⁷] or Chief Wildlife Warden as the Secretary to the Board.

(3) The term of office of the members of the Board referred to in C1.(g) of sub-section (1) and the manner of filling the vacancies among them shall be such as may be prescribed.⁸

(4) The members shall be entitled to receive such allowances in respect of expenses incurred in the performance of their duties as the State Government may prescribe.

7. Procedure to be followed by the Board.—(1) The Board shall meet at least twice a year at such place as the State Government may direct.

(2) The Board shall regulate its own procedure (including the quorum).

(3) No act or proceeding of the Board shall be invalid merely by reason of the existence of any vacancy therein or any defect in the constitution thereof or any irregularity in the procedure of the Board affecting the merits of the case.

8. Duties of the Wildlife Advisory Board. – It shall be the duty of the Wildlife Advisory Board to advise the State Government,—

- (a) In the selection of areas to be declared as Sanctuaries, National Parks, and Closed Areas and the administration thereof ;
- [⁹(b) in formulation of the policy of protection and conservation of Wildlife and specified plants;]
- (c) in any matter relating to any schedule;

- (cc) in relation to the measures to be taken for harmonizing the needs of the tribals and other dwellers of the forest with the protection and conservation of wildlife; and ^{10]}
- (d) in any matter that may be referred to it by the State Government.

¹ Sec.4(1)(a) “and “omitted by Act 44 of 1991, sec6.

² Sec.4(1)(bb) “inserted by Act 44 of 1991, sec.6.

³ Sec.4(3) “the Honorary Wildlife Warden” after “The Wildlife Warden” substituted by Act 44 of 1991, Sec. 6

⁴ Sec.6(1)(d) “Chief Conservator of Forests, ex officio;” substituted by Act of 44 of 1991, sec.7.

⁵ Sec.6(1)(g) “such other officers and non-officials, not exceeding fifteen, who, in the opinion of the State Government, are interested in the protection of Wildlife, “ substituted by Act 44 of 1991, sec.7. and original sub-section renumbered as ‘h’.

⁶ Sec.6(IA) inserted by Act 44 of 199 1, sec.7.

⁷ Sec.6(2) “The State Government shall appoint the Chief Wildlife or the Chief Conservator of Forest as the Secretary to the Board, “substituted by Act 44 of 199 1, sec.7.

⁸ Sec.6 (3) “in CL(g)” should have been substituted by C1 (h)” under the amended verdict.

⁹ Sec. 8(b) “in the formulation of the policy in granting licences and permits under this Act;” substituted by Act 44 of 199 1, sec. 8.

¹⁰ Sec. 8(cc) inserted by Act of 199 1, see. 8.

CHAPTER III

Hunting of Wild Animals

[(9 Prohibition of Hunting. – No person shall hunt any wild animal specified in Schedule, I, II, III and IV except as provided under section 11 and section 12. ^{1]}

10. [²(Omitted 199)

11. Hunting of Wild animals to be permitted in certain cases.– (1) Notwithstanding anything contained in any other law for the time being in force and subject to the provisions of Chapter IV –

- (a) the Chief Wildlife Warden may, if he is satisfied that any wild animal specified in Sch. I has become dangerous to human life or is so disabled or diseased as to be beyond recovery, by order in writing and stating the reasons therefor, permit any person to hunt such animal or cause animal to be hunted;
- (b) the Chief Wildlife Warden or the authorised officer may, if he is satisfied that any wild animal specified in Sch. II Sch. III or Sch. IV has become dangerous to human life or to property (including standing crops on any land) or is so disabled or diseased as to be beyond recovery, by order in writing and stating the reasons therefor, permit any person to hunt such animal or cause such animal to be hunted.

(2) The killing or wounding in good faith of any wild animal in defence of oneself or of any other person shall not be an offence;

Provided that nothing in this sub-section shall exonerate any person who, when such defence becomes necessary, was committing any act in contravention of any provision of this Act or any rule or order made thereunder.

(3) Any wild animal killed or wounded in defence of any person shall be Government property.

12. Grant of permit for special purposes. - Notwithstanding anything contained elsewhere in this Act, it shall be lawful for the Chief Wildlife Warden, to grant [***³] a permit, by an order in writing stating the reasons therefor, to any person, on payment of such fee as may be prescribed, which shall entitle the holder of such permit to hunt, subject to such conditions as may be specified therein, any wild animal specified in such permit, for the purpose of, –

- (a) education;
- [⁴(b) scientific research;
- (bb) scientific management;

Explanation:- for the purposes of Cl. (bb), the expression, “scientific management” means

–

- (i) translocation of any wild animal to an alternative suitable habitat; or
- (ii) population management of wildlife, without killing or poisoning or destroying any wild animals].
- [⁵(c) Collection of specimens
 - (i) for recognised zoos subject to the permission under section 38-1 or
 - (ii) for museums and similar institutions;

(d) derivation, collection or preparation of snake-venom for the manufacture of life saving drugs.]

⁶[Provided that no such permit shall be granted:

- (a) in respect of any wild animal specified in Sch.L except with the previous permission of the Central Government, and
- (b) in respect of any other wild animal, except with the previous permission of the State Government.]

[(13) **“Suspension or cancellation of licence.** - The Chief Wildlife Warden or the authorised officer may, subject to any general or special order of this State Government, for good and sufficient reasons, to be recorded in writing, suspend or cancel any licence granted under this Chapter. (OMITTED 1991)

Provided that no such suspensions or cancellation shall be made except after giving the holder of the licence a reasonable opportunity of being heard”.]

[⁷(14) Omitted 1991]

[⁸(15) Omitted 1991]

[⁹(16) Omitted 1991]*

[¹⁰(17) Omitted 1991]

¹ Sec.9. “Hunting of Wild animals”...

Sec.9(1)“No person shall hunt any wild animal specified in Sch. I” Substituted.

(2) “No person shall hunt any wild animal specified in Sch. II, Sch. III, or Sch. IV, except under, and in accordance with, the conditions specified in a licence granted under sub-section (5).” substituted.

(3) “Any person distilling to obtain a licence referred to in sub-section (2) shall apply, in such from and on payment of such fee, as may be prescribed, to the Chief Wildlife Warden or any other officer authorised by the State Government in this behalf (hereinafter referred to as the authorised officer).”

(4) “An application under sub-section (3) may be made for all or any of the following kinds of licences, namely

- (a) Special game hunting licence.
- (b) Big game hunting licence.
- (c) Small game hunting licence.
- (d) Wild animal trapping licence.

Provided that any such licence may be restricted to be hunting or trapping of such animal as may be specified therein.” omitted.

(5) “On receipt of an application under sub-section (3), the Chief Wildlife Warden or the authorised officer may,, after making such inquiry as he may think fit with regard to the fitness or other wise of the applicant to receive the licence, grant or refuse to grant such licence after recording in writing his reason for such grant of refusal; and when the grant of a licence is refused, the fee paid therefor shall be refunded to the applicant. “ omitted.

(6) “A Licence granted under this section shall

- (a) be in such from as may be prescribed;
- (b) be valid for such period as may be specified therein;

(c) be subject to such items, conditions, and restrictions as may be prescribed; (d) not be transferable.

Omitted by Act 44 of 1991, sec.9.

2 Sec. 10. Maintenance of records of wild animals killed or captured. –(1) The holder of every licence shall maintain a record, containing such particulars as may be prescribed, of the wild animals, other than vermin, killed or captured by him during the currency of the licence.

(2) When any animal specified in Sch. III is killed, wounded, or captured by the holder of a licence, he shall, not later than fifteen days from the date of such killing, wounding, or capture, or before leaving the area specified in the licence, whichever is earlier, intimate in writing to the Chief Wildlife Warden or the authorised officer, the prescribed particulars of such animal killed, wounded, or captured by him”..

(3) The holder of any licence shall, not later than fifteen days from the date of expiry of such licence, surrender the records maintained by him under sub-section (1) and the licence to the Chief Wildlife Warden or the authorised officer, and shall sign a declaration, in the prescribed form, certifying the accuracy of the records maintained by him under sub-section (a).”

omitted by Act of 1991, sec. 10

3 Sec. 12. the words “with the previous permission of the State Government” omitted by Act 23 of 1982, sec.2.

4 Sec. 12(b) substituted by Act 23 of 1982, sec.2.

5 Sec. 12 (c) “collection of specimens for zoological gardens, museums, and similar institutions” substituted by *ibid*.

6 Proviso inserted by Act 23 of 1982, sec.2

7 Sec 14. Omitted by Act 44 of 1991. Sec. 12

“Appeals. - (1) An appeal from an order refusing to grant a licence under sec.9, or an order suspending or cancelling a licence under sec. 13, shall lie

(a) if the order is made by the authorised officer, to the Chief Wildlife Warden, or

(b) If the order is made by the Chief Wildlife Warden, to the State Government.

(2) In the case of an order passed in appeal by the Chief Wildlife Warden under sub-section (1), a second appeal shall lie to the State government

(3) Subject as aforesaid, every order passed in appeal under this section shall be final.

(4) No appeal shall be entertained unless it is preferred within fifteen days from the date of the communication to the applicant of the order appealed against.

*Provided that the appellate authority may admit any appeal after the expiry of the period aforesaid, if it is satisfied that the appellant had sufficient cause for not preferring the appeal in time.”

8 See 15 Omitted by Act 44 of 1991. Sec. 12

“Hunting of young and female of wild animals. --No person shall, unless specially authorised by a licence, hunt the young of any wild animal, other than vermin, or any female of such animal, or any deer with antlers in velvet.”

9 Sec 16. Omitted by Act 44 of 1991. Sec. 12

Declaration of closed time.– (1) The State Government may, by notification, declare the whole year or any part thereof, to be a closed time throughout the State, or any part thereof, for such wild animal as may be specified in the notification and no hunting of such animal shall be permitted, during the said period, in the area specified in the notification.

(2) The provisions of sub-section (1) shall not apply to vermin unless otherwise specified by the State Government in this behalf [omitted 1991]

^{5*} **Conviction, setting aside of.** –On 5th February, 1954, at about 10 a.m. a rhinoceros was shot dead at village Hahpani. The petitioner along with a few others, who have since been acquitted or discharged, were sent up for trial under sec. 429 of the Indian Penal Code and Sec. 25 (g) of the Assam Forest Regulation. The charge under sec. 25 (g) of the Forest Regulation failed because the occurrence was found to have taken place outside the game sanctuary. The petitioner was, however, convicted by the learned Magistrate under sec.429 of the Indian Penal Code for having shot and killed the rhinoceros with a gun, and that conviction was upheld by the learned Sessions Judge on

appeal. 'Me only evidence against the petitioner was that of one prosecution witness, who saw the petitioner firing at the rhinoceros with a single - barreled nuzzle loading gun, and later the animal was found dead. The evidence of this witness had been believed by the two Courts below who has, therefore, convicted the petitioner. The argument for the defence was that in order for the conviction to be correct, the destruction of property should be established. Where, therefore, no one has any property or right in an animal, the killing of the animal does not come within that meaning of Sec. 425 of the Indian Penal Code. And thus the provision of Sec.429 of the Indian Penal Code will also not be attracted. The learned Sessions Judge appears to have overlooked the effect of Sec. 425 on the interpretation of Sec 429. It was submitted that at any rate an offence had been committed under sec.3 of the Wild Birds and Animals Protection Act, 1912 (8 of 1912), and therefore, the conviction of the petitioner should be altered to one under Sec.4 of the Act and an appropriate sentence imposed on him. But this cannot be done for the obvious reason that there is nothing to show in this case that there was any such notification by the Government declaring that the offence, if any, was committed in a closed season, as prohibited by the law, 'Mat being so, the conviction and sentence of the petitioner must be set aside. - Nabin Chandra Gogoi vs State of Assam, AIR 1961, pp. 18-19.

10

Sec. 17 Omitted by Act 44 of 1991. Sec. 12

17. "Restrictions on hunting. -(I) No person shall

- (a) hunt any wild animal, from or by means of, a wheeled or mechanically propelled vehicle on water or land, or by aircraft;
 - (b) use an aircraft, motor vehicle or launch for the purpose of driving or stampeding any wild animal;
 - (c) hunt any wild animal with chemicals, explosives, nets, pitfalls, poisonous, poisoned weapons, snares or traps, except insofar as they relate to the capture or wild animals under a Wild Animal Trapping Licence;
 - (d) hunt any special game or big game other than with a rifle unless specially authorised by the licence to hunt with a shot gun using single-slug bullets;
 - (e) for the purpose of hunting, set fire to any vegetation;
 - (f) use any artificial light for the purpose of hunting except when specially authorised to do so under licence in the case of carnivora over a kill;
 - (h) hunt any wild animal on a salt-lick or waterwheel or other drinking place or on path or approach to the game, except sandgrouse and waterbirds;
 - (i) hunt any wild animal on any land not owned by Government, without the consent of that owner or his agent or the lawful occupant of such land;
 - (j) notwithstanding that he holds a licence for the purpose, hunt any wild animal during the closed time referred to in Sec. 16;
 - (k) hunt, with the help of dogs, any wild animal except waterbird, chakor, partridge, or quail;
- (2) The provisions of sub-section (1) shall not apply to vermin. " [Omitted]

[¹CHAPTER-III]

PROTECTION OF SPECIFIED PLANTS

17A. Prohibition of picking, uprooting, etc., of specified plants. – Save, as otherwise provided in this Chapter, no person shall –

- (a) willfully pick, uproot, damage destroy, acquire or collect any specified plant from any forest land and area specified, by notification, by the Central Government,
- (b) possess, sell, other for sale, or transfer by way of gift or otherwise, or transport any specified plant, whether alive or dead, or part or derivative thereof :

Provided that nothing in this section shall prevent a member of a scheduled tribe, subject to the provisions of Chapter IV, from picking, collecting or possessing in the district he resides any specified plant or part or derivative thereof for his bonafide personal use.

17B. Grant of permit for special purpose–. The Chief Wild Life Warden may with the previous permission of the State Government, grant to any person a permit to pick, uproot, acquire or collect from a forest land or the area specified under section 17A or transport, subject to such conditions as may be specified therein, any specified plant for the purpose of

- (a) education;
- (b) scientific research.,
- (c) collection, preservation and display in a herbarium of any scientific institutions; or
- (d) propagation by a person or an institution approved by the Central Government in this regard.

17C. Cultivation of specified plants without licence prohibited. – (1) No person shall cultivate a specified plant except under, and in accordance with a licence granted by the Chief Wild Life Warden or any other officer authorised by the State Government in this behalf :

Provided that nothing in this section shall prevent a person, who, immediately before the commencement of the Wild Life (Protection)

Amendment Act, 1991, was cultivating a specified plant, from carrying on such cultivation for a period of six months from such commencement, or where he has made an application within that period for the grant of a licence to him, until the licence is granted to him, or he is informed in writing that a licence cannot be granted to him.

(2) Every licence granted under this section shall specify the area in which and the conditions, if any, subject to which the licensee shall cultivate a specified plant.

17D. Dealing in specified plants without licence prohibited. - (1) No person shall, except under and in accordance with a licence granted by the Chief Wild Life Warden or any other officer authorised by the State Government in this behalf, commence or carry on business or occupation as a dealer in a specified plant or part or derivative thereof :

Provided that nothing in this section shall prevent a person, who, immediately before that commencement of the Wild Life (Protection) Amendment Act, 1991, was carrying on such business or occupation for a period of sixty days from such commencement, or where he has made an application within that period for the grant of a licence to him, until the licence is granted to him or he is informed in writing that a licence cannot be granted to him.

(2) Every licence granted under this section shall specify the premises in which and the conditions, if any, subject to which the licensee shall carry on his business.

17E. Declaration of stock.— (1) Every person cultivating, or dealing in, a specified plant or part or derivative thereof shall, within thirty days, from the date of commencement of the Wild Life (Protection) Amendment Act, 1991, declare to the Chief Wild Warden or any other officer authorised by the State Government in this behalf, his stocks of such plants and part or derivative thereof, as the case may be, on the date of such commencement.

(2) The provisions of sub-section (3) to (8) (both inclusive) of section 44, section 45, section 46 and section 47 shall, as far as may be, apply in relation to an application and a licence referred to in section 17C and section 17D as they apply in relation to the licence or business in animals or animal articles.

17F. Possession, etc., of plants by licensee. - No licensee under this chapter shall

- (a) keep in his control or possession
 - (i) any specified plant, or part or derivative thereof in respect of which a declaration under the provisions of section 17E has to be made, but has not been made;
 - (ii) any specified plant, or part or derivative thereof which has not been lawfully acquired under the provisions of this Act or any rule, or order made thereunder;
- (b)
 - (i) pick, uproot, collect or acquire any specified plant, or
 - (ii) acquire, receive, keep in his control, custody or possession, or sell, offer for sale or transport, any specified plant or part or derivative thereof,

except in accordance with the conditions subject to which the licence has been granted and such rules as may be made under this Act.

17G. Purchase, etc., of specified plants.— No person shall purchase, receive or acquire any specified plant or part or derivative thereof otherwise than from a licenced dealer:

Provided that nothing in this section shall apply to any person referred to in section of 17B.

17H. Plants to be Government property. —(1) Every specified plant or part or derivative thereof, in respect of which any offence against this Act or any rule or order made thereunder has been committed, shall be the property of the State Government, and, where such plant or part or derivative thereof has been collected or acquired from a sanctuary or National Park declared by the Central Government, such plant or part or derivative thereof shall be the property of the Central Government.

(2) The provisions of sub-sections (2) and (3) of section 39 shall, as far as may be, apply in relation to the specified plant or part or derivative thereof as they apply in relation to wild animals and articles referred to in sub-section (1) of that section.]

¹ Chapter IIIA inserted by Act 44 of 1991, sec. 13.

CHAPTER IV

Sanctuaries, National Park, ¹[****] and Closed Areas

Sanctuaries

18. Declaration of Sanctuary.— [(1) The State Government may, by notification, declare its intention to constitute any area other than area comprised with any reserve forest or the territorial waters as a sanctuary if it considers that such area is of adequate ecological, faunal, floral, geomorphological, natural. or zoological significance, for the purpose of protecting, propagating or developing wildlife or its environment. ²]

(2) The notification referred to in sub-section (1) shall specify, as nearly as possible, the situation and limits of such area.

Explanation. - For the purposes of the this section, it shall be sufficient to describe the area by roads, rivers, ridges, or other well-known or readily intelligible boundaries

19. Collector to determine rights.— [³When a notification has been issued under Sec.18,] the collector shall inquire into, and determine the existence, nature and extent of the rights of any person in or over the land comprised within the limits of the sanctuary.

20. Bar of accrual of rights.— After the issue of a notification under Sec.”18, no right shall be acquired in, or over the land comprised within the limits of the area specified in such notification, except by succession, testamentary or intestate.

21. Proclamation by Collector. – When a notification has been issued under Sec.18 the Collector shall publish in the regional language in every town and village in or in the neighborhood of the area comprised therein, a progamation:

- (a) specifying, as nearly as possible, the situation and the limits of the sanctuary; and
- (b) requiring any person, claiming any right mentioned in Sec. 19, to prefer before the collector” within two months from the date of such proclamation, a written claim in the prescribed form specifying the nature and extent of such right, with necessary details and the amount and particulars of the compensation, if any, claimed in respect thereof.

22. Inquiry by Collector. – The Collector shall, after service of the prescribed notice upon the claimant, expeditiously inquire into

- (a) the claim preferred before him under Cl. (b) of Sec.21, and
- (b) the existence of any right mentioned in Sec.19 and not claimed under Cl.(b) of Sec.21,

so far as the same may be ascertainable from the records of the State Goven-iments and the evidence of any person acquainted with the same.

23. Powers of Collector. – For the purpose of such inquiry, the Collector may exercise the following powers, namely

- (a) the power to enter in or upon any land and to survey, demarcate, and make a map of the same or to authorise any other officer to do so;
- (b) the same powers as are vested in a civil court for the trial of suits.

24. Acquisition of rights. – (1) In the case of a claim to a right in or over any land referred to in Sec.19, the Collector shall pass an order admitting or rejecting the same in whole or in part.

- (2) If such claim is admitted in whole or in part, the Collector may either
 - (a) exclude such land from the limits of the proposed sanctuary, or
 - (b) proceed to acquire such land or rights, except where by an agreement between the owner of such land or the holder of rights and the Government the owner or holder of such rights has agreed to surrender his rights to the Government, in or over such land, and payment of such compensation, as is provided in the Land Acquisition Act, 1894 (1 of 1894)
- [⁴(c) allow, in consultation with the Chief Wildlife Warden, the continuance of any right of any person in, or over any land within the limits of the sanctuary.]

25. Acquisition proceedings. – (1) For the purpose of acquiring such land, or rights in or over such land,

- (a) the Collector shall be deemed to be a Collector, proceeding under the Land Acquisition Act, 1894 (1 of 1894);
- (b) the claimant shall be deemed to be a person interested and appearing before him in pursuance of a notice given under sec.9 of that Act.
- (c) the provisions of the sections preceding Sec.9 of that Act shall be deemed to have been complied with;
- (d) where the claimant does not accept the award made in his favour in the matter of compensation, he shall be deemed, within the meaning of Sec.18 of that Act, to be a person interested who has not accepted the award, and shall be entitled to proceed to claim relief, against the award under the provision of Part III of that Act;
- (e) the Collector, with the consent of the claimant, or the Court, with the consent of both the parties, may award compensation in land or money or partly in land and partly in money, and
- (f) in the case of the stoppage of a public way or a common pasture, the Collector may, with the previous sanction of the State Government provide for an alternative public way or common pasture, as far as may be practicable or convenient.

(2) The acquisition under this Act of any land or interest therein shall be deemed to be acquisition for a public purpose.

26. Delegation of Collector's powers. – The State Government may, by general or special order, direct that the powers exercisable or the functions to be performed by the Collector

under Sec. 19 to 25 (both inclusive) may be exercised and performed by such other officer as may be specified in the order.

[⁵(26A) Declaration of area as Sanctuary. –(1) When –

- (a) a notification has been issued under sec.18 and the period for preferring claim has elapsed, and all claims, if any, made in relation to any land in an area intended to be declared as a sanctuary, have been disposed of by the State Government; or
- (b) any area comprised within any reserve forest or any part of the territorial waters, which is considered by the State Government to be of adequate ecological, faunal, geomorphological, natural or zoological significance for the purpose of protecting, propagating or developing wildlife or its environment, is to be included in a sanctuary,

the State Government shall issue a notification specifying the limits of the area which shall be comprised within the sanctuary and declare that the said area shall be sanctuary on and from such date as may be specified in the notification.

Provided that where any part of the territorial waters is to be so included, prior concurrence of the Central Government shall be obtained by the State Government.

Provided further that the limits of the area of the territorial waters to be included in the sanctuary shall be determined in consultation with the Chief Naval Hydrographer of the Central Government and after taking adequate measures to protect the occupational interests of the local fishermen.

(2) Notwithstanding anything contained in sub-section (1), the right of innocent passage of any vessel or boat through the territorial water shall not be affected by the notification issued under sub-section (1).

(3) No alteration of the boundaries of a sanctuary shall be made except on a resolution passed by the Legislation of the State.]

27. Restriction on entry in sanctuary. – (1) No person other than,

- (a) a public servant on duty;
- (b) a person who has been permitted by the Chief Wildlife Warden or the authorised officer to reside within the limits of the sanctuary;
- (c) a person who has any right over immovable property within the limits of the sanctuary;
- (d) a person passing through the sanctuary along a public highway, and
- (e) the dependents of the person referred to in CI. (a), (b) or (c).

shall enter or reside in the sanctuary, except under and in accordance with the conditions of a permit granted under section 28.

(2) Every person shall, so long as he resides in the sanctuary, be bound

- (a) to prevent the commission, in the sanctuary, or an offence against this Act;
- (b) where there is reason to believe that any such offence against this Act has been committed in such sanctuary, to help in discovering and arresting the offender;
- (c) to report the death of any wild animal and to safeguard its remains until the Chief Wildlife Warden or the authorised officer takes charge thereof;
- (d) to extinguish any fire in such sanctuary of which he has knowledge or information and to prevent from spreading by any lawful means in his power, any fire within the vicinity of such sanctuary of which he has knowledge or information; and
- (e) to assist any forest officer, Chief Wildlife Warden, Wildlife Warden or police officer demanding his aid for preventing the commission of any offence against this Act or in the investigation of any such offence.

[⁶(3) No person shall, with intent to cause damage to any boundary-mark of a sanctuary or to cause any wrongful gain as defined in the Indian Penal Code (45 of 1860), alter, destroy, move, or deface such boundary-mark.]

[⁷(4) No person shall tease or molest any wild animal or litter the grounds or sanctuary.]

28. Grant of permit. – (1) The Chief Wildlife Warden may, on application, grant to any person a permit to enter or reside in a sanctuary for all or any of the following purposes, namely:

- (a) investigation or study of wildlife and purposes ancillary or incidental thereto;
- (b) photography;
- (c) scientific research;
- (d) tourism;
- (e) transaction of lawful business with any person residing in the sanctuary.

(2) A permit to enter or reside in a sanctuary shall be issued subject to such conditions and on payment of such fee as may be prescribed.

[⁸(29) **Destruction, etc., in a sanctuary prohibited without a permit.** – No person shall destroy, exploit or remove any wildlife from a sanctuary or destroy or damage the habitat of any wild animal or deprive any wild animal or its habitat within such sanctuary except under and in accordance with a permit granted by the Chief Wildlife Warden and no such permit shall be granted unless the State Government being satisfied that such destruction, exploitation or removal of wildlife from the sanctuary is necessary for the improvement and better management of wildlife therein authorises the issue of such permit.

Explanation: For the purposes of this section, grazing or movement of livestock permitted under clause (d) of Sec.33 shall not be deemed to be an act prohibited under this section.]

30. Causing fire prohibited. – No person shall set fire to a sanctuary, or kindle any fire, or leave any fire burning, in a sanctuary, in such manner as to endanger such sanctuary.

31 Prohibition of entry into sanctuary with weapon. – No person shall enter a sanctuary with any weapon except with the previous permission in writing of the Chief Wildlife Warden or the authorised officer.

32. Ban on use of injurious substances. – No person shall use in a sanctuary, chemicals, explosives or any other substances which may cause injury to, or endanger, any wildlife in such sanctuary.

33. Control of sanctuaries. – The Chief Wildlife Warden shall be the authority who shall control, manage and maintain all sanctuaries and for that purpose, within the limits of any sanctuary,

- (a) may construct such roads, bridges, buildings, fences or barrier gates, and carry out such other works as he may consider necessary for the purposes of such sanctuary;
- (b) shall take such steps as will ensure the security of wild animals in the sanctuary and the preservation of the sanctuary and wild animals, therein;
- (c) may take such measures, in the interests of wildlife, as he may consider necessary for the improvement of any habitat.
- (d) may regulate, control or prohibit, in keeping with the interests of wildlife, the grazing or movement of [livestock].
- (e) [omitted 1991]

[⁹33A. Immunisation of livestock. –(41) The Chief Wildlife Warden shall take such measures in such manner as may be prescribed, for immunisation against communicable diseases of the livestock kept in or within five kilometres of a sanctuary.

(2) No person shall take, or cause to be taken or graze, any livestock in a sanctuary without getting it immunised.]

34. Registration of certain persons in possession of arms. – (41) Within three months from the declaration of any area as a sanctuary, every person residing in or within ten kilometres of any such sanctuary and holding a licence granted under the Arms Act, 1959 (54 of 1959), for the possession of arms or exempted from the provisions of that Act and possessing arms, shall apply in such form, on payment of such fee, and within such time as may be prescribed, to the Chief Wildlife Warden or the authorised officer, for the registration of his name.

(2) On receipt of an application under sub-section (1), the Chief Wildlife Warden or the authorised officer shall register the name of the applicant in subject manner as may be prescribed.

[¹⁰3) No new licences under the Arms Act, 1959 (54 of 1959), shall be granted within a radius of ten kilometres of a sanctuary without the prior concurrence of the Chief Wildlife Warden.

National Parks

35. Declaration of National Parks. – (1) Whenever it appears to the State Government that an area, whether within a sanctuary or not, is, by reason of its ecological, faunal, floral, geomorphological, or zoological association or importance, needed to be constituted as a National

Park for the purpose of protectin& propagating or developing wildlife therein or its environment, it may, by notificLtion, declare its intention to constitute such area as a National Park.

[¹¹(1) Provided that where any part of the territorial waters is proposed to be included in such National Park, the provisions of Sec.26A shall, as far as may be, apply in relation to the declaration of a National Park as they apply in relation to the declaration of a sanctuary.]

(2) The notification referred to in sub-section (1) shall define the limits of the area which is intended to be declared as a National Park.

(3) Where any area is intended to be declared as a National Park, the provisions of Sec. [¹²19 to 26-A (both inclusive except clause (c) of sub-section (2) of section 24)] shall, as far as may be, apply to the investigation and determination of claims and extinguishment of rights, in relation to any land in such area as they apply to the said matters in relation to any land in a sanctuary.

(4) When the following events have occurred, namely

- (a) the period for preferring claims has elapsed, and all claims, if any, made in relation to any land in an area intended to be declared as a National Park, have been disposed of by the State Government, and
- (b) all rights in respect of lands proposed to be included in the National Park have become vested in the State Government

the State Government shall publish a notification specifying the limits of the area which shall be comprised within the National Park and declare that the said area shall be a National Park on and from such date as may be specified in the notification.

(5) No alteration of the boundaries of a National Park shall be made except on a resolution passed by the Legislature of the State.

(6) No person shall, destroy, exploit, or remove any wildlife from a National Park or destroy or damage the habitat or any wild animal or deprive any wild animal or its habitat within such National Park except under and in accordance with a permit granted by the Chief Wildlife Warden and no such permit shall be granted unless the State Government, being satisfied that such destruction, exploitation, or removal of wildlife from the National Park is necessary for the improvement and better management of wildlife therein, authorises the issue of such permit.

(7) No grazing of any [livestock¹³] shall be permitted in a National Park and no livestock shall be allowed to enter except where such [livestock] is used as a vehicle by a person authorised to enter such National Park.

(8) The provisions of secs. 27 and 28, secs.30 to 32 (both inclusive), and CIS, (a), (b) and (c) of [Sec.33, 33A¹⁴] and sec.34 shall, as far as may be, apply in realtion to a National Park as they apply in relation to a sanctuary.

36. [¹⁵Omitted 1991]

Closed Area

37. Declaration of closed area. – (1) The State Government may, by notification, declare any area closed to hunting for such period as may be specified in the notification.

(2) No hunting of any wild animal shall be permitted in a closed area during the period specified in the notification referred to in sub-section(1).

Sanctuaries or National Park declared by Central Govt.

38. Power of Central Government to declare areas as Sanctuaries or National Park,
- (1) Where the State Government leases or otherwise transfers any area under its control, not being an area within a Sanctuary, to the Central Government the Central Government may, if it is satisfied that the conditions specified in sec.18 are fulfilled in relation to the area so transferred to it, declare such area, by notification, to be a sanctuary and the provisions of [sec 18 to 35 (both inclusive) ¹⁶], 54 and 55 shall apply in relation to such sanctuary as they apply in relation to a sanctuary declared by the State Government.

(2) The Central Government may, if it is satisfied that the conditions specified in sec.35 are fulfilled in relation to any area referred to in sub-section (1), whether or not such area has been declared, to be a sanctuary by the Central Government, or the State Government, declare such area, by notification, to be a National Park and the provisions of secs.35. 54 and 55 shall apply to such National Park as they apply in relation to a National Park declared by the State Government.

(3) In relation to a sanctuary or National Park declared by the Central Government, the powers and duties of the Chief Wildlife Warden under the section referred to in sub-section (1) and (2). shall be exercised and discharged by the Director or by such other officer as may be authorised by the Director in this behalf and references in the sections aforesaid to the State Government, shall be construed as reference to the Central Government and reference therein to the Legislation of the State shall be construed as a reference to Parliament.

¹ Chapter IV “Game Reserves” omitted by Act 44 of 1991, sec. 14.

² Sec 18(l) substituted by Act 44 of 1991, sec. 15.

³ Sec. 19 “Whenever any area is declared to be a sanctuary” Substituted by Act 44 of 1991, sec. 16.

⁴ Sec.24(2)(c) Inserted by Act 44 of 1991, sec. 17

⁵ Sec.26A inserted by Act 44 of 1991, sec. 18.

⁶ Sec.27(3) Inserted by Act 44 of 1991, sec. 19.

⁷ Sec.27(4) Inserted by Act 44 of 1991, sec. 19.

⁸ Sec.29. Hunting in sanctuary without permit prohibited. (1) Notwithstanding anything contained elsewhere in this Act, no person shall hunt any wild animal in a sanctuary or remove therefrom any wild animal, whether alive or dead, or any trophy, uncured trophy, or meat derived from such animal.

Provided that if the Chief Wildlife Warden is satisfied that it is necessary that any wild animal in a sanctuary should be hunted or removed.

(a) for the better protection of wildlife, or

(b) for any other good and sufficient reason he may, with the previous approval of the State Government, grant a permit authorising any person to hunt or remove such wild animal under the direction of an office authorised by him or cause it to be hunted or removed.

(2) A permit granted under sub-section

(1) shall specify the kind and number of wild animal that may be hunted or removed by the holder of such permit.

(3) The Chief Wildlife Warden may, for good and sufficient reason, to be recorded in writing, cancel any permit granted under sec.28 or under this section.

Provided that no such cancellation shall be made except after giving the holder of the permit a reasonable opportunity of being heard.

(4) Any person aggrieved by the cancellation of a permit under sub-section (3) may, within 15 days from the date of such cancellation, appeal to the State Government, whose decision shall be final.

Provided that the State Government may admit any appeal preferred after the expiry of the period aforesaid if it is satisfied that the applicant had sufficient cause for not preferring the appeal in time."

Substituted by Act 44 of 1991, Sec. 20,

⁹ Sec.33A inserted by Act 44 of 1991, sec.22.

¹⁰ Sec.34(3) inserted by Act 44 of 1991, sec.22A.

¹¹ Sec.35(l) Provision added by Act 44 of 1991, sec.23

¹² Sec. 35(3) " 19 to 26 (both inclusive)" between "the provisions of sections' and "shall, as far as" substituted by Act 44 of 1991, sec.23.

¹³ Sec.35(7) "cattle" substituted by "livestock" by Act 44 of 1991, sec.23.

¹⁴ Sec.35(8) "section 33" after "clause (a), (b) and (c) of "substituted by Act 44 of 1991, sec.23.

¹⁵ Sec.36 Declaration of "Game Reserve".-(1) The State Government may, by notification, declare any area closed to hunting for such period as may be specified in the notification.

(2) No hunting of any wild animal shall be permitted in such reserve except under and in accordance with a licence, issued under this section by the Chief Wildlife Warden or the authorised officer."

omitted by Act 44 of 1991, sec. 24.

¹⁶ Sec38. "Section 19 to 35 after "provisions of" substituted by Act 44 of 1991, sec.25.

[¹CHAPTER -IVA]

CENTRAL ZOO AUTHORITY AND RECOGNITION OF ZOOS

38A. Constitution of Central Authority.² - (1) The Central Government shall constitute a body to be known as the Central Zoo Authority (hereinafter in this Chapter referred to as the Authority), to exercise the powers conferred on, and to perform the functions assigned to it under this Act.

- (2) The Authority shall consist of
 - (a) Chairperson;
 - (b) such number of members not exceeding ten; and
 - (c) Member - Secretary; to be appointed by the Central Government.

38B. Term of office and conditions of service of chairperson and members etc.–

(1) The chairperson and every member shall hold office for such period, not exceeding three years, as may be specified by the Central Government.

(2) The chairperson or a member may, by writing under this hand, addressed to the Central Government, resign from the office of chairperson or, as the case may be, of the Member.

(3) The Central Government shall remove a person from the office of chairperson or member referred to in sub-section (2) if that person.

- (a) becomes an undischarged insolvent,
- (b) gets convicted and sentenced to imprisonment for an offence which, in the opinion of the Central Government, involves moral turpitude;
- (c) becomes of unsound mind and stands so declared by a competent court;
- (d) refuses to act or becomes incapable of acting;
- (e) is, without obtaining leave or absence from the authority, absent from three consecutive meetings of the Authority; or
- (f) in the opinion of the Central Government has so abused the position of chairperson or member as to render that person's continuance in office detrimental to the public interest:

Provided that no person shall be removed under this clause unless that person has been given a reasonable opportunity of being heard in the matter.

(4) A vacancy caused under sub-section (2) or otherwise shall be filled by fresh appointment.

(5) The salaries and allowances and other conditions of appointment of chairperson, members and Member-Secretary of the Authority shall be such as may be prescribed.

(6) The Authority shall, with the previous sanction of the Central Government, employ such officer and other employees as it deems necessary to carry out the purposes of the Authority.

(7) The terms and conditions of service of the officers and other employees of the authority shall be such as may be prescribed.

(8) No act or proceeding of the Authority shall be questioned or shall be invalid on the ground merely of the existence of any vacancies or defect in the constitution of the Authority.

38C. Functions of the Authority. – The Authority shall perform the following functions, namely:

- (a) specify the minimum standards for housing, unkeep and veterinary care of the animals kept in a zoo;
- (b) evaluate and assess the functioning of zoos with respect to the standards or the norms as may be prescribed;
- (c) recognise or derecognize zoos;
- (d) identify endangered species of wild animals for purposes of captive breeding and assigning responsibility in this regard to a zoo;
- (e) co-ordinate the acquisition, exchange and loaning of animals for breeding purposes;
- (f) ensure maintenance of stud-books of endangered species of wild animals bred in captivity;
- (g) identify priorities and themes with regard to display of captive animals in a zoo;
- (h) co-ordinate training of zoo personnel in India and outside India;
- (i) co-ordinate research in captive breeding and educational programmes for the purposes of zoos;
- (j) provide technical and other assistance to zoos for their proper management and development on scientific lines;
- (k) perform such other functions as may be necessary to carry out the purposes of this Act with regard to zoos.

38D. Procedure to be regulated by the Authority. – (1) The Authority shall meet as and when necessary and shall meet at such time and place as the chairperson may think fit.

(2) The Authority shall regulate its own procedure.

(3) All orders and decisions of the Authority shall be authenticated by the Member-Secretary or any other officer of the Authority duly authorised by the Member-Secretary in this behalf.

38E. Grants and loans to Authority and constitution of fund. – (1) The Central Government may, after due appropriation made by Parliament by law in this behalf, make to the Authority grants and loans of such sums of money as that Government may consider necessary.

(2) There shall be constituted a Fund to be called the Central Zoo Authority Fund and there shall be credited thereto any grants and loans made to the Authority by the Central Government all fees and charges received by the Authority under this Act and all sums received by the Authority from such other sources as may be decided upon by the Central Government.

(3) The Fund referred to in sub-section (2) shall be applied for meting salary, allowances and other remuneration of the members, officer and other employees of the Authority and the expenses of the Authority in the discharge of its functions under this Chapter and expenses on objects and for purposes authorised by this Act.

(4) The Authority shall maintain proper accounts and other relevant records and prepare an annual statement of accounts in such form as may be prescribed by the Central Government in consultation with the Comptroller and Auditor General of India.

(5) The accounts of the Authority shall be audited by the Comptroller and Auditor-General at such intervals as may be specified by him and any expenditure incurred in connection with such audit shall be payable by the Authority to the Comptroller and Auditor-General.

(6) The Comptroller and Auditor-General and any person appointed by him in connection with the audit of the accounts of the Authority under this Act shall have the same rights and privileges and the authority in connection with such audit as the Comptroller and Auditor-General generally has in connection with the audit of the Government accounts and, in particular, shall have the right to demand the production of books, accounts, connected vouchers and other documents and papers and to inspect any of the offices of the Authority.

(7) The accounts of the Authority as certified by the Comptroller and Auditor-General or any other person appointed by him in this behalf together with the audit report thereon, shall be forwarded annually to the Central Government by the Authority.

38F. Annual report. - The Authority shall prepare in such form and at such time, for each financial year, as may be prescribed, its annual report, giving a full account of its activities during the previous financial year and forward a copy thereof to the Central Government.

38G. Annual report and audit report to be laid before Parliament. - The Central Government shall cause the annual report together with a memorandum of action taken on the recommendations contained therein, in so far as they relate to the Central Government, and the reasons for the non-acceptance, if any, of any of such recommendations and the audit report to be laid as soon as may be after the reports are received before each House of Parliament.

38H. Recognition of Zoos. – (1) No zoo shall be operated without being recognised by the Authority.

Provided that a zoo being operated immediately before the date of commencement of the Wild Life (Protection) Amendment Act, 1991 may continue to operate without being recognised for a period of [eighteen months from the date of such commencement and³] if the application seeking recognition is made within that period, the zoo may continue to be operated until the said application is finally decided or withdrawn and in case of refusal for a further period of six months from the date of such refusal.

(2) Every application for recognition of a zoo shall be made to the Authority in such form and on payment of such fee as may be prescribed.

(3) Every recognition shall specify the conditions, if any, subject to which the applicant shall operate the zoo.

(4) No recognition to a zoo shall be granted unless the Authority, having due regard to the interests of protection and conservation of wild life, and such standards, norms and other matters as may be prescribed, is satisfied that recognition should be granted.

(5) No application for recognition of a zoo shall be rejected unless the applicant has been given a reasonable opportunity of being heard.

(6) The Authority may, for reason to be recorded by it, suspend or cancel any recognition granted under sub-section (4):

Provided that no such suspension or cancellation shall be made except after giving the person operating the zoo a reasonable opportunity of being heard.

(7) An appeal from an order refusing to recognise a zoo under sub-section (5) or an order suspending or canceling a recognition under sub-section (6) shall lie to the Central Government:

(8) An appeal under sub-section (7) shall be preferred within thirty days from the date of communication to the applicant, of the order appealed against:

Provided that the Central Government may admit any appeal preferred after the expiry of the period aforesaid if it is satisfied that the appellant had sufficient cause for not preferring the appeal.

38I. Acquisition of animals by a zoo. – Subject to the other provisions of this Act, no zoo shall acquire or transfer any wild animal specified in Schedule I and Schedule 11 except with the previous permission of the Authority.

38J. Prohibition of teasing etc., in a zoo. – No person shall tease, molest, injure or feed any animal or cause disturbance to the animals by noise or otherwise, or litter the grounds in a zoo.

¹ Chapter IVA inserted by Act 44 of 1991, sec.26

² The Central Zoo Authority was constituted vide S.O 113 (E), dated 3rd February, 1992 published in Part-II, Section 3, sub-section (ii) of the Extra -Ordinary Gazette of India, dated 3rd February, 1992

³ Sec.38H. “eighteen months from the date of such commencement” after the words “recognised for a period of” substituted by Act 26 of 1993, sec.2.

CHAPTER V
Trade or Commerce in Wild Animals,
Animal Articles and Trophies

39. Wild Animal, etc. to be Government property. - (1) Every –

- (a) wild animal, other than vermin, which is hunted under Sec. 11 or sec.29 or sub-section (6) of sec 35 or kept or [bred in captivity or hunted¹] in contravention of any provisions of this Act or any rule or order made thereunder, or found dead, or killed by [***] mistake;
- (b) animal article, trophy or uncured trophy or meat derived from any wild animal referred to in Cl.(a) in respect of which any offence against this Act or any rule or order made thereunder has been committed;
- [²(c) ivory imported into India and an article made from such ivory in respect of which any offence against this Act or any rule or order made thereunder has been committed.
- (d) vehicle, vessel, weapon, trap or tool that has been used for committing an offence and has been seized under the provision of this Act.]

shall be the property of the State Government and, where such animal is hunted in a sanctuary or National Park declared by the Central Government such animal or any article, trophy, uncured trophy or meat [derived from such animal or any vehicle, vessel, weapon, trap, or tool used in such hunting, ³] shall be the property of Central Government.

(2) Any person who obtains, by any means, the possession of Government property, shall, within forty-eight hours of obtaining such possession, report it to the nearest police station or authorised officer and shall, if so required, hand over such property to the officer in charge of such police station or such authorised officer, as the case may be.

(3) No person shall, without the previous permission in writing of the Chief Wildlife Warden or the authorised officer.

- (a) acquire or keep in his possession, custody, or control, or
- (b) transfer to any person, whether by way of gift, sale or otherwise, or
- (c) destroy or damage

such Government property.

40. Declaration. – (1) Every person having at the commencement of this Act the control, custody, or possession of any captive animal specified in Sch. I or Part 11 of Sch. 11, or any uncured trophy derived from such animal or salted or dried skin of such animal or the musk of a musk deer or the horn of a rhinoceros, shall, within thirty days from the commencement of this Act, declare to the Chief Wildlife-Warden or the authorised officer the number and description of animal, or article of the foregoing description under his control, custody or possession and the place where such animal or article is kept.

(2) No person shall, after the commencement of this Act, acquire, receive, keep in his control, custody or possession, sell, offer for sale, or otherwise transfer or transport any animal specified in Sch. 1 or Part 11 of Sch. 11, any uncured trophy or meat derived from such animal, or the salted or dried skin of such animal or the musk of a deer or the horn of a rhinoceros, except with the previous permission in writing of the Chief Wildlife Warden or the authorised officer.

[⁴(3) Nothing in sub-section (1) or sub-section (2) shall apply to a recognised zoo subject to the provisions of section 381 or to a public museum.]

(4) The State Government may, by notification, require any person to declare to the Chief Wildlife Warden or the authorised officer any animal, article or trophy (other than the musk of musk deer or the horn of rhinoceros), or salted or dried skin derived from an animal specified in Sch. I or Part 11 of Sch. H in his control, custody or possession in such form, in such manner, and within such time as may be prescribed.

41. Inquiry and preparation of inventories. - (1) On receipt of a declaration made under sec.40, the Chief Wildlife Warden or the authorised officer may, after such notice, in such manner and at such time as may be prescribed,

- (a) enter upon the premises of a person referred to in Sec.40;
- (b) make inquiries and prepare inventories of animal articles, trophies, uncured trophies, salted and dried skins, and captive animals specified in Sch. I and Part 11 of Sch. 11 and found thereon; and
- (c) affix upon the animals, animal articles, trophies of uncured trophies, identification marks in such manner as may be prescribed.

(2) No person shall obliterate or counterfeit any identification mark referred to in this Chapter.

42. Certificate of ownership. - The Chief Wildlife Warden may, for the purposes of Sec. 40, issue a certificate of ownership in such form, as may be prescribed, to any person who, in his opinion, is in lawful possession of any wild animal or any animal article, trophy, or uncured trophy, and may, where possible, mark, in the prescribed manner, such animal article, trophy or uncured trophy for the purposes of Identification.

43. Regulation of transfer of animal etc. - (1) Subject to the provisions of sub-section (2), (3) and (4), a person (other than a dealer) who does not possess a certificate of ownership shall not

- (a) sell or offer for sale or transfer whether by way of sale, gift or otherwise, any wild animal specified in Sch. I or Part II of Sch. 11 or any captive animal belonging to that category or any animal article, trophy, uncured trophy or meat derived therefrom;
- (b) make animal articles containing part or whole of such animal;
- (c) put under a process of taxidermy an uncured trophy of such animal;

except with the previous permission in writing of the Chief Wildlife Warden or the authorised officer.

(2) Where a person transfers or transports from the State in which he resides to another State or acquires by transfer from outside the State any such animal, animal article, trophy or uncured trophy as referred to in sub-section (1) in respect of which he has a certificate of ownership, he shall, within thirty days of the transfer or transport, report the transfer or transport to the Chief Wildlife Warden or the authorised officer within whose jurisdiction the transfer or transport is effected.

(3) No person who does not possess a certificate of ownership shall transfer or transport from one State to another state or acquire by transfer from outside the State any such animal, animal article, trophy or uncured trophy as is referred to in sub-section (1) except with the previous permission in writing of the Chief Wildlife Warden or the authorised officer within whose jurisdiction the transfer is to be effected.

(4) Before granting any permission under sub-section (1) or sub-section (3), the Chief Wildlife Warden or the authorised officer shall satisfy himself that the animal or article referred to therein has been lawfully acquired.

(5) While permitting the transfer or transport of any animal, animal article, trophy or uncured trophy, as is referred to in sub-section (1), the Chief Wildlife Warden or the authorised officer

- (a) shall issue a certificate of ownership after such inquiry as he may deem fit;
- (b) shall, where the certificate of ownership existed in the name of the previous owner, issue a fresh certificate of ownership in the name of the person to whom the transfer has been effected,.
- (c) may affix an identification mark on any such animal, animal article, trophy or uncured trophy.

6. Nothing in this section shall apply –

[⁵(a) to tail feather of peacock and animal articles or trophies made therefrom],

[⁶(b) to any transaction entered into by a recognised zoo subject to the provisions of Sec 381 or by a public museum with any other recognised zoo or public museum]

44. Dealings in trophy and animal articles without licence prohibited. – (1) [⁷Subject to the provisions of Chapter VA, no person shall, except under, and in accordance with, a licence granted under sub-section (4), –]

- (a) commence or carry on the business as
 - (i) a manufacturer of, or dealer in, any animal article, or
 - (ia) [⁸Omitted]
 - (ii) a taxidermist; or
 - (iii) a dealer in trophy or uncured trophy; or
 - (iv) a dealer in captive animal; or
 - (v) a dealer in meat; or
- (b) cook or serve meat in any eating-house

[⁹(c) derive, collect or prepare, or deal in, snake venom,]:

Provided that nothing in this sub-section shall prevent a person, who immediately before the commencement of this Act was carrying on the business or occupation specified in this sub-section, from carrying on such business or occupation for a period of thirty days from such commencement, or where he has made an application within that period for the grant of a licence to him, until the licence is granted to him or he is informed in writing that a licence cannot be granted to him.

[¹⁰Provided further that nothing in this sub-section shall apply to the dealers in tail feathers of peacock and articles made therefrom and the manufacturers of such article.]

Explanation. – For the purposes of this section, “eating-house” includes a hotel, restaurant or any other place where any eatable is served on payment, whether or not such payment is separately made for such eatable or is included in the amount charged in board and lodging.

(2) Every manufacturer of, or dealer in animal article, or every dealer in captive animals, trophies or uncured trophies, or every taxidermist shall, within fifteen days from the commencement of this Act, declare to the Chief Wildlife Warden his stocks of animal articles, captive animals, trophies and uncured trophies, as the case may be, as on the date of such declaration and the Chief Wildlife Warden or the authorised officer may place an identification mark on every animal article, captive animal trophy or uncured trophy, as the case may be.

(3) Every person referred to in sub-section (1) who intends to obtain a licence shall¹¹, make an application to the Chief Wildlife Warden or the authorised officer for the grant of a licence.

(4) (a) Every application referred to in sub-section (3) shall be made in such form and on payment of such as fee as may be prescribed, to the Chief Wildlife Warden or the authorised officer.

[¹²(b) No licence referred to in sub-section (1) shall be granted unless the Chief Wildlife Warden or the authorised officer having regard to the antecedents and previous experience of the applicant, the implications which the grant of such licence would have on the status of wildlife and to such other matters as may be prescribed in this behalf and after making such inquiry in respect of those matters as he may think fit, is satisfied that the licence should be granted].

(5) Every licence granted under this section shall specify the premises in which and the conditions, if any, subject to which the licensee shall carry on his business.

(6) Every licence granted under this section shall

(a) be valid for one year from the date of its grant;

(b) not be transferable; and

(c) be renewable for a period not exceeding one year at a time.

(7) No application for the renewal of a licence shall be rejected unless the holder of such licence has been given a reasonable opportunity of presenting his case and unless the Chief Wildlife Warden or the authorised officer is satisfied that.

- (i) the application for such renewal has been made after the expiry of the period specified thereof, or
- (ii) any statement made by the applicant at the time of the grant or renewal of the licence was incorrect or false in material particulars, or
- (iii) the applicant has contravened any term of condition of the licence, or any provision of this Act, or any rule made thereunder, or
- (iv) the applicant does not fulfill the prescribed conditions.

(8) Every order granting or rejecting in application for the grant or renewal of a licence shall be made in writing.

(9) Nothing in the foregoing sub-section shall apply in relation to vermin.

45. Suspension or calculation of licence. - Subject to any general or special order of the State Government the Chief Wildlife Warden or the authorised officer may, for reason to be recorded by him in writing, suspend or cancel any licence granted or renewed under sec.44:

Provided that no such suspension or cancellation shall be made except after giving the holder of the licence a reasonable opportunity of being heard.

46. Appeal. – (1) An appeal from an order refusing to grant or renew a licence under sec.44 of an order suspending or canceling a licence under sec. 45 shall lie

- (a) if the order is made by the authorised officer, to the Chief Wildlife Warden, or
- (b) if the order is made by the Chief Wildlife Warden to the State Government.

(2) In the case of an order passed in appeal by the Chief Wildlife Warden' under C1. (a) of sub-section (1), a second appeal shall lie to the State Government.

(3) Subject as aforesaid, every order passed in appeal under this section shall be final.

(4) An appeal under this section shall be preferred within days from the date of the communication, to be applicant, or the order appealed against.

Provided that the appellate authority may appeal preferred after the expiry of the period aforesaid if it is satisfied that the appellant had sufficient cause for not preferring the appeal in time.

47. Maintenance of records. - A licensee under this Chapter shall-

- (a) keep records, and submit such returns of his dealings, as may be prescribed.
 - (i) to the Director or any other officer authorised by him in this behalf, and
 - (ii) to the Chief Wildlife Warden or the authorised officer, and
- (b) make such records available on demand for inspection by such officers.

48. Purchase of animal, etc., by licensee. - No licensee under this Chapter shall

- (a) keep in his control, custody, or possession
- (i) any animal, animal article, trophy or uncured trophy in respect of which a declaration under the provisions of sub-section (2) of sec.44 has to be made but has not been made;
- (ii) any animal or animal article, trophy, uncured trophy or meat which has not been lawfully acquired under the provisions of this Act or any rule of order made thereunder.
- (b) (i) capture any wild animal, or
- (ii) acquire, receive, keep in his control, custody, or possession, or sell, offer for sale, or transport, any captive animal specified in Sch. I or Part II of Sch. 11 or any animal article, trophy or uncured trophy, or meat derived therefrom, or serve such meat, or put under a process or taxidening or make animal article containing part or whole of such animal,

except in accordance with such rules as may be made under this Act:

Provided that where the acquisition, or possession, or control, or custody of such animal or animal article, trophy or uncured trophy entails the transfer or transport from one State to another, no such transfer or transport shall be effected except with the previous permission in writing of the Director or any other officer authorised by him in this behalf.

Provided further that no such permission under the foregoing proviso shall be granted unless the Director or the officer authorised by him is satisfied that the animal or article aforesaid has been lawfully acquired.

[¹³**48A Restriction of transportation of wildlife.** - No person shall accept any wild animal (other than vermin) or any animal article, or any specified plant or part or derivative thereof, for transportation except after exercising due care to ascertain that permission from the Chief Wildlife Warden or any other officer authorised by the State Government in this behalf has been obtained for such transportation.]

49. Purchase of captive animal, etc. person other than a licensee. - No person shall purchase, receive or acquire any captive animal, wild animal other than vermin, or any animal article, trophy, uncured trophy, or meat derived therefrom otherwise than from a dealer or from a person authorised to sell or otherwise transfer the same under this Act.

[¹⁴Provided that nothing in this section shall apply to a recognised zoo subject to the provision of section 38-1 or to a public museum.]

¹ Sec.39(1)(a) "or hunted" inserted in between "bred in captivity" and "in contravention" by Act 44 of 1991, sec.27. Sec.26(1)(a) The words "without a licence or" after "or killed" omitted by Act 44 of 1991, sec.27.

² Sec.39.(1)(c) Inserted by Act 44 of 1991, sec.27.

³ Sec.39(1) "derived from such animal" substituted by Act 44 of 1991, sec.27.

- ⁴ Sec.40(3) “Nothing in sub-section (1) or (2) shall apply to a public museum or zoo.” substituted by Act 44 of 1991, sec.28.
- ⁵ Sec.43(6)(a) “to animal articles or trophies made out of feathers of peacocks;” substituted by Act 44 of 1991, sec.29.
- ⁶ Sec.43(6)(b) “to any transaction entered into by a public museum or zoo with any other public museum or zoo.” substituted by Act 44 of 1991, sec.29.
- ⁷ Sec.44(1) Substituted by Act 28 of 1986, sec.2 for the words” Except under, and in accordance with, a licence granted under sub-section (4), no person shall”.
- ⁸ Sec.44(1)(a)(ia) ‘a manufacturer of, or dealer in, any article made of ivory imported into India;’ omitted by Act 44 of 1991, sec.30.
- ⁹ Sec.44(1)(c) Inserted by Act 44 of 1991, sec.30.
- ¹⁰ Sec.44(1) Second provision substituted by Act 44 of 1991, sec.30.
- ¹¹ Sec.44(3) The words “written fifteen days from the commencement of this Act.” omitted by Act 23 of 1992. sec.3.
- ¹² Sec.44(4) (b) substituted by Act 23 of 1982, sec.3.
- ¹³ Sec.48A Inserted by Act 44 of 1991, sec.31.
- ¹⁴ Sec.49 “Provided that nothing in this section shall apply to any transaction entered into by a public museum or zoo with any public museum or zoo.” Substituted by Act 44 of 1991, sec.32

[CHAPTER VA]¹

**Prohibition of Trade or Commerce in Trophies,
Animal Articles, etc. derived from Certain Animals.**

49A. Definitions. - In this Chapter, –

- (a) “scheduled animal” means an animal specified for the time being in Sch. I or Part 11 of Sch. 11;
- (b) “scheduled animal article” means an article made from any scheduled animal and includes an article or object in which the whole or any part of such animal (has been used but does not include tail-feather of peacock, an article or trophy made therefrom and snake venom or its derivative;²)
- (c) “specified date” means -
 - (i) In relation to a scheduled animal on the commencement of the Wildlife (Protection) Amendment Act, 1986, the date of expiry of two months from such commencement.]
 - (ii) in relation to any animal added or transferred to Sch. I or part II of Sch. 11 at any time after such commencement, the date of expiry of two months such addition or transfer;
 - [(iii) in relation to ivory imported into India or an article made from such ivory, the date of expiry of 6 months from the commencement of the Wildlife (Protection) Amendment) Act 1991.³]

49B. Prohibition of dealing in trophies, animal articles etc. derived from Scheduled animals.- (1) Subject to the other provisions of this section, on and after the specified date, no person shall

- (a) commence or carry on the business as –
 - (i) a manufacturer of, or dealer, in scheduled animal articles; or
 - [(ia) a dealer in ivory imported into India or article made therefrom or a manufacturer of such article; or⁴]
 - (ii) a taxidermist with respect to any schedule animals or any parts of such animals; or
 - (iii) a dealer in trophy or unucured trophy derived from any scheduled animal; or
 - (iv) a dealer in any captive animal being scheduled animal; or
 - (v) a dealer in meat derived from any scheduled animal⁵; or
- (b) cook or serve meat derived from any scheduled animal in any eating-house.

Explanation. - For the purposes of this sub-section, “eating-house” has the same meaning as in the Explanation below sub-section (1) of Sec.44.

(2) Subject to the other provisions of this section, no licence granted or renewed under sec. 44 before the specified date shall entitle the holder thereof or any other person to commence or carry on the business referred to in Cl. (a) of sub-section (1) of this section on the occupation referred into Cl (b) of that sub-section after such date.

(3) Notwithstanding anything contained in sub-section (1) or sub-section (2), where the Central Government is satisfied that it is necessary or expedient to do so in the public interest, it may, by general or special order published in the official Gazette, exempt, for purposes of export, any corporation owned or controlled by the Central Government (including a Government company within the meaning of Sec.617 of the Companies Act, 1956 (1 of 1956), or any society registered under the Societies Registration Act, 1860 (21 of 1860), or any other law for -the time being in force, wholly or substantially financed by the Central Government, from the provisions of sub-section (1) and (2).

(4) Notwithstanding anything contained in sub-section (1) or sub-section (2), but subject to any rules which may be made in this behalf, a person holding a licence under sec-44 to carry on the business as a taxidermist may put under a process of taxidermy any scheduled animal or any part thereof,

- (a) for or on behalf of the Government or any corporation or society exempted under sub-section (3), or
- (b) with the previous authorisation in writing of the Chief Wildlife Warden, for and on behalf of any person for educational or scientific purposes.

49C. Declaration by dealer. - (1) Every person carrying on the business or occupation referred to in sub-section (1) of Sec.49B shall, within thirty days from the specified date, declare to the Chief Wildlife Warden or the authorised officer,

- (a) his stock, if any, as at the end of the specified date of -
 - (i) scheduled animal articles;
 - (ii) scheduled animals and part thereof;
 - (iii) trophies and uncured trophies derived from scheduled animals;
 - (iv) captive animals, being scheduled animals;
 - (v) ivory imported into India or article made therefrom.]
- (b) the place of places at which the stocks mentioned in the declaration are kept; and
- (c) the description of such items, if any, of the stocks mentioned in the declaration which he desires, to retain with himself for his bohafide personal use.

(2) On receipt of a declaration under sub-section (1), the Chief Wildlife Warden or the authorised officer may take all or any of the measures specified in Sec.41 and for this purpose, the provisions of Sec. 41 shall , so far as may be, apply.

(3) Where, in a declaration made under sub-section (1), the person making the declaration expresses his desire to retain with himself any of the items of the stocks specified in the declaration for his bona fide personal use, the Chief Wildlife Warden, with the prior approval

of the Director, may, if he is satisfied that the person is in lawful possession of such items, issue certificates of ownership in favour of such person with respect to all, or as the case may be, such of the items as in the opinion of the Chief Wildlife Warden are required for the bona fide personal use of such person and affix upon such items identification marks in such manner as may be prescribed.

Provided that no such item shall be kept in any commercial premises.

(4) No person shall obliterate or counterfeit any identification mark referred to in sub-section (3),

(5) An appeal shall lie against any refusal to grant certificate of ownership under sub-section (3) and the provisions of sub-section (2), (3) and (4) of sec. 46 shall, so far as may be, apply in relation to appeals under this sub-section.

(6) Where a person who has been issued a certificate of ownership under sub-section (3) in respect of any item,

(a) transfers such item to any person, whether by way of gift, sale or otherwise, or

(b) transfer or transports from the State in which he resides to another State any such item.

he shall, within thirty days of such transfer or transport, report the transfer or transport to the Chief Wildlife Warden or the authorised officer within whose jurisdiction the transfer or transport is effected.

(7) No person, other than a person who has been issued a certificate of ownership under sub-section (3) shall, on and after the specified date, keep under his control, sell or offer for sale or transfer to [any person any scheduled animal or scheduled animal article or ivory imported into India or any article made therefrom.⁶]

¹ Chap VA Inserted by Act 28 of 1986, sec.3.

² Sec.49A(b) "has been used.... derivatives" substituted by Act 44 of 1991, sec.33.

³ Sec.49(A)(c)(i) The word 'and after "commencement"; omitted by Act 44 of 1991, sec.33.

⁴ Sec.49B(1)(a)(ia) Inserted by Act 44 of 1991, sec.34.

⁵ Sec.49B(1)(a)(v) Inserted by Act 44 of 1991, sec.35.

⁶ Sec.49C(7) The words "any scheduled animal or a scheduled animal article or ivory imported into India or any article made therefrom." substituted by Act 44 of 1991, sec.35.

CHAPTER VI

Prevention and Detection of Offences

50. Power of entry, search, arrest and detention. - (1) Notwithstanding anything contained in any other law for the time being in force, the Director or any other authorised by him in this behalf or the Chief Wildlife Warden or the authorised officer or any forest officer or any police officer not below the rank of a sub-inspector may, if he has reasonable grounds for believing that any person has committed an offence against this Act,

- (a) require any such person to produce for inspection any captive animal, wild animal, animal article, meat, [¹trophy, uncured trophy, or any specified plant or part or derivative thereof] in his control, custody or possession, or any licence, permit or any other document granted to him or required to be kept by him under the provisions of this Act;
- (b) stop any vehicle or vessel in order to conduct search or inquiry or enter upon and search any premises, land, vehicle, or vessel in the occupation of such person, and open and search any baggage or other things in his possession;
- [²(c) seize any captive animal, wild animal, animal article, meat, trophy or uncured trophy, or any specified plant or part or derivative thereof in respect of which an offence against this Act appears to have been committed, in the possession of any person together with any trap, tool, vehicle, vessel, or weapon used for committing any such offence and unless he is satisfied that such person will appear and answer any charge which may be preferred against him arrest him without warrant and detain him.

Provided that where a fisherman, residing within ten kilometres of a sanctuary or National Park, inadvertently enters on a boat not used for commercial fishing, in the territorial waters in that sanctuary or National Park, a fishing tackle or net on such boat shall not be seized.]

(2) [³Omitted 1991]

(3) It shall be lawful for any of the officers referred to in sub-section (1) to stop and detain any person, whom he sees doing any act for which a licence or permit is required under the provisions of this Act, for the purposes of requiring such person to produce the licence or permit and if such person fails to produce the licence or permit, as the case may be, he may be arrested without warrant, unless he furnishes his name and address, and otherwise satisfies the officer arresting him that he will duly answer any summons or other proceedings which may be taken against him.

[(3A) Any officer of a rank not inferior to that of an Assistant Director of Wildlife Preservation or Wildlife Warden, who, or whose subordinate, has seized any captive animal or wild animal under clause (c) of sub-section (1) may give the same for custody on the execution by any person of a bond for the production of such animal if and when so required, before the magistrate having jurisdiction to try the offence on account of which the seizure has been made. ⁴]

(4) Any person detained, or things seized under the foregoing power, shall forthwith be taken before a Magistrate to be dealt with according to law.

(5) Any person who, without reasonable cause, fails to produce anything which he is required to produce under this section, shall be guilty of an offence against the Act.

- (6) (a) Where any [⁵meat or uncured trophy, specified plant or part or derivative thereof] is seized under the provisions of this section, the Asstt. Director of Wildlife Preservation or any other officer of a gazetted rank authorised by him in this behalf or the Chief Wildlife Warden or the authorised officer may arrange for the sale of the same and deal with the proceeds of such sale in such manner as may be prescribed.
- (b) Where it is proved that the [⁶meat or uncured trophy, specified plant or part or derivative thereof] seized under the provision of this section is not Government property, the proceed of the sale shall be returned to the owner.

(7) Whenever any person is approached by any of the officers referred to in sub-section (1) for assistance in the prevention or detection of an offence against this Act, or in apprehending persons charged with the violation of this Act, or for seizure in accordance with Ct. (c) of sub-section (1), it shall be the duty of such person or persons to render such assistance.

[⁷(8) Notwithstanding anything contained in any other law for the time being in force, any officer not below the rank of an Assistant Director of Wildlife Preservation or Wildlife Warden shall have the powers, for the purpose of making investigation into any offence against any provision of this Act.

- (a) to issue a search warrant;
- (b) to enforce the attendance of witness;
- (c) to compel the discovery and production of documents and material objects, and;
- (d) to receive and record evidence.

(9) Any evidence recorded under clause (d) of sub-section (8) shall be admissible in any subsequent trial before a Magistrate provided that it has been taken in presence of the accused person.^{8]}

51. Penalties. - (1) Any person who ⁹[contravenes any provisions of this Act [¹⁰except Chapter VA and section 38J]] or any rule or order made thereunder or who commits a breach of any of the conditions of any licence or permit granted under this Act, shall be guilty of an offence against this Act, and shall, on conviction, be punishable with imprisonment for a term which may extend to [three years] or with fine which may extend to [twenty five thousand rupees] or with both.

Provided that where the offence committed is in relation to any animal specified in Scheduled I or Part 11 of Sch. 11, or meat of any such animal, animal article, trophy, or uncured trophy derived from such animal or where offence [relates to hunting in, or, altering the boundaries of] a sanctuary or a National Park, such offence shall be punishable with imprisonment for a term which shall not be less than [one year] but may extend to six years and also with fine which shall not be less than [five thousand rupees^{11]}.

[Provided further that in the case of a second or subsequent offence of the nature mentioned in this sub-section, the term or imprisonment may extend to six years ‘ and shall not be less than two years and the amount of fine shall not be less than ten thousand rupees.]

[¹² (1A) Any person who contravenes any provisions of Chapter VA, shall be punishable with imprisonment for a term which shall not be less than one year but which may extend to seven years and also with fine which shall not be less than five thousand rupees.]

[(¹³1B) Any person who contravenes the provisions of Section 38J] shall be punishable with imprisonment for a term which may extend to six months or with fine which may extend to two thousand rupees, or with both.

Provided that in case of second or subsequent offence the term of imprisonment may extend to one year or the fine may extend to five thousand rupees.]

(2) When any person is convicted of an offence against this Act, the Court trying the offence may order that any captive animal, wild animal, animal article, trophy, [¹⁴uncured trophy, meat, ivory imported into India or an article made from such ivory, any specified plant or part or derivative thereof] in respect of which the offence has been committed, any trap, tool, vehicle, vessel, or weapon used in the commission of the said offence be forfeited to the State Government and that any licence or permit, held by such person under the provisions of this Act, be cancelled.

(3) Such cancellation of licence or permit or such forfeiture shall be in addition to any other punishment that may be awarded for such offence.

(4) Where any person is convicted of an offence against this Act, the court may direct that the licence, if any, granted to such person under the Arms Act, 1959 (54 of 1959) for possession of any arm with which an offence against this Act has been committed, shall be cancelled, and that such person shall not be eligible for a licence under the Arms Act, 1959, for a period of five years from the date of conviction.

[¹⁵(5) Nothing contained in section 360 of the Code of Criminal Procedure, 1973 (2 of 1974) or in the Probation of offenders Act, 1958 (20 of 1958) shall apply to a person convicted of an offence with respect to hunting in a sanctuary or a National Park or of an offence against any provision of Chapter VA unless such person is under eighteen years of age.]

52. Attempts and abetment. - Whoever attempts to contravene, or abets the contravention of, any of the provisions of this Act or of any rule of order made thereunder shall be deemed to have contravened that provision or rule or order, as the case may be.

53. Punishment for wrongful seizure. - If any person, exercising powers under this Act, vexatiously and unnecessarily seizes the property of any other person on the pretence of seizing it for the reasons mentioned in sec. 50, he shall, on conviction, be punishable with imprisonment for a term which may extend to six months, or with fine which may extend to five hundred rupees, or with both.

54. Power to compound offences. - (1) [¹⁶The Central Government may, by notification empower the Director of Wildlife Preservation or any other officer and the State Government], may, by notification, empower the C-1-def Wildlife Warden or any officer or a rank not inferior to that of a Deputy Conservator of Forests,

- (a) to accept, from any person against whom a reasonable suspicion exists that he has committed an offence against this Act, payment of a sum of money by way of composition of the offence which such person is suspected to have committed; and .

- (b) when any property that has been seized is liable to be forfeited, to release the same on payment of the value thereof as estimated by such officer.

(2) On payment of such sum of money or such value, or both, as the case may be, to such officer, the suspected person, if in custody, shall be discharged, and the property, other than Government property, if any seized, shall be released and no further proceedings in respect of the offence shall be taken against such person.

(3) The officer compounding any offence may order the cancellation of any licence or permit granted under this Act to the offender, or if not empowered to do so, may approach an officer so empowered, for the cancellation of such licence or permit.

(4) The sum of money accepted or agreed to be accepted as composition under C1. (b) of sub-section (1) shall, in no case, exceed the sum of two thousand rupees.

Provided that no offence, for which a minimum period of imprisonment has been prescribed in sub-section (1) of sec51, shall be compounded.

[¹⁷55 Cognizance of offences. - No court shall take cognizance of any offence against this Act on the complaint of any person other than

- (a) the Director of Wildlife Preservation or any other officer authorised in this behalf by the State Government; or
- (b) the Chief Wildlife Warden, or any other officer authorised in this behalf by the State Government; or
- (c) any person who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint, to the Central Government or the officer authorised as aforesaid.]¹⁸

56. Operation of other laws not barred. - Nothing in this Act shall be deemed to prevent any person from being prosecuted under any other law for the time being in force, for any act or omission which constitutes an offence against this Act or from being liable under such other law to any higher punishment or penalty than that provided by this Act.

Provided that no person shall be punished twice for the same offence.

57. Presumption to be made in certain cases. - Where, in any prosecution for one offence against this Act, it is established that a person is in possession, custody or control of any captive animal, animal article, [meat, trophy, uncured trophy, specified plant, or part or derivative thereof,¹⁹] it shall be presumed until the contrary is proved, the burden of proving which shall lie on the accused, that such person is in unlawful possession, custody or control of such captive animal, animal article, meat, [trophy, uncured trophy] specified plant, or part or derivative thereof.]

58. Offences by companies. - (1) Where an offence against this Act has been committed by a company, every person who, at the time the offence was committed, was in charge of, and was responsible to, the company for the conduct of the business of the company as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly.

Provided that nothing contained in this sub-section shall render any such person liable to any punishment, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence against this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of any director, manager, secretary, or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

Explanation. - For the purpose of this Section,

- (a) “company” means any body corporate and includes a firm or other association of individuals; and
- (b) “director”, in relation to a firm, means a partner in the firm

-
- ¹ Sec. 50(1)(a) The words “meat, trophy or uncured” substituted by Act 44 of 1991, sec.36
- ² Sec.50(1)(c) “seize any captive animal, wild animal, animal article, meat trophy or uncured trophy in the possession of any person and appearing to him to be Government property, together with any trap, tool, vehicle, vessel, or weapon used for committing any such offence and, unless; he is satisfied that such person will appear and answer any charge which may be preferred against him arrest him without warrant, and detain him. “substituted by Act 44 of 1991 sec.36.
- ³ Sec.50(2) “Any officer of a rank not inferior to that of an Assistant Director of Wildlife Preservation or Wildlife Warden, who, or whose subordinate, has seized any trap, tool, vehicle, vessel, or weapon under CL(c) of sub-section (1), may release the same, on the execution by the owner thereof a bond for the production of the property so released, if and when required, before the Magistrate having jurisdiction to try the offence on account of which the seizure has been made.” omitted by Act 44 of 1991 sec.36.
- ⁴ Sec.50.(3A) Inserted by Act 44 of 1991, sec.36.
- ⁵ Sec.50(6)(a) The words “meat or uncured trophy” substituted by Act 44 of 1991, sec.36.
- ⁶ Sec.50(6)(b) The words “meat or uncured trophy” substituted by Act 44 of 1991, sec.36.
- ⁷ Sec.50(8) Inserted by Act 44 of 1991, sec.36.
- ⁸ Sec.50(9) Inserted by Act 44 of 1991, sec. 36.
- ⁹ Subs. by Act 28 of 1986, sec.4. for the certain words (w.e.f 20th November, 1986).
- ¹⁰ Sec.51(1) The words “contravenes any provision of this Act” substituted by Act 28 of 1986, sec.4. and the words “except Chapter VA” substituted by Act 44 of 1991, sec.37. The words “two years” and “two thousand rupees” substituted by Act 44 of 1991, sec. 37.
- ¹¹ Sec.51(1) The words “or altering the boundaries of”, six months”, and “five thousand rupees” occurring in the first provision substituted by Act 44 of 1991, sec. 37.
The second provision substituted by Act 44 of 1991, sec.37.
- ¹² Sec.51(1A) Ins by Act 28 of 1986, sec.4. (w.e.f. 20th November, 1986).
- ¹³ Sec.51 (1B) Inserted by Act 44 of 1991, sec. 37.
- ¹⁴ Sec.51(2) The words “uncured trophy or meat” substituted by Act 44 of 1991, sec.37
- ¹⁵ Sec.51(5) Inserted by Act 44 of 1991, sec.37.

- ¹⁶ Sec. 54(l) The words “The State Government” substituted by Act 44 of 1991, sec.38.
- ¹⁷ Sec. 55 “No Court shall take cognizance of any offence against this Act except on the complaint of the Chief Wildlife Warden or such officer as the State Government may authorise in this behalf.” substituted by Act 44 of 1991, sec. 39.
- ¹⁸ Sec. 55(c) came into force w.e.f. 20.4.1995 vide S.O. No. 344(E) Dt. 7.4.95 published in the Gazette of India, Extraordinary, Part II, Sec.3(ii) Dt. 18.4.95.
- ¹⁹ Sec.57. The words “meat or trophy and uncured trophy” substituted by Act 44 of 1991, sec.40.

CHAPTER VII

Miscellaneous

59. Officers to be public servants. - Every officer referred to [in Chapter II and the chairperson, members, member-secretary, officers and other employees referred to in chapter IVA¹] and every other officer exercising any of the powers conferred by this Act shall be deemed to be a public servant within the meaning of sec.21 of the Indian Penal Code (45 of 1860).

60. Protection of action taken in good faith. - (1) No suit, prosecution, or other legal proceeding shall lie against any officer or other employee of the Central Government or the State Government for anything which is in good faith done or intended to be done under this Act.

(2) No suit or other legal proceeding shall lie against the Central Government or the State Government or any of its officers or other employees, for any damage caused or likely to be caused by anything which is in good faith done or intended to be done under this Act.

[² (3) No suit or other legal proceeding shall lie against the Authority referred to in Chapter IVA and its chairperson, member, member secretary, officers and other employees for any thing which is in good faith done or intended to be done under this Act.]

[³ **(60A) Reward to persons.** - (1) When a court imposes a sentence of fine or a sentence of which fine forms a part, the court may when passing judgement order that the reward be paid to a person who renders assistance in the detection of the offence or the apprehension of the offenders out of the proceeds of fine not exceeding twenty percent of such fine.

(2) When a case is compounded under section 54, the officer compounding may order reward to be paid to a person who renders assistance in the detection of the offence or the apprehension of the offenders out of the sum of money accepted by way of composition not exceeding twenty percent of such money].

61. Power to alter entries in schedules. - (41) The Central Government may, if it is of the opinion that it is expedient so to do, by notification, [⁴add or delete any entry to or from any schedule] or transfer any entry from one part of the schedule to another part of the same schedule or from one schedule to another.

(2) [⁵Omitted 1991]

(3) On the issue of a notification under sub-section (1) [⁶***] the relevant schedule shall be deemed to be altered accordingly, provided that every such alteration shall be without prejudice to anything done or omitted to be done before such alteration.

(4) [⁷Omitted 1991]

62. Declaration of certain wild animal to be vermin. - [⁸The Central Government] may by notification, declare any wild animal other than those specified in Sch. I and part 11 of Sch H to be vermin for any area and for such period as may be specified therein and so long as such notification is in force, such wild animal shall be deemed to have been included in Sch.V.

63. Power of Central Government to make rules. - [⁹(1) The Central Government may, by notification, make rules for all or any of the following matters, namely:

- (a) conditions and other matters subject to which a licensee may keep any specified plant in his custody or possession under section 17F;
- (b) the salaries and allowances and other conditions of appointment of chairperson, members and members-secretary under sub-section (5) of Section 38I3;
- (c) the terms and conditions of service of the officer and other employees of the Central Zoo Authority under sub-section (7) of section 38I3;
- (d) the form in which the annual statement of accounts of Central Zoo Authority shall be prepared under sub-section (4) of Section 38E;
- (e) the form in which and the time at which the annual report of Central Zoo Authority shall be prepared under section 38F;
- (f) the form in which and the fee required to be paid with application for recognition of a zoo under sub-section (2) of section 38H;
- (g) the standards, norms and other matters to be considered for granting recognition under sub-section (4) of section 38H;
- (h) the form in which declaration shall be made under sub-section (2) of section 44;
- (i) the matters to be prescribed under clause (b) sub-section (4) of section 44;
- (j) the terms and conditions which shall govern transaction referred to in clause (b) of section 48;
- (k) the manner in which notice may be given by a person under clause (c) of section 55;
- (1) the matters specified in sub-section (2) of section 64 in so far as they relate to sanctuaries and National Parks declared by the Central Government]

(2) Every rule made under this section shall be laid, as soon as may be, after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions and if before the expiry of the session immediately following the session or the successive session aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

64. Power of State Government to make rules.— (1) The State Government may, by notification, make rules for carrying out the provisions of this Act in respect of matters which do not fall within the purview of Sec.63

(2) In particular and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:

- (a) the term of office of the members of the Board referred to in Cl. (g) of sub-section (1) of Sec.6 and the manner of filling vacancies among them;
- (b) allowances referred to in sub-section (4) of Sec.6;

- (c) the forms to be used for any application, certificate, claim, declaration, licence, permit, registration, return, or other document, made, granted, or submitted under the provisions of this Act and the fees, if, any therefor;
- (d) the conditions subject to which any licence or permit may be granted under this Act;
- (e) the particulars of the record of wild animal (captured or killed) to be kept and submitted by the licensee;

[¹⁰(ee)the manner in which measures for immunization of live-stock shall be taken;]

- (f) regulation of the possession, transfer, and the sale of captive animals, meat, animal articles, trophies, and uncured trophies;
- (g) regulation of taxidermy;
- (h) any other matter which has to be, or may be, prescribed under this Act.

65. Rights of Scheduled Tribes to be protected. - Nothing in this Act shall affect the hunting rights conferred on the Scheduled Tribes of the Nicobar Islands in the Union Territory of Andaman and Nicobar Islands by notification of the Andaman and Nicobar Administration, NO. 40/97/1'. No.G-635. Vol. III, dated the 28th April, 1967 published at pages I to 5 Extraordinary issue of the Andaman and Nicobar Gazette, dated 28th April, 1967.

66. Repeal and savings. – (1) As from the commencement of this Act, every other Act relating to any matter contained in this Act and in force in a State shall, to the extent to which that Act or -any provision contained therein corresponds, or is repugnant, to this Act or any provision contained in this Act, stand repealed :

Provided that such repeal shall not–

- (i) affect previous' operation of the Act so repealed, or any thing duly done or suffered thereunder;
- (ii) affect any right, privilege, obligation, or liability acquired, accrued, or incurred under the Act so repealed;
- (iii) affect any penalty, forfeiture or punishment incurred in respect of any offence committed against the Act so repealed; or
- (iv) affect any investigation, legal proceeding, or remedy in respect of any such right, privilege, obligation, liability, penalty, forfeiture, or punishment as aforesaid;

and any such investigation, legal proceeding, or remedy may be instituted, continued, or enforced, and any such penalty, forfeiture, and punishment may be imposed, as if the aforesaid Act had not been repealed.

(2) Notwithstanding such repeal,

- (a) anything don0l or nay action taken under the Act so repealed (including any notification, order, certificate, notice, or receipt issued, application made, or permit granted) which is not inconsistent with the provisions of this Act be deemed to have been done or taken under the corresponding provisions of this Act as if this Act were in force at the time such thing was done or action was taken, and shall continue to be

in force, unless and until superseded by anything done or an action taken under this Act;

- (b) every licence granted under any Act so repealed and in force immediately before the commencement of this Act shall be deemed to have been granted under the corresponding provisions of this Act and shall, subject to the provisions of this Act, continue to be in force for the unexpired portion of the period for which such licence had been granted.

(3) For the removal of doubts, it is hereby declared that any sanctuary or National Park declared by a State Government under any Act repealed under sub-section (1) shall be deemed to be a sanctuary or National Park, as the case may be, declared by the State Government under this Act and where any right in or over any land in any such National Park which has not been extinguished under the said Act, at or before the commencement of this Act, the extinguishment of such rights, shall be made in accordance with the provisions of this Act.

[¹¹(4) For the removal of doubts, it is hereby further declared that where any proceeding under any provision of Sections 19 to 25 (both inclusive) is pending on the date of commencement of the Wildlife (Protection) Amendment Act, 1991, any reserved forest or a part of territorial waters comprised within a sanctuary declared under section 18 to be a sanctuary before the date of such commencement shall be deemed to be a sanctuary, before the date of such commencement shall be deemed to be a sanctuary declared under section 26A.]

¹ Sec.59 The words “in chapter VII” substituted by Act 44 of 1991, sec.41.

² Sec.60(3) Inserted by Act 44 of 1991, sec.42.

³ Sec 60A Inserted by Act 44 of 1991, sec.43.

⁴ Sec.61(1) “add any entry to any schedule” substituted by Act 44 of 1991, sec.44.

⁵ Sec 61(2) “The Central Government may, if it is of the opinion that it is expedient so to do, any notification, transfer any entry from Sch.II, Sch. III, Sch.IV or Sch.V to Sch.I and may also transfer any entry from Part I of sch, II or Sch III, IV or Sch, V to any other schedule,” omitted by Act 44 of 1991, sec.44.

⁶ Sec.61(3) The words “or sub-section (2)” omitted by Act 44 of 1991, sec.44.

⁷ Sec.61(4) “If any alteration of any schedule made by the State Government under sub-section (2) is repugnant to any alteration made therein by the Central Government under sub-section (1), then the alteration made by the Central Government, whether made before or after the notification made by the State Government, shall prevail and the alteration made by the State Government shall, to the extent of the repugnancy, be void.

Provided that any such alteration made by the State Government, if it has been made with the previous consent of the Central Government, shall prevail in that State.

Provided further that nothing in the foregoing proviso shall prevent the Central Government from modifying or cancelling, at any time, the alteration made by the State Government.” Omitted by Act 44 of 1991

⁸ Sec.62. The words “subject to the provisions of Sec.61 the State Government” substituted by Act 44 of 1991, sec.45.

⁹ Sec.63(1) Substituted by Act 44 of 1991, sec.46.

¹⁰ Sec.64(2)(ee) Inserted by Act 44 of 1991, sec.47.

¹¹ Sec.66 (4) Inserted by Act 44 of 1991, sec.48.

SCHEDULE I

(Sections 2, 8,9,11, 40,41, 48,51, 61 & 62)

PART I MAMMALS

- [1. Andaman Wild pig (*Sus sorofa andamanensis*)]
²[1-A. Bharal (*Ovisnahura*)]
²[1 -B. Binturong (*Arctictis Binturong*)]
2. Black Buck (*Antelope cervicapra*) ²[2-A. •*•]
3. Brow-antlered Deer or Thamin (*Cervus eldi*) ³[3-A. Himalayan Brown bear (*Ursus Arctos*)] ³[3-B. Capped Langur (*Presbytis pileatus*)]
4. Caracal (*Felis caracal*) [4-A. Catecean specials]
5. Cheetah (*Acinonyx jubatus*)
⁴[5-A. Chinese Pangolin (*Mainis pentadactyla*)]
'[5-B. Chinkara or India Gazelle (*Gazella gazella bennetti*)]
6. Clouded Leopard (*Neofelis nebulosa*) ²[6-A. Crab-eating Macaque (*Macaca irus umbrosa*)] ²[6-B. Desert Cat (*Felis libyca*)]
³[6-C Desert fox (*Vulpes bucapus*)]
7. Dugong (*Dugong dugon*) ²[7-A Ermine (*Mustele erminea*)]
8. Fishing Cat (*Felis viverrina*)
^a[8-A Four-horned antelope (*Tetracerus quadricomis*)]
²[8-B. *••]
³[8-C ***]
³[8-D. Gangetic dolphin (*Platanista gangetica*)]
³[8-E. Gaur or Indian bison (*Bos gaurus*)]
9. Golden Cat (*Felis temmincki*)
10. Golden Langur (*Presbytis geei*) ³[10-A. Giant squirrel (*Ratufa macroura*)]
[10-B. Himalayan Ibex (*Capra ibex*)]
'[10-C. Himalayan Tahr (*Hemitragus jemlahicus*)]
11. Hispid Hare (*Caprolagus hispidus*) ³[11-A. Hog badgar (*Arconyx collaris*)]
12. Hoolock (*Hyloba tes hoolock*)
1 Vide Notification No. FJ11012/31/76 FRY(WL), dt. 5-10-1977.
2 Vide Notification No. Fl-28/78 FRY(WL), dt. 9-9-1980.
3 Vide Notification No. S.O. 859(E), dt. 24-11-1986.
4 Vide Notification No. F] 11012/31 FRY(WL), dt. 29-8-1977.

'[12-A. •••]
²[12-B. Indian Elephant (*Elephas maximus*)]
13. Indian Lion (*Panlhera leo persica*)
14. Indian Wild Ass (*Equus hemionus khur*) ³[15. Indian Wolf (*Canis lupas pallipes*)]
16. Kashmir Stag (*Cervus elaphus hanglu*) ^J[16-A Leaf Monkey (*Presbytis phayrei*)]
'[16-B. Leopard or Panther (*Panthera pardus*)]

17. Leopard Cat (*Felis bengalensis*)
18. Lesser or Red Panda (*Ailurus fulgens*)
19. Lion-tailed Macaque (*Macaca silenus*)
20. Loris (*Loris tardigradus*)
- ²[20-A. Little Indian Porpoise (*Neomeris phocaenoides*)]
21. Lynx (*Felis lynx isabellinus*)
22. Malabar Civet (*Viverra megaspila*) ¹[22-A. Malay or Sun Bear (*Helarctos malayanus*)]
23. Marbled Cat (*Felis marmorata*)
24. Markhor (*Capra falconeri*) ⁴[24-A. Mouse Deer (*Tragulus meminna*)]
25. Musk Deer (*Moschus moschiferus*) ²[25-A. Nilgiri Lungur (*Presbytis johni*)] ²[25-B. Nilgiri Tahr (*Hemitragus hylocrius*)]
26. Nyan or Great Tibetan Sheep (*Ovis ammon hodgsoni*)
27. Pallas's Cat (*Felis manul*)
28. Pangolin (*Manis crassicaudata*)
29. Pygmy Hog (*Sus salvanius*) ¹[29-A. Ratel (*Mellivora capensis*)]
30. Rhinoceros (*Rhinoceros unicornis*)
31. Rusty spotted Cat (*Felis rubiginosa*) [31-A. Serow (*Capricornis sumatraensis*)]
- ²[31-B. Clawless Otter (*Aonyx cinerea*)] ²[31-C. Sloth Bear (*Melursus ursinus*)]
32. Slow Loris (*Nycticebus couceang*)
- [32-A. Small Travancore Flying Squirrel (*Petinomys fuscocapillus*)]
33. Snow Leopard (*Panthera uncia*)
- 1 Vide Notification No. FI-28/78 FRY(WL), dt. 9-9-1980.
- 2 Vide Notification No. S.O. 859(E), dt. 24-11-1986.
- 3 Vide Notification No. FJ11012/31/76 FRY(WL), dt. 29-8-1977.
- 4 Vide Notification No. FJ 11012/31/76 FRY(WL), dt. 5-10-1977.

- ¹[33-A. Snubfin Dolphin (*Oreaella brevicastris*)]
34. Spotted Linsang (*Prionodon pardicolor*)
35. Swamp Deer (All sub-species of *Cervus d uvauceli*)
36. Takin or Mishmi Takin (*Budorcas taxicolor*) ²[36A. Tibetan Antelope or Chiru (*Panthelops hodgsoni*)] ¹[36B. Tibetan Fox (*Vulpes ferrilatus*)]
37. Tibetan Gazelle (*Procapra picticaudata*)
38. Tibetan Wild Ass (*Equus beminus kiang*)
39. Tiger (*Panthera tigris*)
40. Urial or Shapu (*Ovis vignei*)
41. Wild Buffalo (*Bubalus bubalis*) ²[41-A. Wild Yak (*Bos grunniens*)] ¹[41-B. Tibetan Wolf (*Canis lupus chanco*)]
- [42. Wroughton's free tailed bat (*Otomops wroughtoni*)
43. Salim Ali's fruit bat (*Latidens salimalii*)

PART II AMPHIBIANS AND REPTILES

[1. Agra Monitor Lizard (*Varanus griseus* (Daudin))]

⁴[1A. *••]

'[IB. Audithia Turtle (*Pelochelys bibroni*)]

[IC. Barred, Oval, or Yellow Monitor Lizard (*Varanus flavescens*)]

[ID. Crocodiles (including the Estuarine or salt water crocodile) (*Crocodilus porosus* and *Crocodilus palustris*)]

'[IE. Terrapin (*Batagur basika*)]

IF. Eastern Hill Terrapin (*Melanochelys tricarinata*)

2. Gharial (*Gravialis gangeticus*)

[3. Ganges Soft-shelled Turtle (*Trionyx gangeticus*)]

'[3A. Golden Gecko (*Calodactylodes aureus*)]

4. Green Sea Turtle (*Chelonia Mydas*)

5. Hawksbill Turtle (*Eretmochelys imbricata inlscata*)

'[6. •••]

7. Indian Egg-eating Snake (*Elachistodon westermanni*)

8. Indian Soft-shelled Turtle (*Lissemys punctata punctata*)

9-A. Kerala Forest Terrapin (*Hoesemys sylratica*)

10. Large Bengal Monitor Lizard (*Varanus bengalensis*)

11. Leathery Turtle (*Dermochelys coriacea*)

12. Logger Head Turtle (*Caretta caretta*)

13. Olive Back Logger Head Turtle (*Lepidochelys olivacea*)

14. Peacock-marked Soft-shelled Turtle (*Trionyx hurum*)

1 Vide Notification No. SO 859(E), dt. 24-11-1986.

2 Vide Notification No. FJ 11012/31/76 FRY(WL), dt. 5-10-1977.

3 Inserted vide Notification No. SO 1085(E), dt. 30-9-2002, w.e.f. 11-10-2002.

4 Vide Notification No. Fl-28/78 FRY(WL), dt. 9-9-1980.

5 Vide Notification No. FJ 11012/31/76 FRYfWL, dt. 29-8-1977.

'[14-A. Pythons (Genus *Python*)]^J[14-B. Sail terrapin (*Kachuga Kachuga*)] 14-C.

Spotted black Terrapin (*Geoclemys hamiltoni*)²[15. •••]²[16. •»•]²[17. ***]³[17-A. Water Lizard (*Varanus salvator*)]

"[PART IIA FISHES

1. Whale Shark (*Rhincodon typus*)⁵[2. Shark and Ray

(i) *Anoxypristis cuspidata* (ii) *Carcharhinus hemiodon*

(iii) *Glyphis gangeticus* (iv) *Glyphis glyphis*

(v) *Himantura fluviatilis* (vi) *Pristis microdon*

(vii) *Pristis zijsron* (viii) *Rhynchobatus djiddensis*

(ix) *Urogymus asperrimus*.]

PART III BIRDS⁶[1. Andaman Teal (*Anas gibberifrons allagularis*)] 1-A. Assam

Bamboo Partridge (*Bambusicola fytchii*)³[1 -B. Bazas (*Aviceda jeordone* and *Aviceda*

- leuphotes)] [1-C. Bengal Florican (*Eupodotis bengalensis*)] 1-D. Black-necked Crane (*Grus nigricollis*)
- 1-E. Blood Pheasants (*Ithaginis cruentus tibetanus*, *Ithaginis Cruentus kuseri*) ²[1F. ***]
2. Cheer Pheasant (*Catreus wallichii*)
- ²[2A. Eastern White Stork (*Ciconia ciconia boyciana*)] ³[2B. Foret-spotted Owlet (*Athene blewitti*)] * [2C. Frogmouths (Genus *batrachostomus*)]
3. Great Indian Bustard (*Choriotis nigriceps*)
4. Great Indian Hornbill (*Buceros bicornis*) ²[4A. Hawks (*Accipitridae*)]
- ³[4B. Hooded Crane (*Grus monacha*)]
- ³[4C. Hornbills (*Ptilolaemus tickelli austeni*, *Aceros nipalensis*, *Rhyticeros undulatus ticehursti*)] ³[4D. Houbara Bustard (*Chlamydotis undulata*)] ³[4E. Humes Bar-backed Pheasant (*Syrmaticus humiae*)] ³[4F. Indian Pied Hornbill (*Anthracoceros malabaricus*)]
5. Jerdon's Courser (*Cursorius bitorquatus*)
6. Lammergeier (*Gypaetus barbatus*)
- 1 Vide Notification No. SO 859(E), dt. 24-11-1986.
- 2 Vide Notification No. FI-28/78 FRY(WL), dt. 9-9-1980.
- 3 Vide Notification No. FJ11012/31/76 FRY(WL), dt. 29-8-1977.
- 4 Inserted vide Notification No. 1-2/2001-WL-1, dt. 28-5-2001.
- 5 Substituted vide Notification No. 1-4/95-WL, dt. 5-12-2001, w.e.f. 6-12-2001.
- 6 Vide Notification No. FJ 11012/31/76 FRY(WL), dt. 5-10-1977.
7. Large Falcons (*Falco peregrinus*, *Falco biarmicus* and *Falco chicuera*) ³[7A Large Whistling Teal (*Anatidae*)]
- ¹[7B. Lesser Florican (*Sypheotides indica*)]
- ¹[7C. Monal Pheasants (*Lophophorus impeyanus*, *Lophophorus Sclateri*)]
8. Mountain Quail (*Ophrysia superciliosa*)
9. Narcondam Hornbill [*Rhyticeros (undulatus) narcondami*] ¹[9-A. ***]
10. Nicobar Megapode (*Megapodius freycinet*) [10-A Nicobar Pigeon (*Caloenas nicobarica pelewensis*)]
- ²[10-B. Osprey or Fish-eating Eagle (*Pandion haliaetus*)]
- ²[10-C. Peacock Pheasants (*Polyplectron bicalcaratum*)]
11. Peafowl (*Pavo cristatus*)
12. Pink-headed Duck (*Rhodonessa caryophyllacea*)
13. Sclater's Monal (*Lophophorus sclateri*)
14. Siberian White Crane (*Grus leucogeranus*) ³[14-A- **»]
- ²[14-B. Tibetan Snow-Cock (*Tetraogallus tibetanus*)]
15. Tragopan Pheasants (*Tragopan melanocephalus*, *Tragopan blythii*, *Tragopan satyra*, *tragopan temminckii*)
16. White-bellied Sea Eagle (*Haliaetus leucogaster*)
17. White-eared Pheasant (*Crossoptilon crossoptilon*) ¹[17-A. White Spoonbill (*Platalea leucorodia*)]
18. White-winged Wood Duck (*Cairina scutulata*)
- ⁴[19. Swiftlets (*Collocalia unicolor* and *Collocalia fusiphaga*)

20. Hill myna (*Gracula religiosa intermedia*, *Gracula religiosa peninsularis*, *Gracula religiosa indica* and *Gracula religiosa amanesis*)
21. Tibetan ear pheasant (*Crossoptilon harmani*) 22- Kalij pheasant (*Lophur leucomelana*)
23. Lord Derby's parakeet (*Psittacula derbyana*)
24. Vultures (*Gyps indicus*, *Gyps bengalensis*, *Gyps tenuirostris*)
25. White bellied heron (*Ardea insignis*)]

PART IV

CRUSTACEA AND INSECTS [1.] Butterflies and Moths

| Family Amathusidae | Common English name |
|--|-------------------------------|
| <i>Discophora deo deo</i> | Duffer, banded |
| <i>Discophora sondaica muscina</i> | Duffer, common |
| <i>Faunis faunula faunuloides</i> | Pallid fauna |
| Family Danaidae | |
| 1 Re-numbered vide Notification No. SO 859(E), dt. 24-11-1986. | |
| 2 Vide Notification No. FJ 11012/31/76 FRY(WL), dt. 29-8-1977. | |
| 3 Vide Notification No. FI-28/78 FRY(WL), dt. 9-9-1980. | |
| 4 Inserted vide Notification No. SO 1085(E), dt. 30-9-2002, w.e.f. 11-10-2002. | |
| <i>Danaus gautama gautamoides</i> | Tigers |
| <i>Euploea crameri nicevillei</i> | Crow, spotted Black |
| <i>Euploea midamus roepstorfti</i> | Crow, Blue-spotted |
| Family Lycaenidae | |
| <i>Allotinus drumila</i> | Darkie, crenulate/Great |
| <i>Allotinus fabius penormis</i> | Angled darkie |
| <i>Amblopala avidiena</i> | Hairstreak, Chinese |
| <i>Amblypodia ace arata</i> | Leaf |
| Blue | |
| <i>Amblypodia alea constanceae</i> | Rosy Oakblue |
| <i>Amblypodia ammonariel</i> | Malayan Bush blue |
| <i>Amblypodia arvina ardea</i> | Purple Brown tailless Oakblue |
| <i>Amblypodia asopia</i> | Plain tailless Oakblue |
| <i>Amblypodia comica</i> | Comic Oakblue |
| <i>Amblypodia opalima</i> | Opal Oakblue |
| <i>Amblypodia zeta</i> | Andaman tailless Oakblue |
| <i>Biduanda Melisa Cyana</i> | |
| <i>Biduanda melisa cyana</i> | Blue posy |
| <i>Callophrys leechii</i> | Hairstreak, Ferruginous |
| <i>Castalius rosimon alarbus</i> | Pierrot, common |
| <i>Charana cephes</i> | Mandar in Blue, Cachar |
| <i>Chloria othona</i> | Tit, |
| orchid | |
| <i>Deudorix epijarbas amatius</i> | Cornelian, scarce |
| <i>Everes moorei</i> | Cupid, Moore's |

Gerydus biggsii
 Gerydus symethus diopeithes
 Heliophorus hybrida
 Horaga albimacula
 Onyxes
 Jamides ferrari
 Caeruleans
 Liphyra brassolis
 Listeria dudgenni
 Logania Watsoniana subfasciata
 Lycaenopsis binghami
 Lycaenopsis haraldus ananga
 Lycaenopsis puspa prominens
 Lycaenopsis quadriplaga dohertiya
 Nacaduba noreia hampsoni
 Polyommatus oritulus leela
 Pratapa lcetas mishmia
 Simiskina phalena harterti
 Sinthusa Virgo
 Pale
 Spindasis elwesi
 Spindasis rukmini
 Strymon mackwoodi
 Tajuria ister

Bigg's Brownie
 Great Brownie
 Sapphires

Butterfly, Moth
 Lister's hairstreak
 Mottle, Wasten's
 Hedge Blue
 Hedge Blue, Felder's
 Common hedge Blue
 Naga hedge Blue
 Lineblue, White-tipped
 Greenish mountain Blue
 Royal, drak Blue
 Brilliant, Broadlanded
 Spark,

Silverline, Elwes's
 Silverline, Khaki
 Hairstreak, Mackwood's
 Royal, uncertain

Tajuria luculentus nela
 Tajuria yajna yajna
 Thecla ataxus zulla
 Thecla bleti mendera
 Thecla letha
 Thecla paona
 Thecla pavo
 hairstreak
 Virchola smilis
 Blues Family Nymphalidae
 Apatura ulupi ulupi
 Argynnis hegemone
 Callnaga buddha
 Freak
 Charaxes durnfordi nicholi
 Cirrochroa fasciata
 Yeomen
 Diadora nicevillei
 Scarce
 Dillpa morgiana

Royal, Chinese
 Royal, Chestnut and Black
 Wonderful hairstreak
 Indian Purple hairstreak
 Watson's hairstreak
 Paona hairstreak
 Peacock

Guava

Emperor, Tawny
 Silver-washed fritillary

Rajah, Chestnut

Siren,

Emperor, Golden

| | |
|---------------------------------|----------------------------|
| Doleschallia bisaltide andamana | Autumn leaf |
| Eriboea moorei sandakanas | Mayanan Nawab |
| Eriboea schreiberi | Blue |
| Nawab | |
| Eulaceura manipurensis | Emperor, Tytler's |
| Euthalia durga splendens | Barons/Connis/Duchesses |
| Euthaliaiva | Duke, |
| Grand | |
| Euthalia Khama Curvifascia | Duke, Naga |
| Euthalia tellehinia | Baron, |
| Blue | |
| Helcyra hemina | Emperor, White |
| Hypolimnas missipus | Eggfly, Danaid |
| Limenitis austenia purpurascens | Commodore, Grey |
| Limenitis zulema | |
| Admirals | |
| Melitaea shandura | Fritillaries/Silverstripes |
| Neptis antilope | Sailer, variegated |
| Neptis aspasia | Sailer, Great Hockeystick |
| Neptis columella kankena | Sailer.Short-banded |
| Neptis cydippe kirbariensis | Sailer, Chinese yellow |
| Neptis ebusa ebusa | Sailer/Lascar |
| Neptis jumbah binghami | Sailer, chestnut-streaked |
| Neptis manasa | Sailer, Pale Hockeystick |
| Neptis nycteus | Sailer, Hockeystick |
| Neptis poona | Lascar, tytler's |
| Neptis sankara nar | Sailer, Broad-banded |
| Panthoporia jina jina | Bhutan sergeant |
| Panthoporia reta moorei | Malay staff sergeant |
| Prothoc franckii regalis | Begum, Blue |
| Sasakia funebris | |
| Empress | |
| Sophisa chandra | Courtier, Eastern |

62 WILD LIFE (PROTECTION) ACT, 1972

SCHEDULE

| | |
|------------------------------------|-----------------------------|
| Symbrenthia silana | Jester, Scarce |
| Vanessa antiopa yedunula | Admirables |
| Family Papilionidae | |
| Chilasa clytea clytea of commixtus | Common mime |
| Papilio elephenor | Spangle, yellow-crested |
| Papilio liomedon | Swallowtail, Malabar Banded |
| Parnassiusaecogeminifer | Apollo |
| Parnassius delphius | Banded apollo |
| Parnassius hannyngtoni | Hannyngton's apollo |

| | |
|---|-----------------------|
| Parnassius imperator augustus | Imperial apollo |
| Parnassius stoliezkanuss | Ladakh Banded apollo |
| Polydorus coon sambilana | Common clubtail |
| Polydorus cerassipes | Black windmill |
| Polydorus hector | Crimson rose |
| Polydorus neville | Nevill's windmill |
| Polydorus plutonius pambertoni | Chinese windmill |
| Polydorus polla | Denicey's windmill |
| Family Pieridae | |
| Aporia harrietiae harrietiae | Black veins |
| Baltia butleri sikkima | White butterfly |
| Colias colias thrasibulus | Clouded yellows |
| Colias dubi | Dwarf clouded yellow |
| Delias samaca | Jezebel, |
| pale Pieris krueperi devta Butterfly cabbage/White II Family Satyriidae | |
| Coelitis mothis adamsoni | Cat's eye, 'Scarce |
| Cyllogenes janetae | Evening Brown, Scarce |
| Elymnias peali | Palmfly, |
| Peal's | |
| Elymnias penanga chilensis | Palmfly, Painted |
| Erebia annada annada | Argus, ringed |
| Erebia nara singha nara singha | Argus, Mottled |
| Lethe, distans | Forester, Scarce Red |
| Lethe dura gammiei | Lilacfork, Scarce |
| Lethe europa tamuna | Bamboo tree brown |
| Lethe gemina gafuri | Taylor's tree brown |
| Lethe guluihal guluihal | Forester, Dull |
| Lethe margaritae | Tree brown, Bhutan |
| Lethe ocellata lyncus | Mystic, dismal |
| Lethe ramadeva | Silverstripe, Single |
| Lethe satyabati | Forester, |
| pallid | |
| Mycalesis orseis nautilus | Bushbrown, Purple |
| Pararge menava maeroides | Wall dark |
| Ypthima doherryi persimilis | Five ring, Great |

SCHEDULE

WILD LIFE (PROTECTION)

ACT, 1972 63

'[1-A. Coconut or Robber Crab (Bigrus latro)] '[2. Dragon Fly (Epioplebia laidlawi)]

²**[PART IVA**

COELENTERATES 1 Reef Building Coral (All Scleractinians)

2. Black Coral (All Antipatharians)

3. Organ Pipe Coral (Tubipora musica)

4. Fire Coral (All Millipora Species) 5- Sea Fan (All Gorgonians)]

³**[PART IVB MOLLUSCA**

1. *Cassis cornuta*
2. *Charonia tritonis*
3. *Conus milneedwardsi*
4. *Cypræacassis rufa*
5. *Hippopus hippopus*
6. *Nautilus pompilius*
7. *Tridacna maxima*
8. *Tridacna squamosa*
9. *Tudicla spirallus*.

PART IV-C ECHINODERMATA Sea Cucumber (All Holothurians).]

SCHEDULE II

(Sections 2, 8, 9, 11, 40, 41, 43, 48, 51, 61, and 62)

PART I

i * * *

[1-A. Assamese macaque (*Macaca assamensis*)]

[2. Bengal Porcupine (*Atherurus mecrourus assamensis*)]

3. ***

3A. Bonnet macaque (*Macaca radiata*)]

⁵[3-B. ••")

⁶[3-C Cetatean spp. (other than those listed in Sch. I and Sch. II, Part II)]

»[4. *•*]

[4-A. Common langur (*Presbytis entellus*)]

1 Inserted vide Notification No. FI-28-/78 FRY(WL), dt. 9-9-1980.

2 Inserted by Notification No. 1-4/95-WL-I, dt. 11-7-2001.

3 Substituted vide Notification No. 1-4/95-WL-I, dt. 5-12-2001 & corrected vide corrigendum Noti. No. 1-4/95/WL-I, dt. 19-2-2002.

4 Vide Notification No. F) 11012/31/76 FRY(WL), dt. 29-8-1977.

5 Vide Notification No. FJ 11012/31/76 FRY (WL), dt. 5-10-1977.

6 Vide Notification No. SO 859(E), dt. 24-11-1986.

...j

**»!

•p.

²[6.

7. Ferret Badgers (*Melogale moschata*, *Melogale personata*)

²[8. •*•]

²[9. ••]

²[10. ***]

11. Himalayan Crestless Porcupine (*Hystrix hodgsoni*)

[11-A. Himalayan Newtor Salamander (*Tyletrotiton verrucosus*)]

⁴[12. ***]

⁴[13. ***]

⁴[14. ••]

⁴[15. ••]

16. Pig-tailed macaque (*Macaca nemestrina*)]

³[17. "*)

³[17A. Rhesus macaque (*Macaca mulatta*)

⁴[18. "*)

19. Stump-tailed macaque (*Macaca speciosa*)

⁴[20. ••]

21. ***]

22. Wild dog or dhole (*Cuon alpinus*)

⁴[23. ***]

³[24. Chameleon (*Chameleon calcaratus*)] 25. Spiny-tailed Lizard or Sanda (*Uromastix hardwickii*)

PART II

⁴[1. Beetles]

Family Amathueidae

Aemona amathusia amathusia

Amathusia phildippus andamanicus

Amathuxida amythaon amythaon

Discophora deo deodoides

Discophora lepida lepida

Discophora timora andamanensi

Enispe cycnus

Faunis sumeus assama

Sticopthalma nourmahal

1 Vide Notification No. FI-28-/78 FRY(WL), dt. 9-9-1980.

2 Substituted vide Notification No. 1-4/95-WL-1, dt. 5-12-2001 & corrected vide corrigendum Noti.No. 1-4/95/WL-1, dt. 19-9-2002.

3 Vide Notification No. FJ 11012/31/76 FRYfWL), dt. 29-8-1977.

4 Vide Notification No. FJ 11012/31/76 FRY (WL), dt. 5-10-1977.

Thauria aliris amplifascia

Family Carabidae

Agonotrechus andrewesi

Amara brucei

Amara eleganfula

Brachinus atripennis

Brososoma gracile

Brososus bipillifer

Broterovicollis

Calathus amaroides

Callistominus belli

Chalenius championi

Chlaenius kanarae

Chalenius masoni

Chlaenius nilgiricus

Family Chrysomelidae

Acrocrypta rotundata

Bimala indica

Clitea indica

Gopala pita

Griva cyanipennis
Nisotra cardoni
Nistora madurensis
Nistora nigripennis
Nistora semicoreulea
Nisotra striatipennis
Nonarthra patkaia
Psylliodes plana
Psylliodes shira
Sebaethe cervina
Sebaethe patkaia
Sphaeroderma brevicorne
Family Cucujidae
Carinophlocus raffrayi

Cucujus bicolor
Cucujus grouvelle
Cucujus imperialis
Heterojinussemilaetaneus
Laemophloeus belli
Laemoploeus incertus
Pediacus refipes
Family Danaidae
Euploea melanaleuca
Euploea midamus rogenhofer
Family Erycinidae
Abisara kausambi
Dodona adonira
Dodona dipoea
Dodona egeon
Libythea lepita
Family Hesperidae
Baoris phidippina
Bebasa sena
Halpe homolea
Family Inopeplidae
Inopeplus albonotalus
Family Lycaenidae
Allotinus subviolaceus manychus
Amblypodia aenea
Amblypodia agaba aurelia
Amblypodia agrata
Amblypodia alesia
Amblypodia apidanus ahamus
Amblypodia areste areste
Amblypodia bazaloides

Amblypodia camdeo
Amblypodia ellisi
Amblypodia fulla ignara

Amblypodia genesa watsoni
Amblypodia paraganesa zephyreeta
Amblypodia paralea
Amblypodia silhetensis
Amblypodia suffusa suffusa
Amblypodia yendava
Apharitis lilacinus
Araotes lapithis
Artipe eryx
Bindahara phocides
Bothrinia chennellia
Castalius roxus manluena
Catapoecilma delicatum
Catapoecilma elegans myositina
Charana jalindra
Cheritrella truncipennis
Chliaria kina
Deudoryx hypargyria gaetulia
Enchrysops cnejus
Everes kala
Helipphorus androcles moorei
Horage onyx
Horage viola
Hypolycaena nilgirica
Hypolycaena theclodies nicobarica
Iraota rochana boswelliana
Jamides alectokandulana
Jamides celeodus pura
Jamides coeruler
Jamides kankena
Lampides boeticus
Lilacea albocaerulea
Lilacea atroguttata
Lilacea lilacea

Lilacea melaena
Lilacea minima
Logania massalia
Lycaenesthes lycaenina
Mahathala ameria
Mahathala atkinsoni
Magisba malaya presbyter

Nacaduba aluta coelestis
Nacaduba ancyra aberrans
Nacaduba dubiosa fulva
Nacaduba helicon
Nacaduba hermus major
Nacaduba pactolus
Neucheritra febronia
Niphanda cymbia
Orthomiella pontis
Pithecopus fulgens
Polymmatius devanica devancia
Polymmatius metallica metallica
Polymmatius orbitulus jaloka
Polymmatius yeonghusbandi
Poritia erycinoides elsiei
Poritia hewitsoni
Poritia plsurata geta
Pratapa bhetes
Pratapa blanka
Pratapa deva
Pratapa icetas
Rapala buxaria
Rapala chandrana chandrana
Rapala nasaka
Rapala refulgens
Rapala rubida
Rapala scintilla

Rapala sphinx sphinx
Rapala varuna
Spindasis elima elima
Spindasis lohita
Spindasis nipalicus
Suasa lisides
Surendra todara
Tajuria albiplaga
Tajuria cippus cippus
Tajuria culta
Tajuria diaeus
Tajuria illurgioides
Tajuria illurgis
Tajuria jangala andamanica
Tajuria melastigma
Tajuria sebonga
Tajuria thyia

Tajuria yajna istroides
Tarucus callinara
Tarucus dharta
Thaduka malticaudata kanara
Thecla ataxus ataxus
Theclabitel
Thecla icana
Thecla jakamensis
Thecla kabreea
Thecla khasia
Thecla kirbariensis
Thecla suroia
Thecla syla assamica
Thecla vittata
Thecla ziba
Thecla zoa
Thecla zsta

Una usta
Yasoda tripunctata
Family Nymphalidae
Adolias cyanipardus
Adolias dirtea
Adolias khasiana
Apatura chevana
Apatura parvata
Apatura sordida
Apatura ulupi florenciae
Argynnis adippe pallida
Argynnis altissima
Argynnis clara clara
Argynnis pales horla
Atella alciope
Calinaga buddha brahaman
Charaxes aristogiton
Charaxes fabius sulphureus
Charaxes karruba
Charaxes marmax
Charaxes polyxena heman
Cheroonesia rahria rahrioides
Cyrestis cloces
Diagora persimilis
Doleschallia bisaltide malabarica
Eriboea athames andamanicus
Eriboea delphis

Eriboea dolen
Eriboea harcoea lissainei
Euripus consimilis
Equipus halitherses
Euthalia anosia
Euthalia cocytus
Euthalia duda

Euthalia durga durga
Euthalia evalina landabilis
Euthalia franciae
Euthalia garuda acontius
Euthalia lepidea
Euthalia merta eriphyle
Euthalia nara nara
Euthalia patala taozana
Euthalia teuta
Horona marathus andamana
Hypolimnas missipus
Hypolimnas polynice birmana
Kallima albofasciata
Kallima alompra
Kallima philarchus horsfieldii
Limenitis austenia austenia
Limenitis damava
Limenitis dudu
Melitaea robertsi lutko
Neptis aurelia
Neptis anjana nashona
Neptis aurelia
Neptis magadh khasiana
Neptis nandina hamsoni
Nethis narayana
Neptis radha radha
Neptis soma
Neptis zaida
Neurosigma doubledayi doubledayi
Pantoporia ksura ksura
Pantoporia kanwa phorkys
Pantoporia larymna siamensis
Pantoporia pravara acutipennis
Pantoporia ranga

Parthenos sylvia
Penthema lisarda

Symbrenthia niphanda
 Vanesa egea agnicula
 Vanesa lalbum
 Vanesa polychloros fervida
 Vanesa prarsoides dohertyi
 Vanesa urticae rizama
Family Papilionidae
 Bhutanitis liderdalei liderdalei
 Chilasa epycides epycides
 Chilasa paradoxa telearchus
 Chilasa slateri slateri
 Graphium aristeus anticrates
 Graphium arycles arycles
 Graphium eurypylus macronius
 Graphium evemon albociliates
 Graphium gyas gyas
 Graphium megarus megarus
 Papilio bootes
 Papilio buddha
 Papilio fuscus andamanicus
 Papilio machaon verityi
 Papilio mayo
 Parnassius charltonius charltonius
 Parnassius epaphus hillensis
 Parassius jacquemonti jacquemonti
 Polydorus latreillei kabrua
 Polydorus plutonius tytleri
 Teinopalpus imerialis imperialis
Family Pieridae
 Aporia nabellica
 Appias albina darada
 Appias indra shiva

 Appias lyncida latifasciata
 Appias wardi
 Baltia butleri butleri
 Cepora nadian remba
 Cepora nerissa dapha
 Colias ecocandiea hinducucica
 Colias eogene
 Colias ladakensis
 Colias stoliczkana miranda
 Delias lativitta
 Dercas lycorias
 Euchloe charltonia lucilla
 Eurema andersoni ormistoni

Metaporia agathon
Pieris deota
Pontia chloridice alipina
Saletara panda Chrysaea
Valeria avatar avatar
Family Satyridae
Anlocera brahminus
Cyllogenes suradeva
Elymnias malelas nnilamba
Elymnias vasudeva
Erebia annada suroia
Erebia hygriva
Erebia kalinda kalinda
Erebia mani marti
Erebia seanda opima
Erites falcipennis
Hipparchis hoydenreichi shandura
Lethe atkinsoni
Lethe baladeva
Lethe brisanda
Lethe goalpara goalpara

Lethe insana insana
Lethe jalaurida
Lethe kaubra
Lethe latiaris latiaris
Lethe moelleri moelleri
Lethe naga naga
Lethe nicetella
Lethe pulaha
Lethe scanda
Lethe serbonis
Lethe siderca
Lethe sincrix
Lethe tristigmata
Lethe violaceopicta kanjupkula
Lethe visrava
Lethe yama
Maniola davendra davendra
Melanitis zitenius
Myscalesis adamsoni
Mycalesis anaxias
Mycalesis quotama chamka
Mycalesis heri
Mycalesis lepcha bethami

Mycalesis malsarida
Mycalesis mestra
Mycalesis misenus
Mycaleis mystes
Mycalesis suavolens
Neorina hilda
Neorina patria westwoodii
Oeneis buddha quaurhwalica
Parantirrhoea marshali
Pararge eversmanni cash mirensis
Pararge maerula maefula

Ragadia crislda crito
Rhapticera sttriens kabrua
Ypthima bolanica
Ypthima lycus lycus
Ypthima mathora mathora
Ypthima similis affectata
Zipotis saitis

- [1-A. Civets (all species of Viverridae except Malabar civet)]
 '[1-B. Common fox (*Vulpes bengalensis*)]
¹[1-C. Flying squirrels (all species of the genera *Bulopetes*, *Petaurista*, *Pelomys* and *Eupetaurus*)]
 '[1-D. Giant squirrels (*Ratufa macroura* *Ratufa indica*, and *Ratufa bicolor*)]
 '[2. Himalayan brown bear (*Ursus arctos*)]
²[2A. Himalayan black bear (*Selenarctos thibetanus*)]
¹[2B. Jackal (*Canis aureus*)]
¹[2C. Jungle cat (*Felis chaus*)]
 '[2D. Marmots (*Marmota bobak himalayana*, *Marmota caudata*)]
 '[2E. Martens (*Martes foria intermedia*, *Martes flovigule*, *Martes gwatkinsii*)]
 '[3. ***]
 4. Otters (*Luthra*, *L. perspicillata*)
³[4-A. Pole cats (*Vormela peregusna*, *Mustila poturius*)
 4-B. Red fox (*Vulpes vulpes*, *vulpes montana*, *vulpes griffithi*, *vulpes pusilla*)
 '[5. Sloth bear (*Melursus ursinus*)]
¹[5A. Sperm whale (*Physeter macrocephalus*)]
^a[6. ***]
 '[7. Weasells (*Mustela Sibirica*, *Mustela Kathian*, *Mustela Altaica*)]
 '[8. Checkered keelback snake (*Xenochrophis piscatar*)]
 9. Dhaman or rat snake (*Plyas mucosus*)
 10. Dog-faced water snake (*Carbrus rhynchops*)
 11. Indian cobras (all sub-species belonging to genus *Naja*)
 12. King cobra (*Ophiophagus hannah*)
 13. Oliveaceous keelback (*Artatium schistosum*)

14. Russel's viper (*Vipera ruselli*)
15. *Varanus* species (excluding yellow monitor lizard)
- ⁴[16. Mongooses (All species of genus *Herpestes*)
17. Grey jungle fowl (*Gallus sonnerati*)]

- 1 Vide Notification No. SO 859(E), dt. 24-11 -1986.
- 2 Vide Notification No. FI-28/78 FRY(WL), dt. 9-9-1980.
- 3 Vide Notification No. FJ 11012/31/76 FRY (WL), dt. 5-10-1977.
- 4 Inserted vide Noti. No. 1085(E), dt. 30-9-2002, w.e.f. 11-10-2002.

SCHEDULE III

(Sections 2, 8¹[*"] 9, 11 and 611

²[1. ***]

2. Barking deer or muntjac (*Muntiacus muntjak*)

³[3. ***]

'[4. »••]

5. Chital (*Axis axis*)

^x[6. •••]

7. Goral (*Nemorhaedus goral*, *Nemorhaedus hodgsoni*)

¹[8. •••]

⁴[9. ***]

'[10. ***]

11. Hogdeer (*Axis porcinus*)

12. Hyena (*Hyaena hyaena*) *[13. ***]

14. Nilgai (*Boselaphus tragocamelus*)

'[15. **⁴]

16. Sambar (*Cervus unicolor*)

'[17.

'[IS-19. Wild pig (*Sus scrofa*)

⁴ [20. Sponges (all calcareans)]

1 Omitted by Act 44 of 1991, w.e.l. 2-10-1991.

2 Omitted Notification No. SO 859(E), dt. 24-11-1986.

3 Vide Notification No. Fl-28/78 FRY(WL), dt. 9-9-1980.

4 Inserted vide Noti. No. 1-4/95/WL-I, dt. 11-7-2001.

5 Omitted by Act 44 of 1991, w.e.f. 2-10-1991.

6 Vide Notification No. SO 859(E), dt. 24-11-1986.

7 Vide Notification No. Fl 28/78 FRY(WL), dt. 9-9-1980.

8 Vide Notification No. FJ11012/31 /76 FRY(WL), dt. 29-8-1977.

WILD LIFE (PROTECTION) ACT, 1972

SCHEDULE IV

(Sections 2, 8, 9, 11 and 61)

⁵[*1

⁶[1. ...]

⁷[1-A. ...]

²[2. ...]

³[3. *"]

³[3-A. Five-striped plam squirrel (*Funambulus pennanti*)]

4. Hares (Black Naped, Common Indian, Desert, Himalayan mouse hare)

⁸[4-A. Hedge hog (*Hemiechinus auritus*)]

²[4-B. ***]

²[4-C. *...]

²[4-D. ***]

²[4-E. Indian porcupine (*Hystrix indica*)]

²[5. *»1

1 Omitted by Act 44 of 1991, w.e.l. 2-10-1991.

2 Omitted Notification No. SO 859(E), dt. 24-11-1986.

3 Vide Notification No. Fl-28/78 FRY(WL), dt. 9-9-1980.

4 Inserted vide Noti. No. 1-4/95/WL-1, dt. 11-7-2001.

5 Omitted by Act 44 of 1991, w.e.f. 2-10-1991.

6 Vide Notification No. SO 859(E), dt. 24-11-1986.

7 Vide Notification No. Fl 28/78 FRY(WL), dt. 9-9-1980.

8 Vide Notification No. FJ11012/31 /76 FRY(WL), dt. 29-8-1977.

'[6. ***]

²[6-A. ...]

³(6-B. ***]

³[7. ***J

⁴[7-A. Pole cats (*Vormela peregusna*, *Mustela putorius*)]

*[7-B. ***]

8. [...*]

³[8-A. ...]

'[9. ***]

'[9-A. *»»]

10. [...]

11. Birds ⁴[(other than those which appear in other Schedules)]:

1. Avadavat(*Estrildinae*)

2. Avocet (*Recurvirostridae*)

3. Babblers (*Timaliinae*)

4. Barbets (*Capitonidae*)

5. Barnowls (*Tytonknae*)

6. Bitterns (*Ardeidae*)

7. Brown-headed gull (*Larus brunnicephalus*)
8. Bulbuls (*Pycnonotidae*)
9. Buntings (*Emberizidae*)
10. Bustards (*Otididae*)
11. Bustard-Quails (*Turnicidae*)
12. Chloroppsis (*Irenidae*)
13. Comb duck (*Sarkidiornis melanotos*)
14. Coots (*Rallidae*)
15. Cormorants (*Phalacrocoracidae*)
16. Cranes (*Gruidae*)
17. Cuckoos (*Cuculidae*) 17-A. Curlews (*Seoalopacinae*)
18. Darters (*Phalacrocoracidae*)
19. Doves including the Emerald Dove (*Columbidae*)
20. Drongos (*Dicruridae*)
21. Ducks (*Anatidae*)
22. Egrets (*Ardeidae*)
23. Fairy Blue Birds (*Irenidae*)
24. Falcons (*Falconidae*), excepting the Shaheen and Peregrine falcons (*Falco peregrinus*), the shaker or chorrug, shanghar and laggar falcons (*F. biarmicus*), and the redheaded merlin (*F. chicquera*)
25. Finches including the chaffinch (*Fringillidae*)
26. Flamingos (*Phoenicopteridae*)

- 1 Omitted vide Notification No. SO 859(E), dt. 24-11-1986.
- 2 Omitted vide Notification No. SO 1085(E), dt. 30-9-2002, w.e.f. 11-10-2002.
- 3 Omitted vide Notification No. FJ 11012/31/76 FRY(WL), dt. 5-10-1977.
- 4 Inserted vide Notification No. FI-28/78-FRY(WL), dt. 9-9-1980, w.e.f. 2-10-1980.

27. Flowerpeckers (*Dicaeidae*)
28. Flycatchers (*Muscicapidae*)
29. Geese (*Anatidae*)
30. Goldfinch and allies (*Carduelinae*)
31. Grebes (*Poicipididae*)
32. Herons (*Ardeidae*)
33. Ibises (*Threskiornithidae*)
34. Iorars (*Irenidae*)
35. Jays (*Corvidae*)
36. Jacanas (*Gacaniidae*)
- 36A Junglefowl (*Phasianidae*)
37. Kingfishers (*Alcedinidae*)
38. Larks (*Alcedinidae*)
39. Lorikeets (*Psittacidae*)
40. Magpies including the Hunting magpie (*Corvidae*)
41. Mannikins (*Estrildinae*)
42. Megapodes (*Megapodidae*)

43. Minivest (Campephagidae)
44. Munias (Estrildinae)
45. Mynas (Sturnidae)
46. Nightjara (Caprimulgidae)
47. Orioles (Oriolidae)
48. Owls (Strigidae)
49. Oystercatchers (Haematopodidae)
50. Parakeets (Psittacidae)
51. Partridges (Phasianidae)
52. Pelicans (Pelecanidae)
53. Pheasants (Phasianidae)
54. Pigeons (Columbidae) except the Blue Rock Pigeon (*Columba livia*)
55. Pipits (Motacillidae) 55-A. Pittas (Pittidae)
56. Plovers (Charadriidae)
57. Quails (Rhasianidae)
58. Rails (Rallidae)
59. Rollers or Blue Jays (Coraciidae)
60. Sandgrouses (Pteroclididae)
61. Sandpipers (Scolopacinae)
62. Snipes (Scolopacinae)
63. Spurfowls (Phasianidae)
64. Starlings (Sturnidae)
65. Stone Curlew (Burhinidae)
66. Storks (Ciconiidae)
67. Stilts (Recurvirostridae)
68. Sunbirds (Nectariniidae)
69. Swans (Anatidae)
70. Teals (Anatidae)
71. Thrushes (Turdidae)

(*Columba livia*)

72. Tits (Paridae)
73. Tree pies (Corvidae)
74. Trogons (Trogonidae)
75. Vultures (Accipitridae)
76. Waxbills (Estrildinae)
77. Weaver Birds or Bayas (Ploceidae)
78. White-eyes (Zosteropidesa)
79. Woodpeckers (Picidae)
80. Wrens (Troglodytidae)

¹[12. Snakes ²[other than those species listed in Sch. II; Pt. II; and Sch. II, Pt. II]:

- (i) Amblycephalidae
- (ii) Amilidae
- (iii) Boidae
- (iv) Colubridae
- (v) Dasyptidae (Egg-eating snakes)

- (vi) Elapidae (Cobras; Kraits, and Coral Snakes)
- (vii) Glaucconidae
- (viii) Hydrophidae (Fresh water and sea snakes)
- (xi) Tlysiidae
- (x) Leptotyphlopidae
- (xi) Typhlopidae
- (xii) Uropeltidae
- (xiii) Viperidae
- (xiv) Xenopeltidae]

- ³[13. Fresh Water Frogs (*Rana* spp.)]
- ¹[14. Three-keeled Turtle (*Geoemydas tricarinata*)]
- ¹[15. Tortoise (Testudinidae, Tryonychidae)]
- ¹[16. Viviparous toads (*Nectophrynoides* sp.)]
- ¹[17. Voles]
- ^J[18. Butterflies and Moths]

Family Danaidae *Euploca core simulatrix*

Euploca crassa

Euploca diocletianus ramsayi

Euploca muleiber

Family Hesperilidae

Baoris farri

Hasora vitta

Hyarotis adrastus

Oriens concinna

- 1 Vide Notification No. Fl 28/78 FRY(WL), dt. 9-9-1980.
- 2 Vide Notification No. SO 859(E). dt. 24-11-1986.
- 3 Vide Notification No. Fl 28/78 FRY(WL), dt. 9-9-1980.

Pelopidas assamensis

Pelopidas sinensis

Polytrema discreta

Polytrema rubricans

Thoressa horioerei

Family Lycaenidae

Tarucus ananda

Family Nymphalidae

Euthalia lubentina

Family Pieridae

Aporia agathon ariaca

Appias libythea

Appiad nero galba Prioneris sita

*[19. Mollusca

(i) *Cypraea lamacina*

- (ii) *Cypraea mappa*
- (iii) *Cypraea talpa*
- (iv) *Fasciolaria trapezium*
- (v) *Harpulina arausiaca*
- (vi) *Lambis chiragra*
- (vii) *Lambis chiragra arthritica*
- (viii) *Lambis crocea*
- (ix) *Lambis millepeda*
- (x) *Lambis scorpius*
- (xi) *Lambis truncata*
- (xii) *Placenta placenta*
- (xiii) *Strombus plicatus sabbaldi*
- (xiv) *Trochus niloticus*
- (xv) *Turbo marmoratus*]

WILD LIFE (PROTECTION) ACT, 1972

SCHEDULE V

(Sections 2, 8, 61 and 62) 1.

Common crow

²{2. ...}

3. Fruit bats

²[4. ...*]

5. Mice

6. Rats \7. ...]

1 Inserted vide Noti. No. 1-4/95, dt. 5-12-2001 & corrected vide corrigendum Noti. No. 1-4/95/WL-1, dt. 19-2-2002.

2 Vide Notification No. FJ 11012/31 /76 FRY(WL), dt. 5-10-1977.

WILD LIFE (PROTECTION) ACT, 1972

¹[SCHEDULE VI
(Section 2)

1. Beddomes' cycad (*Cycas beddomei*)
2. Blue Vanda (*Vanda soerulec*)
3. Kuth (*Saussurea lappa*)
4. Ladies slipper orchids (*Paphiopedilum* spp.)
5. Pitcher plant (*Nepenthes khasiana*)
6. Red Vanda (*Ranantthera inschootiana*)]

1 Inserted by Act 44 of 1991, w.e.f. 2-10-1991.

Water (Prevention and Control of Pollution) Act, 1974

An Act to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water, for the establishment, with a view to carrying out the purposes aforesaid, of Boards for the prevention and control of water pollution, for conferring on and assigning to such Boards Powers and functions relating thereto and for matters connected therewith.

WHEREAS it is expedient to provide for the prevention and control of water pollution and the maintaining or restoring of wholesomeness of water, for the establishment, with a view to carrying out the purposes aforesaid, of Boards for the prevention and control of water pollution and for conferring on and assigning to such Boards powers and functions relating thereto;

AND WHEREAS Parliament has no power to make laws for the States with respect to any of the matters aforesaid except as provided in articles 249 and 250 of the Constitution;

AND WHEREAS in pursuance of clause (1) of article 252 of the Constitution resolutions have been passed by all the Houses of the Legislatures of the States of Assam, Bihar, Gujrat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tripura and West Bengal to the effect that the matters aforesaid should be regulated in those States by Parliament by law; BE it enacted by Parliament in the Twenty-fifth Year of the Republic of India as follows:-

CHAPTER I PRELIMINARY

1. Short Title, Application and Commencement.

- (1) Short title, application and commencement. This Act may be called the Water (Prevention and Control of Pollution) Act, 1974.
- (2) It applies in the first instance to the whole of the States of Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tripura and West Bengal and in the Union territories; and it shall apply to such other State which adopts this Act by resolution passed in that behalf under clause (1) of article 252 of the Constitution.
- (3) It shall come into force, at once in the States of Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tripura and West Bengal and in the Union territories, and in any other State which adopts this Act under clause (1) of article 252 of the Constitution on the date of such adoption and any reference in this Act to the commencement of this Act shall, in relation to any State or Union territory, mean the date on which this Act comes into force in such State or Union territory.

2. Definitions.

In this Act, unless the context otherwise requires,-

- (a) "Board" means the Central Board or State Board;
- (b) "Central Board" means the Central Pollution Control Board Constituted under Section 3;
- (c) "members" means a member of a Board and includes the chairman thereof;
- (d) "occupier", in relation to any factory or premises, means the person who has control over the affairs of the factory or the premises, and includes, in relation to any substance, the person in possession of the substance;
- (dd) "outlet" includes any conduit pipe or channel, open or closed carrying sewage or trade effluent or any other holding arrangement which causes, or is likely to cause, pollution;
- (e) "pollution" means such contamination of water or such alteration of the physical, chemical or biological properties of water or such discharge of any sewage or trade effluent or of any other liquid, gaseous or solid substance into water (whether directly or indirectly) as may, or is likely to, create a nuisance or render such water harmful or injurious to public health or safety, or to domestic, commercial, industrial, agricultural or other legitimate uses, or to the life and health of animals or plants or of aquatic organisms;
- (f) "prescribed" means prescribed by rules made under this Act by the Central Government or, as the case may be, the State Government,
- (g) "sewage effluent" means effluent from any sewerage system or sewage disposal works and includes sullage from open drains;
- (gg) "sewer" means any conduit pipe or channel, open or closed, carrying sewage or trade effluent;
- (h) "State Board" means a State Pollution Control Board constituted under Section 4;
- (i) "State Government" in relation to a Union territory means the Administrator thereof appointed under article 239 of the Constitution;
- (j) "stream" includes-
 - (i) river;
 - (ii) water course, whether flowing or for the time] being dry;
 - (iii) inland water, whether natural or artificial;
 - (iv) subterranean waters;
 - (v) sea or tidal waters to such extent or, as the case may be, to such point as the State Government may, by notification in the Official Gazette, specify in this behalf ;
- (k) "trade effluent" includes any liquid, gaseous or solid substance which is discharged from any premises

used for carrying on any industry, operation or process, or treatment and disposal system" other than domestic sewage.

CHAPTER II

THE CENTRAL & STATE BOARDS FOR PREVENTION & CONTROL OF WATER POLLUTION

3. Constitution of Central Board

- (1) The Central Government shall, with effect from such date (being a date not later than six months of the commencement of this Act is the States of Assam, Bihar, Gujarat, Haryana, Himachal Pradesh, Jammu and Kashmir, Karnataka, Kerala, Madhya Pradesh, Rajasthan, Tripura and West Bengal and in the Union territories) as it may, by notification in the Official Gazette, appoint, constitute a Central Board to be called the Central Pollution Control Board to exercise the powers conferred on and perform the functions assigned to that Board under this Act.
- (2) The Central Board shall consist of the following members, namely:-
 - (a) a full-time chairman, being a person having special knowledge or practical experience in respect of matters relating to environmental protection or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the Central Government;
 - (b) such number of officials, not exceeding five to be nominated by the Central Government to represent that Government;
 - (c) such number of persons, not exceeding five to be nominated by the Central Government, from amongst the members of the State Boards, of whom no exceeding two shall be from those referred to in clause (c) of sub-Section (2) of Section 4;
 - (d) such number of non-officials, not exceeding three to be nominated by the Central Government, to represent the interests of agriculture, fishery or industry or trade or any other interest which, in the opinion of the Central Government, ought to be represented;
 - (e) two persons to represent the companies or corporations owned, controlled or managed by the Central Government, to be nominated by that Government;
 - (f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the Central Government
- (3) The Central Board shall be a body corporate with the name aforesaid having perpetual succession and a common seal with power, subject to the provisions of this Act, to acquire, hold and dispose of property and to contract, and may, by the aforesaid name, sue or be sued.

4. Constitution of State Boards

- (1) The State Government shall, with effect from such date ^{6***} as it may, by notification in the Official Gazette, appoint, constitute a ⁷[State Pollution Control Board], under such name as may be specified in the notification, to exercise the powers conferred on the perform the functions assigned to that Board under this Act.
- (2) A State Board shall consist of the following members, namely:-
 - (a) a chairman, being a person having special knowledge or practical experience in respect of matters relating to environmental protection or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the State Government. Provided that the chairman may be either whole-time or part-time as the State Government may think fit;
 - (b) such number of officials, not exceeding five, to be nominated by the State Government to represent that Government;
 - (c) such number of persons, not exceeding five to be nominated by the State Government from amongst the members of the local authorities functioning within the State;
 - (d) such number of non-officials, not exceeding three to be nominated by the State Government to represent the interest of agriculture, fishery or industry or trade or any other interest which, in the opinion of the State Government, ought to be represented;
 - (e) two persons to represent the companies or corporations owned, controlled or managed by the State Government, to be nominated by that Government;
 - (f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the State Government]
- (3) Every State Board shall be a body corporate with the name specified by the State Government in the notification under sub-Section (1), having perpetual succession and a common seal with power, subject to the provisions of this Act, to acquire, hold and dispose of property and to contract, and may, by the said name, sue or be sued.
- (4) Notwithstanding anything contained in this Section, no State Board shall be constituted for a Union territory and in relation to a Union territory, the Central Board shall exercise the powers and perform the functions of a State Board for that Union territory: Provided that in relation to a Union territory the Central Board may delegate all of any of its powers and functions under this sub-Section to such person or body of persons as the Central Government may specify.

5. Terms and Conditions of service of Members

- (1) Save as otherwise provided by or under this Act, a member of a Board, other than, a member-secretary, shall hold office for a term of three years from the date of this nomination:
Provided that a member shall, notwithstanding the expiration of his term, continue to hold office until his successor enters upon his office.
- (2) The term of office of a member of a Board nominated under clause (b) or clause (e) of sub-Section (2) of Section 3 or clause (b) or clause (e) of sub-Section (2) of Section 4 shall come to an end as soon as he ceases to hold the office under the Central Government or the State Government or, as the case may be, the company or corporation owned, controlled or managed by the Central Government or the State Government, by virtue of which he was nominated
- (3) The Central Government or, as the case may be, the State Government may, if it thinks fit, remove any member of a Board before the expiry of his term of office, after giving him a reasonable opportunity of showing cause against the same.
- (4) A member of a Board, other than the member-secretary, may at any time resign his office by writing under his hand addressed-
 - (a) in the case of chairman, to the Central Government or, as the case may be, the State Government; and
 - (b) in any other case, to the chairman of the Board; and the seat of the chairman or such member shall thereupon become vacant.
- (5) A member of a Board, other than the member-secretary, shall be deemed to have vacated his seat if he is absent without reason, sufficient in the opinion of the Board, from three consecutive meetings of the Board,¹⁶ or where he is nominated under clause (c) or clause (e) of sub-Section (2) of Section (3) or under clause (c) or clause (e) of sub-Section (2) of Section 4, if he ceases to be a member of the State Board or of the local authority or, as the case may be, of the company or corporation owned, controlled or managed by the Central Government or the State Government and such vacation of seat shall, in either case, take effect from such date as the Central Government or, as the case may be, the State Government may, by notification in the Official Gazette, specify
- (6) A casual vacancy in a Board shall be filled by a fresh nomination and the person nominated to fill the vacancy shall hold office only for the remainder of the term for which the member in a whose place he was nominated.
- (7) A member of a Board shall be eligible for re-nomination.
- (8) The other terms and conditions of service of a member of a Board, other than the chairman and member-secretary, shall be such as may be prescribed.
- (9) The other terms and conditions of service of the chairman shall be such as may be prescribed.

6. Disqualifications

- (1) No person shall be a member of a Board, who-
 - (a) is, or at any time has been adjudged insolvent or has suspended payment of his debts or has compounded with his creditors, or
 - (b) is of unsound mind and stands so declared by a competent court, or
 - (c) is, or has been, convicted of an offence which, in the opinion of the Central Government or, as the case may be, of the State Government, involves moral turpitude, or
 - (d) is, or at any time has been, convicted of an offence under this Act, or
 - (e) has directly or indirectly by himself or by any partner, any share or interest in any firm or company carrying on the business of manufacture, sale or hire of machinery, plant, equipment, apparatus or fittings for the treatment of sewage or trade effluents, or
 - (f) is a director or a secretary, manager or other salaried officer or employee of any company or firm having any contract with the Board, or with the Government constituting the Board, or with a local authority in the State, or with a company or corporation owned, controlled or managed by the Government, for the carrying out of sewerage schemes or for the installation of plants for the treatment of sewage or trade effluents, or
 - (g) has so abused, in the opinion of the Central Government or as the case may be, of the State Government, his position as a member, as to render his continuance on the Board detrimental to the interest of the general public.
- (2) No order of removal shall be made by the Central Government or the State Government, as the case may be, under this Section unless the member concerned has been given a reasonable opportunity of showing cause against the same.
- (3) Notwithstanding anything contained in sub-Section (1) and (7) of Section 5, a member who has been removed under this Section shall not be eligible for re-nomination as a member.

7. Vacation of seat by Members

If a member of a Board becomes subject to any of the disqualifications specified in Section 6, his seat shall become vacant.

8. Meetings of Boards

A Board shall meet at least once in every three months and shall observe such rules of procedure in regard to the transaction of business at its meetings as may be prescribed:
Provided that if, in the opinion of the chairman, any business of an urgent nature is to be transacted, he may convene a meeting of the Board at such time as he thinks fit for the aforesaid purpose.

9. Constitution of Committees

- (1) A Board may constitute as many committees consisting wholly of members or wholly of other persons or partly of members and partly of other persons, and for such purpose or purposes as it may think fit.
- (2) A committee constituted under this Section shall meet at such time and at such place, and shall observe such rules of procedure in regard to the transaction of business at its meetings, as may be prescribed.
- (3) The members of a committee (other than the members of Board) shall be paid such fees and allowances, for attending its meetings and for attending to any other work of the Board as may be prescribed.

10. Temporary association of persons with Board for particular purposes

- (1) A Board may associate with itself in such manner, and for such purposes, as may be prescribed any person whose assistance or advice it may desire to obtain in performing any of its functions under this Act.
- (2) A person associated with the Board under sub-Section (1) for any purpose shall have a right to take part in the discussions of the Board relevant to that purpose, but shall not have a right to vote at a meeting of the Board, and shall not be a member for any other purpose.
- (3) A person associated with the Board under sub-Section (1) for any purpose shall be paid such fees and allowances, for attending its meetings and for attending to any other work of the Board, as may be prescribed.

11. Vacancy in Board not to invalidate Acts and Proceedings

No act or proceeding of a Board or any committee thereof shall be called in question on the ground merely of the existence of any vacancy in, or any defect in the constitution of, the Board or such committee, as the case may be.

11A. Delegation of powers to Chairman

The chairman of a Board shall exercise such powers and perform such duties as may be prescribed or as may, from time to time, be delegated to him by the Board

12. Member Secretary and officers and other employees of Board

- (1) Terms and conditions of service of the member-secretary shall be such as may be prescribed.
- (2) The member-secretary shall exercise such powers and perform such duties as may be prescribed or as may, from time to time, be delegated to him by the Board or its chairman.
- (3) Subject to such rules as may be made by the Central Government or, as the case may be, the State Government in this behalf, a Board may appoint such officers and employees as it considers necessary for the efficient performance of its functions.
- (3A) The method of recruitment and the terms and conditions of service (including the scales or pay) of the officers (other than the member-secretary) and other employees of the Central Board or a State Board shall be such as may be determined by regulations made by the Central Board or, as the case may be, by the State Board:
Provided that no regulation made under this sub-Section shall take effect unless --
 - (a) in the case of a regulation made by the Central Board, it is approved by the Central Government; and
 - (b) in the case of a regulation made by a State Board, it is approved by the State Government
- (3B) The Board may, by general or special order, and subject to such conditions and limitations, if any, as may be specified in the order, delegate to any officer of the Board such of its powers and functions under this Act as it may deem necessary
- (4) Subject to such conditions as may be prescribed, a Board may from time to time appoint any qualified person to be a consulting engineer to the Board and pay him such salaries and allowances and subject him to such other terms and conditions of service as it thinks fit.

**CHAPTER III
JOINT BOARDS**

13. Constitution of Joint Board

- (1) Notwithstanding anything contained in this Act, an agreement may be entered into
 - (a) by two or more Governments of contiguous States, or
 - (b) by the Central Government (in respect of one or more Union territories) and one or more Government

of State Government contiguous to such Union territory or Union territories, to be in force for such period and to be subject to renewal for such further period if any, as may be specified in the agreement to provide for the constitution of a Joint Board

- (i) in a case referred to in clause (a), for all the participating States, and
- (ii) in a case referred to in clause (b), for the participating Union territory or Union territories and the State or States.

- (2) An agreement under this Section may --
 - (a) provide, in a case referred to in clause (a) of sub-Section (1), for the apportionment between the participating States and in a case referred to in clause (b) of that sub-Section, for the apportionments between the Central Government and the participating State Government or State Governments, of the expenditure in connection with the Joint Board;
 - (b) determine, in a case referred to in clause (a) of sub-Section (1), which of the participating State Governments and in a case referred to in clause (b) of that sub-Section, whether the Central Government or the participating State Government (if there are more than one participating State, also which of the participating State Governments) shall exercise and perform the several powers and functions of the State Government under this Act and the references in this Act to the State Government shall be construed accordingly;
 - (c) provide for consultation, in a case referred to in clause (a) of sub-Section (1), between the participating State Governments and in a case referred to in clause (b) of that sub-Section, between the Central Government and the participating State Government or State Governments either generally or with reference to particular matters arising under this Act; -
 - (d) make such incidental and ancillary provisions, not inconsistent with this Act, as may be deemed necessary or expedient for giving effect to the agreement.
- (3) An agreement under this Section shall be published, in a case referred to in clause (a) of sub-Section (1), in the Official Gazette of the participating States and in a case referred to in clause (b) of that sub-Section, in the Official Gazette of participating Union territory or Union territories and participating State or States.

14. Composition of Joint Boards

- (1) A Joint Board constituted in pursuance of an agreement entered into under clause (a) of sub-Section (1) of Section 13 shall consist of the following members, namely: --
 - (a) a full-time chairman, being a person having special knowledge or practical experience in respect of matters relating to environmental protection or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the Central Government;
 - (b) two officials from each of the participating States to be nominated by the concerned participating State Government to represent that Government;
 - (c) one person to be nominated by each of the participating State Governments from amongst the members of the local authorities functioning within the State concerned;
 - (d) one non-official to be nominated by each of the participating State Governments to represent the interests or agriculture, fishery or industry or trade in the State concerned or any other interest which, in the opinion of the participating State Government, is to be represented;
 - (e) two persons to be nominated by the Central Government to represent the companies or corporations owned, controlled or managed by the participating State Government;
 - (f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the Central Government
- (2) A Joint Board constituted in pursuance of an agreement entered into under clause (b) of sub-Section (1) of Section 13 shall consist of the following members, namely: -
 - (a) a full-time chairman, being a person having special knowledge or practical experience in respect of matters relating to environmental protection or a person having knowledge and experience in administering institutions dealing with the matters aforesaid, to be nominated by the Central Government;
 - (b) two officials to be nominated by the Central Government from the participating Union territory or each of the participating union territories, as the case may be, and two officials to be nominated, from the participating State or each of the participating States, as the case may be by the concerned participating State Government;
 - (c) one person to be nominated by the Central Government from amongst the members of the local authorities functioning within the participating Union territory or each of the participating Union territories, as the case may be and one person to be nominated, from amongst the members of the local authorities functioning within the participating State or each of the participating States, as the case may be, by the concerned participating State Government;
 - (d) one non-official to be nominated by the Central Government and one person to be nominated by the participating State Government or State Governments to represent the interests of agriculture, fishery or industry or trade in the Union territory or in each of the Union territories or the State or in each of the States, as the case may be, or any other interest which in the opinion of the Central Government or, as the case may be, of the State Government is to be represented.
 - (e) two persons to be nominated by the Central Government to represent the companies or corporations owned, controlled or managed by the Central Government and situate in the participating Union territory or territories and two persons to be nominated by Central Government to represent the companies or corporations owned, controlled or managed by the participating State Government;
 - (f) a full-time member-secretary, possessing qualifications, knowledge and experience of scientific, engineering or management aspects of pollution control, to be appointed by the Central

Government.

- (3) When a Joint Board is constituted in pursuance of an agreement under clause (b) of sub-Section (1) of Section 13, the provisions of sub-Section (4) of Section 4 shall cease to apply in relation to the Union territory for which the Joint Board is constituted.
 - (4) Subject to the provisions of sub-Section (3), the provisions of sub-Section (3) of Section 4 and Sections 5 to 12 (inclusive) shall apply in relation to the Joint Board and its member-secretary as they apply in relation to a State Board and its member-secretary.
 - (5) Any reference in this Act to the State Board shall, unless the context otherwise requires, be construed as including a Joint Board.
- 15. Special provision relating to giving of directions**
- Notwithstanding anything contained in this Act where any Joint Board is constituted under Section 13 -
- (a) the Government of the State for which the Joint Board is constituted shall be competent to give any direction under this Act only in cases where such direction relates to a matter within the exclusive territorial jurisdiction of the State;
 - (b) the Central Government alone shall be competent to give any direction under this Act where such direction relates to a matter within the territorial jurisdiction of two or more States or pertaining to a Union territory.

CHAPTER IV

POWERS AND FUNCTIONS OF BOARDS

16. Functions of Central Board

- (1) Subject to the provisions of this Act, the main function of the Central Board shall be to promote cleanliness of streams and wells in different areas of the States.
- (2) In particular and without prejudice to the generality of the foregoing function, the Central Board may perform all or any of the following functions, namely: --
 - (a) advise the Central Government on any matter concerning the prevention and control of water pollution;
 - (b) co-ordinate the activities of the State Boards and resolve disputes among them;
 - (c) provide technical assistance and guidance to the State Boards, carry out and sponsor investigations and research relating to problems of water pollution and prevention, control or abatement of water pollution;
 - (d) plan and organise the training of persons engaged or to be engaged in programs for the prevention, control or abatement of water pollution on such terms and conditions as the Central Board may specify;
 - (e) organise through mass media a comprehensive programme regarding the prevention and control of water pollution;
 - (ee) perform such of the functions of any State Board as may be specified in an order made under sub-Section (2) of Section 18;
 - (f) collect, compile and publish technical and statistical data relating to water pollution and the measures devised for its effective prevention and control and prepare manuals, codes or guides relating to treatment and disposal of sewage and trade effluents and disseminate information connected therewith;
 - (g) lay down, modify or annul, in consultation with the State Government concerned, the standards for a stream or well: Provided that different standards may be laid down for the same stream or well or for different streams or wells, having regard to the quality of water, flow characteristics of the stream or well and the nature of the use of the water in such stream or well or streams or wells;
 - (h) plan and cause to be executed a nation-wide programme for the prevention, control or abatement of water pollution;
 - (i) perform such other functions as may be prescribed.
- (3) The Board may establish or recognise a laboratory or laboratories to enable the Board to perform its functions under this Section efficiently, including the analysis of samples of water from any stream or well or of samples of any sewage or trade effluents.

17. Functions of State Board

- (1) Subject to the provisions of this Act, the functions of a State Board shall be --
 - (a) to plan a comprehensive programme for the prevention, control or abatement of pollution of streams and wells in the State and to secure the execution thereof;
 - (b) to advise the State Government on any matter concerning the prevention, control or abatement of water pollution;
 - (c) to collect and disseminate information relating to water pollution and the prevention, control or abatement thereof;
 - (d) to encourage, conduct and participate in investigations and research relating to problems of water pollution and prevention, control or abatement of water pollution;
 - (e) to collaborate with the Central Board in organising the training of persons engaged or to be engaged in programmes relating to prevention, control or abatement of water pollution and to organise mass

- education programmes relating thereto;
 - (f) to inspect sewage or trade effluents, works and plants for the treatment of sewage and trade effluents and to review plans, specifications or other data relating to plants set up for the treatment of water, works for the purification thereof and the system for the disposal of sewage or trade effluents or in connection with the grant of any consent as required by this Act;
 - (g) lay down, modify or annul effluent standards for the sewage and trade effluents and for the quality of receiving waters (not being water in an inter-State stream) resulting from the discharge of effluents and to classify waters of the State;
 - (h) to evolve economical and reliable methods of treatment of sewage and trade effluents, having regard to the peculiar conditions of soils, climate and water resources of different regions and more specially the prevailing flow characteristics of water in streams and wells which render it impossible to attain even the minimum degree of dilution;
 - (i) to evolve methods of utilisation of sewage and suitable trade effluents in agriculture;
 - (j) to evolve efficient methods of disposal of sewage and trade effluents on land, as are necessary on account of the predominant conditions of scant stream flows that do not provide for major part of the year the minimum degree of dilution;
 - (k) to lay down standards of treatment of sewage and trade effluents to be discharged into any particular stream taking into account the minimum fair weather dilution available in that stream and the tolerance limits of pollution permissible in the water of the stream, after the discharge of such effluents;
 - (l) to make, vary or revoke any order --
 - (i) for the prevention, control or abatement of discharge of waste into streams or wells;
 - (ii) requiring any person concerned to construct new systems for the disposal of sewage and trade effluents or to modify, alter or extend any such existing system or to adopt such remedial measures as are necessary to prevent control or abate water pollution;
 - (m) to lay down effluent standards to be complied with by persons while causing discharge of sewage or sullage or both and to lay down, modify or annul effluent standards for the sewage and trade effluents;
 - (n) to advise the State Government with respect to the location of any industry the carrying on of which is likely to pollute a stream or well;
 - (o) to perform such other functions as may be prescribed or as may, from time to time be entrusted to it by the Central Board or the State Government.
- (2) The Board may establish or recognise a laboratory or laboratories to enable the Board to perform its functions under this Section efficiently, including the analysis of samples of water from any stream or well or of samples of any sewage or trade effluents.

18. Powers to give directions

- (1) In the performance of its functions under this Act --
- (a) the Central Board shall be bound by such directions in writing the Central Government may give to it; and
 - (b) every State Board shall be bound by such directions in writing as the Central Government or the State Government may give to it:
Provided that where a direction given by the State Government is inconsistent with the direction given by the Central Board, the matter shall be referred to the Central Government for its decision.
- (2) Where the Central Government is of the opinion that and State Board has defaulted in complying with any directions given by the Central Government under sub-Section (1) and as a result of such default a grave emergency has arisen and it is necessary or expedient so to do in the public interest, it may, by order, direct the Central Board to perform any of the functions of the State Board in relation to such area for such period and for such purposes, as may be specified in the order.
- (3) Where the Central Board performs any of the functions of the State Board in pursuance of a direction under sub-Section (2), the expenses, if any, incurred by the Central Board with respect to performance of such functions may, if the State Board is empowered to recover such expenses, be recovered by the Central Board with interest (at such reasonable rate as the Central Government may, by order, fix) from the date when a demand for such expenses is made until it is paid from the person or persons concerned as arrears of land revenue or of public demand.
- (4) For the removal of doubts, it is hereby declared that any directions to perform the functions of any State Board given under sub-Section (2) in respect of any area would not preclude the State Board from performing such functions in any other area in the State or any of its other functions in that area.

CHAPTER V

PREVENTION AND CONTROL OF WATER POLLUTION

19. Power of State Government to restrict the application of The Act to certain areas

- (1) Notwithstanding contained in this Act, if the State Government, after consultation with, or on the recommendation of, the State Board, is of opinion that the provisions of this Act need not apply to the entire State, it may, by notification in the Official Gazette, restrict the application of this Act to such area

or areas as may be declared therein as water pollution, prevention and control area or areas and thereupon the provisions of this Act shall apply only to such area or areas.

- (2) Each water pollution, prevention and control area may be declared either by reference to a map or by reference to the line of any watershed or the boundary of any district or partly by one method and partly by another.
- (3) The State Government may, by notification in the Official Gazette-
 - (a) alter any water pollution prevention and control area whether by way of extension or reduction; or
 - (b) define a new water pollution, prevention and control area in which may be merged one or more water pollution, prevention and control areas, or any part or parts thereof.

20. Power to obtain Information

- (1) For the purpose of enabling a State Board to perform the function conferred on it by or under this Act, the State Board or any officer empowered by it in that behalf, may make surveys of any area and gauge and keep records of the flow or volume and other characteristics of an stream or well in such area, and may take steps for the measurement and recording of the rainfall in such area or any part thereof and for the installation and maintenance for those purposes of gauges or other apparatus and works connected therewith, and carry out stream surveys and may take such other steps as may be necessary in order to obtain any information required for the purposes aforesaid.
- (2) A State Board may give directions requiring any person who in its opinion is abstracting water from any such stream or well in the area in quantities which are substantial in relation to the flow or volume of that stream or well or is discharging sewage or trade effluent into any such stream or well, to give such information as to the abstraction or the discharge at such times and in such form as may be specified in the directions.
- (3) Without prejudice to the provisions of sub-Section (2), a State Board may, with a view to preventing or controlling pollution of water, give directions requiring any person in charge of any establishment where any industry, operation or process, or treatment and disposal system is carried on, to furnish to it information regarding the construction, installation or operation of such establishment or of any disposal system or of any extension or addition thereto in such establishment and such other particulars as may be prescribed.

21. Power to take samples of effluents and procedure to be followed in connection therewith

- (1) A State Board or any officer empowered by it in this behalf shall have power to take for the purpose of analysis samples of water from any stream or well or samples of any sewage or trade effluent which is passing from any plant or vessel or from or over any place into any such stream or well.
- (2) The result of any analysis of a sample of any sewage or trade effluent taken under sub-Section (1) shall not be admissible in evidence in an legal proceeding unless the provisions of sub-Sections (3), (4) and (5) are complied with.
- (3) Subject to the provisions of sub-Sections (4) and (5), when a sample (composite or otherwise as may be warranted by the process used) of any sewage or trade effluent is taken for analysis under sub-Section (1), the person taking the sample shall --
 - (a) serve on the person in charge of, or having control over, the plant or vessel or in occupation of the place (which person is hereinafter referred to as the occupier) or any agent of such occupier, a notice, then and there in such form as may be prescribed of his intention to have it so analysed;
 - (b) in the presence of the occupier or his agent, divided the sample into two parts;
 - (c) cause each part to be placed in a container which shall be marked and sealed and shall also be signed both by the person taking the sample and the occupier or his agent;
 - (d) send one container forthwith,--
 - (i) in a case where such sample is taken from any area situated in a Union territory, to the laboratory established or recognised by the Central Board under Section; and
 - (ii) in any other case, to the laboratory established or recognised by the State Board under Section 17;
 - (e) on the request of the occupier or his agent, send the second container --
 - (i) in a case where such sample is taken from any area situated in a Union territory, to the laboratory established or specified under sub-Section (1) of Section 51; and
 - (ii) in an other case, to the laboratory established or specified under sub-Section (1) of Section 52.
- (4) When a sample of any sewage or trade effluent is taken for analysis under sub-Section (1) and the person taking the sample serves on the occupier or his agent, a notice under clause (a) of sub-Section (3) and the occupier or his agent wilfully absents himself, then --
 - (a) the sample so taken shall be placed in a container which shall be marked and sealed and shall also be signed by the person taking the sample and the same shall be sent forthwith by such person for analysis to the laboratory referred to in sub-clause (i) or sub-clause (ii), as the case may be, of clause (e) of sub-Section (3) and such person shall inform the Government analyst appointed under sub-Section (1) or sub-Section (2), as the case may be, of Section 53, in writing about the wilful absence of the occupier or his agent; and

- (b) the cost incurred in getting such sample analysed shall be payable by the occupier or his agent and in case of default of such payment, the same shall be recoverable from the occupier or his agent, as the case may be, as an arrear of land revenue or of public demand:
Provided that no such recovery shall be made unless the occupier or, as the case may be, his agent has been given a reasonable opportunity of being heard in the matter.
- (5) When a sample of any sewage or trade effluent is taken for analysis under sub-Section (1) and the person taking the sample serves on the occupier or his agent a notice under clause (a) of sub-Section (3) and the occupier or his agent who is present at the time of taking the sample does not make a request for dividing the sample into two parts as provided in clause (b) of sub-Section (3), then, the sample so taken shall be placed in a container which shall be marked and sealed and shall also be signed by the person taking the sample and the same shall be sent forthwith by such person for analysis to the laboratory referred to in sub-clause (i) or sub-clause (ii), as the case may be, of clause (d) of sub-Section (3).
- 22. Reports of results of analysis on samples taken under section 21**
- (1) Where a sample of any sewage or trade effluent has been sent for analysis to the laboratory established or recognised by the Central Board or, as the case may be, the State Board, the concerned Board analyst appointed under sub-Section (3) of Section 53 shall analyse the sample and submit a report in the prescribed form of the result of such analysis in triplicate to the Central Board or the State Board, as the case may be.
- (2) On receipt of the report under sub-Section (1), one copy of the report shall be sent by the Central Board or the State Board, as the case may be, to the occupier or his agent referred to in Section 21, another copy shall be preserved for production before the court in case any legal proceedings are taken against him and the other copy shall be kept by the concerned Board.
- (3) Where a sample has been sent for analysis under clause (e) of sub-Section (3) or sub-Section (4) of Section 21 to any laboratory mentioned therein, the Government analyst referred to in that sub-Section shall analyse the sample and submit a report in the prescribed form of the result of the analysis in triplicate to the Central Board or, as the case may be, the State Board which shall comply with the provisions of sub-Section (2).
- (4) If there is any inconsistency or discrepancy between, or variation in the results of, the analysis carried out by the laboratory established or recognised by the Central Board or the State Board, as the case may be, and that of the laboratory established or specified under Section 51 or Section 52, as the case may be, the report of the latter shall prevail.
- (5) Any cost incurred in getting any sample analysed at the request of the occupier or his agent shall be payable by such occupier or his agent and in case of default the same shall be recoverable from him as arrears of land revenue or of public demand.
- 23. Power of entry and inspection**
- (1) Subject to the provisions of this Section, any person empowered by a State Board in this behalf shall have a right at any time to enter, with such assistance as he considers necessary, any place--
- (a) for the purpose of performing any of the functions of the Board entrusted to him;
- (b) for the purpose of determining whether and if so in what manner, any such functions are to be performed or whether any provisions of this Act or the rules made thereunder of an notice, order, direction or authorisation served, made, given, or granted under this Act is being or has been complied with;
- (c) for the purpose of examining any plant, record, register, document or any other material object or for conducting a search of any place in which he has reason to believe that an offence under this Act or the rules made thereunder has been or is being or is about to be committed and for seizing any such plant, record, register, document or other material object, if he has reason to believe that it may furnish evidence of the commission of an offence punishable under this Act or the rules made thereunder:
Provided that the right to enter under this sub-Section for the inspection of a well shall be exercised only at reasonable hours in a case where such well is situated in any premises used for residential purposes and the water thereof is used exclusively for domestic purposes.
- (2) The provisions of the Code of Criminal Procedure, 1973, or, in relation to the State of Jammu and Kashmir, the provisions of any corresponding law in force in that State, shall, so far as may be, apply to a search or seizure under this Section as they apply to any search or seizure made under the authority of a warrant issued under Section 94 of the said Code, or, as the case may be, under the corresponding provisions of the said law.
Explanation - For the purposes of this Section, "place" includes vessel.
- 24. Prohibition on use of stream or well for disposal of polluting matter, etc.**
- (1) Subject to the provisions of this Section --
- (a) no person shall knowingly cause or permit any poisonous, noxious or polluting matter determined in accordance with such standards as may be laid down by the State Board to enter (whether directly or indirectly) into any stream or well or sewer or on land; or

- (b) no person shall knowingly cause or permit to enter into any stream any other matter which may tend, either directly or in combination with similar matters, to impede the proper flow of the water of the stream in a manner leading or likely to lead to a substantial aggravation of pollution due to other causes or of its consequences.
- (2) A person shall not be guilty of an offence under sub-Section (1), by reason only of having done any of the following acts, namely;--
 - (a) constructing, improving a maintaining in or across or on the bank or bed of any stream any building, bridge, weir, dam, sluice, dock, pier, drain or sewer or other permanent works which he has a right to construct, improve or maintain;
 - (b) depositing any materials on the bank or in the bed of any stream for the purpose of reclaiming land or for supporting, repairing or protecting the bank or bed of such stream provided such materials are not capable of polluting such stream;
 - (c) putting into an stream any sand or gravel or other natural deposit which has flowed from or been deposited by the current of such stream;
 - (d) causing or permitting, with the consent of the State Board, the deposit accumulated in a well, pond or reservoir to enter into any stream.
- (3) The State Government may, after consultation with, or on the recommendation of, the State Board, exempt, by notification in the Official Gazette, any person from the operation of sub-Section (1) subject to such conditions, if any, as may be specified in the notification and any conditions so specified may by a like notification and be altered, varied or amended.

25. Restrictions on new outlets and new discharges

- (1) Subject to the provisions of this Section, no person shall, without the previous consent of the State Board,--
 - (a) establish or take any steps to establish any industry, operation or process, or any treatment and disposal system or an extension or addition thereto, which is likely to discharge sewage or trade effluent into a stream or well or sewer or on land (such discharge being hereafter in this Section referred to as discharge of sewage); or
 - (b) bring into use any new or altered outlets for the discharge of sewage; or
 - (c) begin to make any new discharge of sewage;
 Provided that a person in the process of taking any steps to establish any industry, operation or process immediately before the commencement of the Water (Prevention and Control of Pollution) Amendment Act, 1988, for which no consent was necessary prior to such commencement or, if he has made an application for such consent, within the said period of three months, till the disposal of such application.
- (2) An application for consent of the State Board under sub-Section (1) shall be made in such form, contain such particulars and shall be accompanied by such fees as may be prescribed.
- (3) The State Board may make such inquiry as it may deem fit in respect of the application for consent referred to in sub-Section (1) and in making any such inquiry shall follow such procedure as may be prescribed.
- (4) The State Board may --
 - (a) grant its consent referred to in sub-Section (1), subject to such conditions as it may impose, being--
 - (i) in cases referred to in clauses (a) and (b) of sub-Section (1) of Section 25, conditions as to the point of discharge of sewage or as to the use of that outlet or any other outlet for discharge of sewage;
 - (ii) in the case of a new discharge, conditions as to the nature and composition, temperature, volume or rate of discharge of the effluent from the land or premises from which the discharge or new discharge is to be made; and
 - (iii) that the consent will be valid only for such period as may be specified in the order, and any such conditions imposed shall be binding on any person establishing or taking any steps to establish any industry, operation or process, or treatment and disposal system or extension or addition thereto, or using the new or altered outlet, or discharging the effluent from the land or premises aforesaid; or
 - (b) refuse such consent for reasons to be recorded in writing.
- (5) Where, without the consent of the State Board, any industry operation or process, or any treatment and disposal system or any extension or addition thereto, is established, or any steps for such establishment have been taken or a new or altered outlet is brought into use for the discharge of sewage or a new discharge of sewage is made, the State Board may serve on the person who has established or taken steps to establish any industry, operation or process, or any treatment and disposal system or any extension or addition thereto, or using the outlet, or making the discharge, as the case may be, a notice imposing any such conditions as it might have imposed on an application for its consent in respect of such establishment, such outlet or discharge.

- (6) Every State Board shall maintain a register containing particulars or conditions imposed under this Section and so much of the register as relates to any outlet, or to any effluent, from any land or premises shall be open to inspection at all reasonable hours by any person interested in, or affected by such outlet, land or premises, as the case may be, or by any person authorised by him in this behalf and the conditions so contained in such register shall be conclusive proof that the consent was granted subject such conditions
 - (7) The consent referred to in sub-Section (1) shall, unless given or refused earlier, be deemed to have been given unconditionally on the expiry of a period of four months of the making of an application in this behalf complete in all respects to the State Board.
 - (8) For the purposes of this Section and Sections 27 and 30 --
 - (a) the expression "new or altered outlet" means any outlet which is wholly or partly constructed on or after the commencement of this Act or which (whether so constructed or not) is substantially altered after such commencement;
 - (b) the expression "new discharge" means a discharge which is not, as respects the nature and composition, temperature, volume, and rate of discharge of the effluent substantially a continuation of a discharge made within the preceding twelve months (whether by the same or different outlet), so however that a discharge which is in other respects a continuation of previous discharge made as aforesaid shall not be deemed to be a new discharge by reason of any reduction of the temperature or volume or rate of discharge of the effluent as compared with the previous discharge.
- 26. Provision regarding existing discharge of sewage or trade effluent**
 Where immediately before the commencement of this Act any person was discharging any sewage or trade effluent into a ⁸[stream or well or sewer or on land], the provisions of Section 25 shall, so far as may be, apply in relation to such person as they apply in relation to the person referred to in that Section subject to the modification that the application for consent to be made under sub-Section (2) of that Section ⁹[shall be made on or before such date as may be specified by the State Government by notification in this behalf in the Official Gazette.
- 27. Refusal or withdrawal of consent by State Board**
- (1) A State Board shall not grant its consent under sub-Section (4) of Section 25 for the establishment of any industry, operation or process, or treatment and disposal system or extension or addition thereto, or to the bringing into use of a new or altered outlet unless the industry, operation or process, or treatment and disposal system or extension or addition thereto, or the outlet is so established as to comply with an conditions imposed by the Board to enable it to exercise its right to take samples of the effluent.
 - (2) A State Board may from time to time review --
 - (a) any condition imposed under Section 25 or Section 26 and may serve on the person to whom a consent under Section 25 or Section 26 is granted a notice making any reasonable variation of or revoking any such condition.
 - (b) the refusal of any consent referred to in sub-Section (1) of Section 25 or Section 26 or the grant of such consent without any condition, and may make such orders as it deemed fit]
 - (3) Any conditions imposed under Section 25 or Section 26 shall be subject to any variation made under sub-Section (2) and shall continue in force until revoked under that sub-Section.
- 28. Appeals**
- (1) Any person aggrieved by an order made by the State Board under Section 25, Section 26 or Section 27 may within thirty days from the date on which the order is communicated to him, prefer an appeal to such authority (hereinafter referred to as the appellate authority) as the State Government may think fit to constitute:
 Provided that the appellate authority may entertain the appeal after the expiry of the said period of thirty days if such authority is satisfied that the appellant was prevented by sufficient cause from filing the appeal in time.
 - (2) An appellate authority shall consist of a single person or three persons as the State Government may think fit, to be appointed by that Government.
 - (3) The form and manner in which an appeal may be preferred under sub-Section (1), the fees payable for such appeal and the procedure to be followed by the appellate authority shall be such as may be prescribed.
 - (4) On receipt of an appeal preferred under sub-Section (1), the appellate authority shall, after giving the appellant and the State Board an opportunity of being heard, dispose of the appeal as expeditiously as possible.
 - (5) If the appellate authority determines that any condition imposed, or the variation of any condition, as the case may be, was unreasonable, then,--
 - (a) where the appeal is in respect of the unreasonableness of any condition imposed, such authority

- may direct either that the condition shall be treated as annulled or that there shall be substituted for it such condition as appears to it to be reasonable;
- (b) where the appeal is in respect of the unreasonableness of any variation of a condition, such authority may direct either that the condition shall be treated as continuing in force unvaried or that it shall be varied in such manner as appears to it to be reasonable.

29. Revision

- (1) The State Government may at any time either of its own motion or on an application made to it in this behalf, call for the records of any case where an order has been made by the State Board under Section 25, Section 26 or Section 27 for the purpose of satisfying itself as to the legality or propriety of any such order and may pass such order in relation thereto as it may think fit :
Provided that the State Government shall not pass any order under this sub-Section without affording the State Board and the person who may be affected by such order a reasonable opportunity of being heard in the matter.
- (2) The State Government shall not revise any order made under Section 25, Section 26 or Section 27 where an appeal against that order lies to the appellate authority, but has not been preferred or where an appeal has been preferred such appeal is pending before the appellate authority.

30. Power of State Board to carry out certain works

- (1) Where under this Act, any conditions have been imposed on any person while granting consent under Section 25 or Section 26 and such conditions require such person to execute any work in connection therewith and such work has not been executed within such time as may be specified in this behalf, the State Board may serve on the person concerned a notice requiring him within such time (not being less than thirty days) as may be specified in the notice to execute the work specified therein
- (2) If the person concerned fails to execute the work as required in the notice referred to in sub-Section (1), then, after the expiration of the time specified in the said notice, the State Board may itself execute or cause to be executed such work.
- (3) All expenses incurred by the State Board for the execution of the aforesaid work, together with interest, at such rate as the State Government may, by order, fix, from the date when a demand for the expenses is made until it is paid, may be recovered by that Board from the person concerned, as arrears of land revenue, or of public demand.

31. Furnishing of information to State Board and other agencies in certain cases

- (1) If at any place where any industry, operation or process, or any treatment and disposal system or any extension or addition thereto is being carried on, due to accident or other unforeseen act or event, any poisonous, noxious or polluting matter is being discharged, or is likely to be discharged into a stream or well or sewer or on land and, as a result of such discharge, the water in any stream or well is being polluted, or is likely to be polluted, then the person in charge of such place shall forthwith intimate the occurrence of such accident, act or event to the State Board and such other authorities or agencies as may be prescribed
- (2) Where any local authority operates any sewerage system or sewage works the provisions of sub-Section (1) shall apply to such local authority as they apply in relation to the person in charge of the place where an industry or trade is being carried on.

32. Emergency measures in case of pollution of stream or well

- (1) Where it appears to the State Board that any poisonous, noxious or polluting matter is present in any stream or well or on land by reason of the discharge of such matter in such stream or well or on such land or has entered into that stream or well due to any accident or other unforeseen act or event, and if the Board is of opinion that it is necessary or expedient to take immediate action, it may for reasons to be recorded in writing, carry out such operations as it may consider necessary for all or any of the following purposes, that is to say --
- removing that matter from the ¹⁷[stream or well or on land and disposing of it in such manner as the Board considers appropriate;
 - remedying or mitigating any pollution caused by its presence in the stream or well;
 - issuing orders immediately restraining or prohibiting the persons concerned from discharging any poisonous, noxious or polluting matter ¹⁸[into the stream or well or on land] or from making unsanitary use of the stream or well.
- (2) The power conferred by sub-Section (1) does not include the power to construct any works other than works of a temporary character which are removed on or before the completion of the operations.

33. Power of Board to make application to courts for restraining apprehended pollution.

- (1) Where it is apprehended by a Board that the water in any stream or well is likely to be polluted by reason of the disposal or likely disposal of any matter in such stream or well or in any sewer, or on any land, or otherwise, the Board may make an application to a court, not inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class, for restraining the person who is likely to cause such pollution from so causing.

- (2) On receipt of an application under sub-Section (1) the court make such order as it deems fit.
- (3) Where under sub-Section (2) the court makes an order restraining any person from polluting the water in any stream or well, it may in that order-
 - (i) direct the person who is likely to cause or has caused the pollution of the water in the stream or well, to desist from taking such action as is likely to cause pollution or, as the case may be, to remove such stream or well, such matter, and
 - (ii) authorise the Board, if the direction under clause (i) (being a direction for the removal of any matter from such stream or well) is not complied with by the person to whom such direction is issued, to undertake the removal and disposal of the matter in such manner as may be specified by the court.
- (4) All expenses incurred by the Board in removing any matter in pursuance of the authorisation under clause (ii) of sub-Section (3) or in the disposal of any such matter may be defrayed out of any money obtained by the Board from such disposal and any balance outstanding shall be recoverable from the person concerned as arrears of land revenue or of public demand.

33A. Power to give directions

Notwithstanding anything contained in any other law, but subject to the provisions of this Act, and to any directions that the Central Government may give in this behalf, a Board may, in the exercise of its powers and performance of its functions under this Act, issue any directions in writing to any person, officer or authority, and such person, officer or authority shall be bound to comply with such directions.

Explanation.-For the avoidance of doubts, it is hereby declared that the power to issue directions under this Section includes the power to direct

- (a) the closure, prohibition or regulation of any industry, operation or process; or
- (b) the stoppage or regulation of supply of electricity, water or any other service.

CHAPTER VI

FUNDS, ACCOUNTS AND AUDIT

34. Contributions by Central Government

The Central Government may, after due appropriation made by Parliament by law in this behalf, make in each financial year such contribution to the Central Board as it may think necessary to enable the Board to perform its functions under this Act.

35. Contributions by State Government

The State Government may, after due appropriation made by the Legislature of the State by law in this behalf, make in each financial year such contributions to the State Board as it may think necessary to enable that Board to perform its functions under this Act.

36. Fund of Central Board

- (1) The Central Board shall have its own fund, and all sums which may, from time to time, be paid to it by the Central Government and all other receipts (by way of gifts, grants, donations, benefactions, fees or (otherwise) of that Board shall be carried to the fund of the Board and all payments by the Board shall be made therefrom.
- (2) The Central Board may expend such sums as it thinks fit for performing its functions under this Act, and, where any law for the time being in force relating to the prevention, control of abatement or air pollution provides for the performance of any function under such law by the Central Board, also for performing its functions under such [law] and such sums shall be treated as expenditure payable out of the funds of that Board.

37. Fund of State Board

- (1) The State Board shall have its own fund, and the sums which may, from time to time, be paid to it by the State Government and all other receipts (by way of gifts, grants, donations, benefactions ²[fees] or (otherwise) of that Board shall be carried to the fund of the Board and all payments by the Board shall be made therefrom.
- (2) The State Board may expend such sums as it thinks fit for performing its functions under this Act, and, where any law for the time being in force relating to the prevention, control or abatement of air pollution provides for the performance of any function under such law by the State Board, also for performing its functions under such law and such sums shall be treated as expenditure payable out of the fund of that Board.

37a. Borrowing powers of Board

A Board may, with the consent of, or in accordance with, the terms of any general or special authority given to it by the Central Government or, as the case may be, the State Government, borrow money from any source by way of loans or issue of bonds, debentures or such other instruments, as it may deem fit, for the performance of all or any of its functions under this Act.

38. Budget

The Central Board or, as the case may be, the State Board shall, during each financial year, prepare, in such form and at such time as may be prescribed, a budget in respect of the financial year next ensuing showing the estimated receipt and expenditure, and copies thereof shall be forwarded to the Central Government, or as the case may be, the State Government.

39. Annual Report

- (1) The Central Board shall, during each financial year, prepare, in such form as may be prescribed, an annual report giving full account of its activities under this Act during the previous financial year and copies thereof shall be forwarded to the Central Government within four months from the last date of the previous financial year and that Government shall cause every such report to be laid before both Houses of Parliament within nine months from the last date of the previous financial year.
- (2) Every State Board shall, during each financial year, prepare, in such form as may be prescribed, an annual report giving full account of its activities under this Act during the previous financial year and copies thereof shall be forwarded to the State Government within four months from the last date of the previous financial year and that Government shall cause every such report to be laid before the State legislature within a period of nine months from the last date of the previous financial year.

40. Account and Audit

- (1) Every Board shall maintain proper accounts and other relevant records and prepare an annual statement of accounts in such form as may be prescribed by the Central Government or, as the case may be, the State Government.
- (2) The accounts of the Board shall be audited by an auditor duly qualified to act as an auditor of companies under section 226 of the Companies Act, 1956.
- (3) The said auditor shall be appointed by the Central Government or, as the case may be, the State Government on the advice of the Comptroller and Auditor-General of India.
- (4) Every auditor appointed to audit the accounts of the Board under this Act shall have the right to demand the production of books, accounts, connected vouchers and other documents and papers and to inspect any of the offices of the Board.
- (5) Every such auditor shall send a copy of his report together with an audited copy of the accounts to the Central Government or, as the case may be, the State Government.
- (6) The Central Government shall, as soon as may be after receipt of the audit report under sub-section(5), cause the same to be laid before both Houses of Parliament.
- (7) The State Government shall, as soon as may be after the receipt of the audit report under sub-section (5), cause the same to be laid before the State Legislature.

CHAPTER VII

PENALTIES AND PROCEDURE

41. Failure to comply with directions under sub-section (2) or sub-section (3) of section of 20, or orders issued

under clause (c) of sub-section (1) of 32 or directions issued under sub-section (2) of section 33 or section 33A.

- (1) Whoever fails to comply with any direction given under sub-section (2) or sub-section (3) of section 20 within such time as may be specified in the direction shall, on conviction, be punishable with imprisonment for a term which may extend to three months or with fine which may extend to ten thousand rupees or with both and in case the failure continues, with an additional fine which may extend to five thousand rupees for every day during which such failure continues after the conviction for the first such failure.
- (2) Whoever fails to comply with any order issued under clause (c) of sub-section (1) of section 32 or any direction issued by a court under sub-section (2) of section 33 or any direction issued under section 33A shall, in respect of each such failure and on conviction, be punishable with imprisonment for a term which shall not be less than one year and six months but which may extend to six years and with fine, and in case the failure continues, with an additional fine which may extend to five thousand rupees for every day during which such failure continues after the conviction for the first such failure.
- (3) If the failure referred to in sub-section (2) continues beyond a period of one year after the date of conviction, the offender shall, on conviction, be punishable with imprisonment for a term which shall not be less than two years but which may extend to seven years and with fine.

42. Penalty for certain acts

- (1) Whoever --
- (a) destroys, pulls down, removes, injures or defaces any pillar, post or stake fixed in the ground or any notice or other matter put up, inscribed or placed, by or under the authority of the Board, or
 - (b) obstructs any person acting under the orders or directions of the Board from exercising his powers and performing his functions under this Act, or
 - (c) damages any works or property belonging to the Board, or
 - (d) fails to furnish to any officer or other employees of the Board any information required by him for the purpose of this Act, or
 - (e) fails to intimate the occurrence of an accident or other unforeseen act or even under section 31 to the Board and other authorities or agencies as required by that section, or
 - (f) in giving any information which he is required to give under this Act, knowingly or wilfully makes a statement which is false in any material particular, or
 - (g) for the purpose of obtaining any consent under section 25 or section 26, knowingly or wilfully makes a statement which is false in any material particular shall be punishable with imprisonment for a term which may extend to three months or with fine which may extend to 2[ten thousand rupees or with both.
- (2) Where for the grant of a consent in pursuance of the provisions of section 25 or section 26 the use of a meter or gauge or other measure or monitoring device is required and such device is used for the purposes of those provision, any person who knowingly or wilfully alters or interferes with that device so as to prevent it from monitoring or measuring correctly shall be punishable with imprisonment for a term which may extend to three months or with fine which may extend to 2[ten thousand rupees] or with both.

43. Penalty for contravention of section 24

Whoever contravenes the provisions of section 24 shall be punishable with imprisonment for a term which shall not be less than 3[one year and six months] but which may extend to six years and with fine.

44. Penalty for contravention of section 25 or section 26

Whoever contravenes the provision of section 25 or section 26 shall be punishable with imprisonment for a term which shall not be less than 4[two years] but which may extend to six years and with fine.

45. Enhanced penalty after previous conviction

If any person who has been convicted of any offence under section 24 or 25 or section 26 is again found guilty of an offence involving a contravention of the same provision, he shall, on the second and on every subsequent conviction, be punishable with imprisonment for a term which shall not be less than one and half years but which may extend to seven years and with fine:
Provided that for the purpose of this section no cognisance shall be taken of any conviction made more than two years before the commission of the offence which is being punished.

45a. Penalty for contravention of certain provisions of the Act

Whoever contravenes any of the provisions of this Act or fails to comply with any order or direction given under this Act, for which no penalty has been elsewhere provided in this Act, shall be punishable with imprisonment which may extend to three months or with fine which may extend to ten thousand rupees or with both and in the case of a continuing contravention or failure, with an additional fine which may extend to five thousand rupees for every day during which such contravention or failure continues after conviction for the first such contravention or failure.

46. Publication of names of offenders

If any person convicted of an offence under this Act commits a like offence afterwards it shall be lawful for the court before which the second or subsequent conviction takes place to cause the offender's name and place of residence, the offence and the penalty imposed to be published at the offender's expense in such newspapers or in such other manner as the court may direct and the expenses of such publication shall be deemed to be part of the cost attending the conviction and shall be recoverable in the same manner as a fine.

47. Offences by companies

- (1) Where an offence under this Act has been committed by a company, every person who at the time the offence was committed was in charge of, and was responsible to the company for the conduct of, the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:
Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act if he proves that the offence was committed without his knowledge for that he exercised all due diligence to prevent the commission of such offence.
- (2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.
Explanation- For the purpose of this section,

- (a) "company" means any body corporate, and includes a firm or other association of individuals; and
- (b) "director" in relation to a firm means a partner in the firm.

48. Offences by Government Departments

Where an offence under this Act has been committed by any Department of Government, the Head of the Department shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this section shall render such Head of the Department liable to any punishment if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

49. Cognisance of offences

- (1) No court shall take cognisance of any offence under this Act except on a complaint made by--
 - (a) a Board or any officer authorised in this behalf by it; or
 - (b) any person who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint, to the Board or officer authorised as aforesaid, and no court inferior to that of a Metropolitan Magistrate or a Judicial Magistrate of the first class shall try any offence punishable under this Act.
- (2) Where a complaint has been made under clause (b) of sub-section (1), the Board shall, on demand by such person, make available the relevant reports in its possession to that person:

Provided that the Board may refuse to make any such report available to such person if the same is, in its opinion, against the public interest
- (3) Notwithstanding anything contained in section 29 of the Code of Criminal Procedure, 1973, it shall be lawful for any Judicial Magistrate of the first class or for any Metropolitan Magistrate to pass a sentence of imprisonment for a term exceeding two years or of fine exceeding two thousand rupees on any person convicted of an offence punishable under this Act.

50. Members, Officers and Servants Of Board to be public servants

All members, officers and servants of a Board when acting or purporting to act in pursuance of any of the provisions of this Act (45 of 1860) and the rules made thereunder shall be deemed to be public servants within the meaning of section 21 of the Indian Penal Code.

**CHAPTER VIII
MISCELLANEOUS**

51. Central Water Laboratory

- (1) The Central Government may, by notification in the Official Gazette --
 - (a) establish a Central Water Laboratory; or
 - (b) specify any laboratory or institute as a Central Water Laboratory, to carry out the functions entrusted to the Central Water Laboratory under this Act.
- (2) The Central Government may, after consultation with the Central Board, make rules prescribing--
 - (a) the functions of the Central Water Laboratory;
 - (b) the procedure for the submission to the said laboratory of samples of water or of sewage or trade effluent for analysis or tests, the form of the laboratory's report thereunder and the fees payable in respect of such report;
 - (c) such other matters as may be necessary or expedient to enable that laboratory to carry out its functions.

52. State Water Laboratory

- (1) The State Government may, by notification in the Official Gazette --
 - (a) establish a State Water Laboratory; or
 - (b) specify any State laboratory or institute as a State Water Laboratory, to carry out the functions entrusted to the State Water Laboratory under this Act.
- (2) The State Government may, after consultation with the State Board, make rules prescribing --
 - (a) the functions of the State Water Laboratory;
 - (b) the procedure for the submission to the said laboratory of samples of water or of sewage or trade effluent for analysis or tests, the form of the laboratory's report thereon and the fees payable in respect of such report;
 - (c) such other matters as may be necessary or expedient to enable that laboratory to carry out its functions.

53. Analysts

- (1) The Central Government may, by notification in the Official Gazette appoint such persons as it thinks fit and having the prescribed qualifications to be Government analysts for the purpose of analysis of

samples of water or of sewage or trade effluent sent for analysis to any laboratory established or specified under sub-section (1) of section 51.

- (2) The State Government may, by notification in the Official Gazette, appoint such persons as it thinks fit and having the prescribed qualifications to be Government analysts for the purpose of analysis of water or of sewage or trade effluent sent for analysis to any laboratory established or specified under sub-section (1) of section 52.
 - (3) Without prejudice to the provisions of sub-section (3) of section 12, the Central Board or, as the case may be, the State Board may, by notification in the Official Gazette, and with the approval of the Central Government or the State Government, as the case may be, appoint such persons as it thinks fit and having the prescribed qualifications to be Board analysts for the purpose of analysis of samples of water or of sewage or trade effluent sent for analysis to any laboratory established or recognised under section 16, as the case may be, under section 17.
- 54. Reports of Analysts**
Any document purporting to be report signed by a Government analyst or, as the case may be, a Board analyst may be used as evidence of the facts stated therein in any proceeding under this Act.
- 55. Local Authorities to assist**
All local authorities shall render such help and assistance and furnish such information to the Board as it may require for the discharge of its functions, and shall make available to the Board for inspection and examination such records, maps, plans and other documents as may be necessary for the discharge of its functions.
- 56. Compulsory acquisition of land for the State Board**
Any land required by a State Board for the efficient performance of its function under this Act shall be deemed to be needed for a public purpose and such land shall be acquired for the State Board under the provisions of the Land Acquisition Act, 1894 (1 of 1984), or under any other corresponding law for the time being in force.
- 57. Returns and Reports**
The Central Board shall furnish to the Central Government, and a State Board shall furnish to the State Government and to the Central Board such reports, returns, statistics, accounts and other information with respect to its fund or activities as that government, or, as the case may be, the Central Board may, from time to time, require.
- 58. Bar of jurisdiction**
No civil court shall have jurisdiction to entertain any suit or proceeding in respect of any matter which an appellate authority constituted under this Act is empowered by or under this Act to determine, and no injunction shall be granted by any court or other authority in respect of any action taken or to be taken in pursuance of any power conferred by or under this Act.
- 59. Protection of action taken in good faith**
No suit or other legal proceedings shall lie against the Government or any officer of Government or any member or officer of a Board in respect of anything which is in good faith done or intended to be done in pursuance of this Act or the rules made thereunder.
- 60. Overriding effect**
The provisions of this Act shall have effect notwithstanding anything inconsistent therewith contained in any enactment other than this Act.
- 61. Power of Central Government to supersede the Central Board and Joint Boards**
- (1) If at any time the Central Government is of opinion --
 - (a) that the Central Board or any Joint Board has persistently made default in the performance of the functions imposed on it by or under this Act; or
 - (b) that circumstances exist which render it necessary in the public interest so to do, the Central Government may, by notification in the Official Gazette, supersede the Central Board or such Joint Board, as the case may be, for such period not exceeding one year, as may be specified in the notification:
Provided that before issuing a notification under this sub-section for the reasons mentioned in clause (a), the Central Government shall give a reasonable opportunity to the Central Board or such Joint Board, as the case may be, to show cause why it should not be superseded and shall consider the explanations and objections if any, of the Central Board or such Joint Board, as the case may be.
 - (2) Upon the publication of notification under sub-section (1) superseding the Central Board or any Joint Board,
 - (a) all the members shall, as from the date of supersession vacate their offices as such;
 - (b) all the powers, functions and duties which may, by or under this Act, be exercised, performed or

- discharged by the Central Board or such Joint Board, shall, until the Central Board or the Joint Board, as the case may be, is reconstituted under sub-section (3) be exercised, performed or discharged by such person or persons as the Central Government may direct;
- (c) all property owned or controlled by the Central Board or such Joint Board shall, until the Central Board or the Joint Board, as the case may be, is reconstituted under sub-section (3) vest in the Central Government.
- (3) On the expiration of the period of supersession specified in the notification issued under sub-section (1), the Central Government may --
- extend the period of supersession for such further term, not exceeding six months, as it may consider necessary; or
 - reconstitute the Central Board or the Joint Board, as the case may be, by fresh nomination or appointment, as the case may be, and in such case any person who vacated his office under clause (a) of sub-section (2) shall not be deemed disqualified for nomination or appointment: Provided that the Central Government may at any time before the expiration of the period of supersession, whether originally specified under sub-section (1) or as extended under this sub-section, take action under clause (b) of this sub-section.

62. Power of State Government to supersede State Board

- (1) If at any time the State Government is of opinion --
- that the State Board has persistently made default in the performance of the functions imposed on it by or under this Act; or
 - that circumstances exist which render it necessary in the public interest so to do, the State Government may, by notification in the Official Gazette, supersede the State Board for such period, not exceeding one year, as may be specified in the notification: Provided that before issuing a notification under this sub-section for the reasons mentioned in clause (a), the State Government shall give a reasonable opportunity to the State Board to show cause why it should not be superseded and shall consider the explanations and objections, if any, of the State Board.
- (2) Upon the publication of a notification under sub-section (1) superseding the State Board, the provisions of sub-sections (2) and (3) of section 61 shall apply in relation to the supersession of the State Board as they apply in relation to the supersession of the Central Board or a Joint Board by the Central Government.

63. Power of Central Government to make Rules

- (1) The Central Government may, simultaneously with the constitution of the Central Board, make rules in respect of the matters specified in sub-section (2) : Provided that when the Central Board has been constituted, no such rule shall be made, varied, amended or repealed without consulting the Board.
- (2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters namely :-
- the terms and conditions of service of the members (other than the chairman and member secretary) of the Central Board under sub-section (8) of section 5;
 - the intervals and the time and place at which meetings of the Central Board or of any committee thereof constituted under this Act, shall be held and the procedure to be followed at such meetings, including the quorum necessary for the transaction of business under section 8, and under sub-section (2) of section 9;
 - the fees and allowances to be paid to such members of a committee of the Central Board as are not members of the Board under sub-section (3) of section 9;
 - the manner in which and the purposes for which persons may be associated with the Central Board under sub-section (1) of section 10 and the fees and allowances payable to such persons;
 - the terms and conditions of service of the chairman and the member-secretary of the Central Board under sub-section (9) of section 5 and under sub-section (1) of section 12;
 - conditions subject to which a person may be appointed as a consulting engineer to the Central Board under sub-section (4) of section 12;
 - the powers and duties to be exercised and performed by the chairman and member-secretary of the Central Board;
 - omitted*
 - the form of the report of the Central Board analyst under sub-section (1) of section 22;
 - the form of the report of the Government analyst under sub-section (1) of section 22;
 - the form in which the time within which the budget of the Central Board may be prepared and forwarded to the Central Government under section 38;
 - the form in which the annual report of the Central Board may be prepared under section 39;
 - the form in which the accounts of the Central Board may be maintained under section 40;
 - the manner relating to the Central Board, including the powers and functions of that Board in relation to Union territories;
 - any other matter relating to the Central Board, including the powers and functions of the Board in relation to Union Territories;
 - any other matter which has to be, or may be, prescribed.
- (3) Every rule made by the Central Government under this Act shall be laid, as soon as may be after it is made, before each House of Parliament while it is in session for a total period of thirty days which may be

comprised in one session or in two or more successive sessions, and if, 5[before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule of both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

64. Power of State Government to make Rules

- (1) The State Government may, simultaneously with the constitution of the State Board, make rules to carry out the purposes of this Act in respect of matters not falling within the purview of section 63; Provided that when the State Board has been constituted, no such rule shall be made, varied, amended or repealed without consulting that Board.
- (2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely: --
 - (a) the terms and conditions of service of the members (other than the chairman and the member-secretary) of the State Board under sub-section (8) of section 5;
 - (b) the time and place of meetings of the State Board or of any committee of that Board constituted under this Act and the procedure to be followed at such meeting, including in quorum necessary for the transaction of business under section 8 and under sub-section (2) of section 9;
 - (c) the fees and allowances to be paid to such members of a committee of the State Board as are not members of the Board under sub-section (3) of section 9;
 - (d) the manner in which and the purpose for which persons may be associated with the State Board under sub-section (1) of section 10 and the fees and allowances payable to such persons;
 - (e) the terms and conditions of service of the chairman and the member secretary of the State Board under sub-section (9) of section 5 and under sub-section (1) of section 12;
 - (f) the conditions subject to which a person may be appointed as a consulting engineer to the State Board under sub-section (4) of section 12;
 - (g) the powers and duties to be exercised and discharged by the chairman and the member-secretary of the State Board;
 - (h) the form of the notice referred to in section 21;
 - (i) the form of the report of the State Board analyst under sub-section (3) of section 22.
 - (j) the form of the report of the Government analyst under sub- section (3) of section 22;
 - (k) the form of application for the consent of the State Board under sub-section (2) of section 25 and the particular it may contain;
 - (l) the manner in which inquiry under sub-section (3) of section 25 may be made in respect of an application for obtaining consent of the State Board and the matters to be taken in to account in granting or refusing such consent;
 - (m) the form and manner in which appeals may be filed, the fees payable in respect of such appeals and the procedure to be followed by the appellate authority in disposing of the appeals under sub-section (3) of section 28;
 - (n) the form in which and the time within which the budget of the State Board may be prepared and forwarded to the State Government under section 38;
 - (nn) the form in which the annual report of the State Board may be prepared under section 39;
 - (o) the form in which the accounts of the State Board may be maintained under sub-section (l) of section 40;
 - (oo) the manner in which notice of intention to make a complaint shall be given to the State Board or officer authorised by it under section 49;
 - (p) any other matter which has to be, or may be, prescribed.



**THE WATER (PREVENTION AND CONTROL OF POLLUTION) CESS ACT,
1977¹**

No. 36 of 1977

[7th December, 1977]

MINISTRY OF LAW, JUSTICE AND COMPANY AFFAIRS

(Legislative Department)

New Delhi, the 7th December, 1977

The following Act of Parliament received the assent of the President on the 7th December, 1977, and is hereby published for general information:--

An Act to provide for the levy and collection of a cess on water consumed by persons carrying on certain industries and by local authorities, with a view to augment the resources of the Central Board and the State Boards for the prevention and control of water pollution constituted under the Water (Prevention and Control of Pollution) Act, 1974.

Be it enacted by Parliament in the Twenty-eighth Year of the Republic of India as follows :--

1.SHORT TITLE, EXTENT, APPLICATION AND COMMENCEMENT

(1) This Act may be called the Water (Prevention and Control of Pollution) Cess Act, 1977.

(2) It extends to the whole of India except the State of Jammu and Kashmir.

(3) Subject to the provisions of sub-section (2), it applies to all the States to which the Water (Prevention and Control of Pollution) Act, 1974 applies and the Union territories.

(4) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint.

2.DEFINITIONS

In this Act, unless the context otherwise requires:--

- (a) "local authority" means a municipal corporation or a municipal council (by whatever name called) or a cantonment board or any other body, entrusted with the duty of supplying the water under the law by or under which it is constituted;
- (b) "prescribed" means prescribed by rules made under the Act;
- (c) "specified industry" means any industry specified in Schedule I;
- (d) words and expressions used but not defined in this Act and defined in the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) shall have the meanings respectively assigned to them in that Act.

3.LEVY AND COLLECTION OF CESS

(1) There shall be levied and collected a cess for the purpose of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) and utilisation thereunder.

(2) The cess under sub-section (1) shall be payable by--

- (a) every person carrying on any specified industry; and
- (b) every local authority,

and shall be calculated on the basis of water consumed by such person or local authority, as the case may be, for any of the purposes specified in column (1) of Schedule II, at such rate, not exceeding the rate specified in the corresponding entry in column (2) thereof, as the Central Government may, by notification in the Official Gazette, from time to time, specify.

²[(2A) Where any person carrying on any specified industry or any local authority consuming water for domestic purpose liable to pay cess fails to comply with any of the provisions of section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or an of the standards laid so down by the Central Government under the Environment (Protection) Act, 1986, cess shall be and payable at such rate, not exceeding the rate specified in column (3) of Schedule II, as the Central Government may, by notification in the Official Gazette, from time to time specify.]

(3) Where any local authority supplies water to any person carrying on any specified industry or to any other local authority and such person or other local authority is liable to

pay cess under sub-section (2) or sub-section (2A) in respect of the water so supplied, then, notwithstanding anything contained in that sub-section, the local authority first mentioned shall not be liable to pay such cess in respect of such water.

Explanation--For the purpose of this section and section 4, "consumption of water" includes supply of water.

4. AFFIXING OF METERS

(1) For the purpose of measuring and recording the quantity of water consumed, every person carrying on any specified industry and every local authority shall affix meters of such standards and at such places as may be prescribed and it shall be presumed that the quantity indicated by the meter has been consumed by such person or local authority, as the case may be, until the contrary is proved.

(2) Where any person or local authority fails to affix any meter as required by sub-section (1), the Central Government shall after notice to such person or local authority, as the case may be, cause such meter to be affixed and the cost of such meter together with the cost for affixing the meter may be recovered from such person or local authority by the Central Government in the same manner as an arrear of land revenue.

5. FURNISHING OF RETURNS

³[(1)] Every person carrying on any specified industry and every local authority, liable to pay the cess under section 3, shall furnish such returns, in such form at such intervals and containing such particulars to such officer or authority, as may be prescribed.

⁴[(2) If a person carrying on any specified industry or a local authority, liable to pay the cess under section 3, fails to furnish any return under sub-section (1), the officer or the authority shall give a notice requiring such person or local authority to furnish such return before such date as may be specified in the notice.]

6. ASSESSMENT OF CESS

(1) The officer of authority to whom or which the return has been furnished under section 5 shall, after making or causing to be made such inquiry as he or it thinks fit and after satisfying himself or itself that the particulars stated in the return are correct, by order,

assess the amount of cess payable by the concerned person carrying or any specified industry or local authority, as the case may be.

⁵[(1A) If the return has not been furnished to the officer or authority under sub-section (2) of section 5, he or it shall, after making or causing to be made such inquiry as he or it thinks fit, by order, assess the amount of cess payable by the concerned person carrying on any specified industry or local authority, as the case may be.]

(2) An order of assessment made under sub-section (1) or sub-section (1A) shall specify the date within which the cess shall be paid to the State Government.

(3) A copy each of the order of assessment made under sub-section (1) or sub-section (1A) shall be sent to the person or, as the case may be, to the local authority concerned and to the State Government.

(4) The State government shall, through such of its officers or authorities as may be specified by it in this behalf by notification in the Official Gazette, collect the cess from the person or local authority liable to pay the same and pay the amount so collected to the Central Government in such manner and within such time as may be prescribed.

7. REBATE

Where any person or local authority, liable to pay the cess under this Act, installs any plant for the treatment of sewage or trade effluent, such person or local authority shall from such date as may be prescribed, be entitled to a rebate of twenty five per cent of the cess payable by such person or, as the case may be, local authority.

⁶[Provided that a person or local authority shall not be entitled to a rebate, if he or it--

(a) consumes water in excess of the maximum quantity as may be prescribed in this behalf for any specified industry or local authority; or

(b) fails to comply with any of the provisions of section 25 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974) or any of the standards laid down by the Central Government under the Environment (Protection) Act, 1986 (29 of 1986).]

8. CREDITING PROCEEDS OF CESS TO CONSOLIDATED FUNDS OF INDIA AND APPLICATION THEREOF

The proceeds of the cess levied under section 3 shall first be credited to the Consolidated Fund of India and the Central Government may, if Parliament by appropriation made by law in this behalf, so provides, pay to the Central Board and every State Board, from time to time, from out of such proceeds, after deducting the expenses on collection, such sums of money as it may think fit for being utilised under the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974)

Provided that while determining the sum of money to be paid to any State Board under this section, the Central Government shall have regard to the amount of cess collected by the State Government concerned under sub-section (4) of section 6.

Explanation-For the purpose of this section, "State Board" includes a Joint Board, if any, constituted under section 13 of the Water (Prevention and Control of Pollution) Act, 1974 (6 of 1974).

9. POWER OF ENTRY

Any officer or authority of the State Government specially empowered in this behalf by that Government may,-

- (a) with such assistance, if any, as he or it may think fit, enter at any reasonable time any place which he or it considers it necessary to enter for carrying out the purposes of this Act including the testing of the correctness of the meters affixed under section 4;
- (b) do within such place anything necessary for the proper discharge of his or its duties under this Act; and
- (c) exercise such other powers as may be prescribed.

10. INTEREST PAYABLE FOR DELAY IN PAYMENT OF CESS

If any person carrying on any specified industry or any local authority fails to pay any amount of cess payable under section 3 to the State government within the date specified in the order of assessment made under section 6, such person or local authority, as the case may be, shall be liable to pay ⁷[interest on the amount to be paid at the rate of two

per cent for every month or part of a month comprised in the period from the date on which such payment is due till such amount is actually paid].

11. PENALTY OF AMOUNT DUE UNDER THE ACT

If any amount of cess payable by any person carrying on any specified industry or any Local authority under section 3 is not paid to the State (government within the date specified in the order of assessment made under section 6, it shall be deemed to be in arrears and the authority prescribed in this behalf may, after such inquiry as it deems fit, impose on such person Of, as the case may be, Local authority, a penalty not exceeding the amount of cess in arrears:

Provided that before imposing any such penalty, such person or, as the case may be, the local authority shall be given a reasonable opportunity of being heard and if after such hearing the said authority is satisfied that the default was for any good and sufficient reason, no penalty shall be imposed under this section.

12. RECOVERY OF AMOUNT DUE UNDER THE ACT

Any amount due under this Act (including any interest or penalty payable under section 10 or section 11, as the case may be) from any person carrying on any specified industry or from any local authority may be recovered by the Central Government in the same manner as an arrear of land revenue.

13. APPEALS

(1) Any person or local authority aggrieved by an order of assessment made under section 6 or by an order imposing penalty made under section 11 may, within such time as may be prescribed, appeal to such authority in such form and in such manner as may be prescribed.

(2) Every appeal preferred under sub-section (I) shall be accompanied by such fees as may be prescribed.

(3) After the receipt of an appeal under sub-section (1), the appellate authority shall, after giving the appellant an opportunity of being heard in the matter, dispose of the appeal as expeditiously as possible.

(4) Every order passed in appeal under this section shall be final and shall not be called in question in any court of law.

14. PENALTY

(1) Whoever, being under an obligation to furnish a return under this Act, furnishes any return knowing, or having reason to believe, the same to be false shall be punishable with imprisonment which may extend to six months or with fine which may extend to one thousand rupees or with both.

(2) Whoever, being liable to pay cess under this Act willfully or intentionally evades or attempts to evade the payment of such cess shall be punishable with imprisonment which may extend to six months or with fine which may extend to one thousand rupees or with both.

(3) No court shall take cognizance of an offence punishable under this section save on a complaint made by or under the authority of the Central Government.

15. OFFENCES BY COMPANIES

(1) Where an offence under this Act has been committed by a company, every person who, at the time the offence was committed, was in charge of and was responsible to, the company for the conduct of the business of the company as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

Explanation-For the purpose of this section,-

(a) "company" means any body corporate and includes a firm or other association of individuals; and

(b) "director", in relation to firm, means a partner in the firm.

16. POWER TO AMEND SCHEDULE-I

(1) The Central Government may, by notification in the Official Gazette, add to Schedule I any industry having regard to the consumption of water in the carrying on of such industry and the consequent discharge thereof resulting in pollution of any stream and thereupon Schedule I shall, subject to the provisions of sub-section (2), be deemed to be amended accordingly.

(2) Every such notification shall be laid before each House of Parliament, if it is sitting, as soon as may be after the issue of the notification and if it is not sitting, within seven days of its re-assembly and the Central Government shall seek the approval of Parliament to notification by a resolution moved within a period of fifteen days beginning with the day on which the notification is so laid before the House of the People, and if Parliament makes any modification in the notification or directs that the notification should cease to have effect, the notification shall thereafter have effect only in such modified form or be of no effect, as the case may be, but without prejudice to the validity of anything previously done thereunder.

17. POWER TO MAKE RULES

(1) The Central Government may make rules for carrying out the purposes of this Act.

(2) Without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:-

(a) the standards of the meters to be affixed and the places at which such meters are to be affixed under sub-section (I) of section 4;

(b) the returns to be furnished under section 5, the form in which and the intervals at which such returns are to be furnished, the particulars which such returns contain and the officer or authority to who or which such returns shall be furnished;

- (c) the manner in which and the time within which the cess collected shall be paid to the Central Government under sub-section (4) of section 6;
- (d) the date from which any person or local authority liable to pay cess shall be entitled to the rebate ⁸[and the maximum quantity of water in excess of consumption whereof any person or local authority shall not be entitled to the rebate] under section 7.
- (e) the powers which may be exercised by the officer or authority under section 9;
- (f) the authority which may impose penalty under section 11;
- (g) the authority to which an appeal may be filed under sub-section (I) of section 13 and the time within which and the form and manner in which such appeal may be filed;
- (h) the fees which shall accompany an appeal under sub-section (2) of section 13; and
- (i) any other matter which has to be or may be prescribed.
- (3) Every rule made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament while it is in session for a total period of thirty days which may be comprised in one session or in two successive sessions and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

SCHEDULE I

[See section 2(c)]

1. Ferrous metallurgical industry.
2. Non-ferrous metallurgical industry.
3. Mining industry.
4. Ore processing industry.

5. Petroleum industry.
6. Petro-chemical industry
7. Chemical industry.
8. Ceramic industry.
9. Cement industry.
10. Textile industry. ⁹[including cotton synthetic and semi-synthetic fibres manufactured from these fibres];
11. Paper industry.
12. Fertilizer industry.
13. Coal (including coke) industry.
14. Power (thermal, diesel) and ¹⁰[Hydel] generating industry
15. Processing of animal or vegetable products industry ¹¹[including processing of milk, meat, hides and skins, all agricultural products and their wastes].
16. ¹²[Engineering industry]

¹³**[SCHEDULE II]**

(See section 3)

| Purpose for which water rate under | Maximum rate under | Maximum |
|---------------------------------------|-------------------------------------|------------------------------|
| is consumed (2A) of | sub-section (2) of section 3 | sub-section section 3 |
| <hr/> | | |
| 1. Industrial cooling, spraying | One and a half paise per | Two and one-fourth |

| | | |
|---|---------------------------|-----------------------|
| in mine pits or boiler feeds | per kilo litre | |
| paise per kilo litre. | | |
| 2. Domestic purpose | Two paise per kilo litre | Three paise |
| per kilo litre | | |
| 3. Processing whereby water | Four paise per kilo litre | Seven and a |
| half paise | | |
| gets polluted and the pollutants are | | per kilo litre. |
| easily biodegradable and are toxic. | | |
| Processing whereby water | Five paise per kilo litre | Nine and a half paise |
| gets polluted and the pollutants are | | per kilo litre. |
| not easily biodegradable and are toxic. | | |

¹ Source: The Gazette of India, Extraordinary, Part II, Section 1, dated 7th December, 1977.

² Inserted by Act No. 53 of 1991, s. 2. w.e.f. 26-1 1992

³ Renumbered by Act No. s.3 of 1991, s. 3. w.e.f. 26.1.1992

⁴ Inserted by *ibid.*, s. 3.wef 26.1.1992

⁵ Inserted by Act No. 53 of 1991, s. 4.

⁶ Inserted by Act No. 53 of 1991, s. 5. w.e.f. 26.1.1992

⁷ Substituted by Act No. 53 of 1991, s. 6 w.e.f. 26.1.1W2

⁸ Inserted by Act No. 53 of 1991, s. 7. w.e.f. 26.1.1992

⁹ Added by Gazette Notification No. G.S.R. 14{E) dated 02.01.1992

¹⁰ Substituted Vide Notification No. G.S.R 377(E) dated 16.04.1993

¹¹ Added by Gazette Notification No. G.S.R. 14(E) dated 02.01.1992

¹² Added Vide Notification No. G.S.R. 377(E) dated 16.04.1993

¹³ Substituted by Act No. 53 of 1991, s.8 w.e.f. 26.1.1992

NOTIFICATION

New Delhi, the 16th January, 1980

G.S.R. 190.-In exercise of the powers conferred by clause (1) of article 258 of the Constitution, the President, with the consent of the State Governments concerned hereby entrusts to the Governments of each of the States of Andhra Pradesh, Bihar, Gujarat, Haryana, Himachal Pradesh, Kerala, Madhya Pradesh, Punjab, Rajasthan, Uttar Pradesh and West Bengal, the functions of the Central Government under sub-section (2) of section 4, section 12 and sub-section (3) of section 14 of the Water (Prevention and Control of Pollution) Cess Act, 1977 (36 of 1977) subject to the conditions that notwithstanding this entrustment the Central Government may itself exercise any of the said functions should deem fit to do so in any case.

[No. Q-17013/2/78-EPC]

J.N. KALIA, Under Secy.

MINISTRY OF ENVIRONMENT AND FORESTS

NOTIFICATION

New Delhi, the 26th January, 1992

S.O.78(E).-In exercise of the powers conferred by sub- section (2) of section 1 of the Water (Prevention and Control of Pollution) Cess (Amendment) Act, 1991 (53 of 1991), the Central Government hereby appoints the 26th day of January,1992 as the date on which the said Act shall come into force.

[No. 1(14)/91-PL]

MUKUL SANWAL, Jt. Secy.

The Forest (Conservation) Act 1980

An Act to provide for the conservation of forests and for matters connected therewith or ancillary or incidental thereto.

Be it enacted by Parliament in the Thirty-first year of the Republic of India as follows;

1. Short title, extent and commencement: (1) This Act may be called the Forest (Conservation) Act 1980.

(2) It extends to the whole of India except the State of Jammu and Kashmir.

(3) It shall be deemed to have come into force on the 25th day of October 1980.

With a view to checking further deforestation, the Forest (Conservation) Ordinance, 1980 had been promulgated on 25th October, 1980. The present Act has replaced the said Ordinance and contains similar provisions. The Act extends to the whole of India except the State of Jammu and Kashmir and came into force on 25th October, 1980.

2. Restriction on the de-reservation of forests or use of forest land for non-forest purpose: Notwithstanding anything contained in any other law for the time being in force in a State, no State Government or other authority shall make, except with the prior approval of the Central Government, any order directing-

- (i) that any reserved forest (within the meaning of the expression "reserved forest" in any law for the time being in force in that State) or any portion thereof, shall cease to be reserved;
- (ii) that any forest land or any portion thereof may be used for any non-forest purposes;

1. Received the assent of the President on 27-12-1980 published in the Gazette of India, (Extra), Part II, Section 1, dated 27-12-1980.

- ¹[(iii) that any forest land or any portion thereof may be assigned by way of lease or otherwise to any private person or to any authority, corporation, agency or any other Organisation not owned, managed or controlled by Government.
- (iv) that any forest land or any portion thereof may be cleared of trees which have grown naturally in that land or portion, for the purpose of using it for afforestation.

²**[Explanation:-** For the purpose of this section "non-forest purpose" means the breaking or clearing of any forest land or portion thereof for-

- (a) the cultivation of tea, coffee, species, rubber, palms, oil-bearing plants, horticultural crops of medicinal plants;
- (b) any purpose other than reafforestation, but does not include any work relating or ancillary to conservation, Development and management of forests and wildlife, namely, the establishment of check-posts, fire lines, wireless communications and Construction of fencing, bridges and culverts, dams, waterholes, trench marks, boundary marks, pipelines or other like purposes.]

3. Constitution of Advisory Committee:- The Central Government may constitute a Committee consisting of such number of persons as it in may deem fit to advise that Government with regard to-

- (i) the grant of approval under section 2; and

(ii) any other matter connected with the conservation of forests which may be referred to it by the Central Government.

(iii)

³**[3A. Penalty for contravention of the provisions of the Act:-** Whenever contravenes or abets the contravention of any of the provisions of section 2, shall be punishable with simple imprisonment for a period which may extend to fifteen days.

-
1. Ins. by Act No. 69 of 1988 (w.e.f. 15-3-1989)
 2. Subs. by Act No. 69 of 1988 (w.e.f. 15-3-1989)
 3. Section 3A & 3B inserted by Act No. 69 of 1988 (w.e.f. 15-3-1989)
-

3B. Offences by authorities and Government departments:- (1) Where any offence under this Act has been committed.

- (a) by any department of Government the head of the department; or
- (b) by any authority, every person who, at the time the offence was committed, was directly in charge of and was responsible to, the authority for the conduct of the business of the authority was well as the authority; shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly.

Provided that nothing contained in this sub-section shall render the head of the department or any person referred to the clause (b), liable to any punishment if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

- (2) Notwithstanding anything contained in sub-section (1), where an offence punishable under the Act has been committed by a department of Government or any authority referred to in clause (b) of sub-section (1) and it is proved that the offence has been committed with the consent or connivance of; or is attributable to any neglect on the part of any officer, other than the head of the department or in the case of an authority, any person other than the persons referred to in clause (b) of sub-section (1), such officer or persons shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.]

4. Power to make rules: (1) The Central Government may by notification in the Official Gazette, makes rules for carrying out the provisions of this Act.

- (2) Every rule made under this Act shall be laid as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

5. -Repeal and saving:- (1) The Forest (Conservation) Ordinance, 1980 (17 of 1980), is hereby repealed.

- (2) Notwithstanding such repeal, anything done or any action taken under the provisions of the said Ordinance shall be deemed to have been done or taken under the corresponding provisions of this Act.

COASTAL ZONE REGULATION (CRZ) NOTIFICATION-
WITHDRAWAL TO BENEFIT WHOM?

1. Government of India proposes to issue a draft notification-coastal Management Zone Notification 2006-in supercession of CRZ notification 1991 as amended from time to time. It is high time to analyse who benefits from the withdrawal of the existing CRZ notification framed for the purpose of conserving and protecting the Coastal Environment and Regulating activities in the coastal areas. The fisherfolk apprehend that the coastal lands would be largely diverted for unsustainable developmental purposes (sand mining, Tourism, Special Economic zone, Ports etc.) with the introduction of CMZ notification.

2. CRZ Notification

In view of the degradation of coastal environment and uncontrolled construction activities along the Coastal areas, MOEF issued the CRZ notification declaring coastal stretches as Coastal regulation Zones and regulating activities in the CRZ. As per this 500 M on the landward side from the High Tide Line and the land area between the Low Tide Line and High Tide Line including 500 M along the tidal influenced water bodies subject to minimum of 100M on the width of the water body whichever is less is declared as CRZ areas. Based on several ecological parameters, the CRZ areas are classified into four categories namely CRZ I (Sensitive and intertidal) CRZ II (urban or developed), CRZ III (Rural or Undeveloped) and CRZ IV (Andaman, Nicobar and Lakshadweep islands). This notification has clearly regulated activities in the CRZ area prohibiting unwarranted activities and permitting essential activities.

The coastal States were instructed to prepare Coastal Zone Management Plan and submit to Government of India for approval. None of the States have prepared these plans as envisaged. Government of Kerala through CESS have prepared a Coastal Zone Management Plan Map instead of a Coastal Zone Management Plan.

The CRZ notification has been generally accepted by the Coastal population as there has been stringent provisions in the notification incorporated against the degradation

of the coast. Most of the fishermen and fishermen organizations are satisfied with the present CRZ notification as it safeguards and protects the traditional rights of the fisherfolk who are dependent on the sea for their livelihood. Still they were deeply concerned on the denial of the right to housing in the coastal villages, settlements or fishing hamlets with legal title deed even though CRZ notification had theoretically supported the traditional rights of fishermen.

3. Amendments

Since the introduction of CRZ notification, this has been amended 19 times permitting more activities within the CRZ area mainly because of the pressure from Tourism and Industrial lobbies. Some of the amendments have been squashed by the Supreme Court indicating they are against the Spirit of CRZ notification. Hence it may be presumed that the withdrawal of CRZ and introduction of CMZ with diluted provisions might be due to the pressure from interested groups.

4. Swaminathan Committee Report

In July 2004 MOEF set up an expert Committee headed by Prof.M.S.Swaminathan to carry out a comprehensive review of the CRZ notification. The committee submitted its report in Feb 2005. The Committee recommended to withdraw the regulation concept and to introduce a larger concept of integrated management by replacing Coastal Regulation Zones to Coastal Management Zones based on Coastal Vulnerability and set back area instead of 500 M Zonation.

5. Draft Notification of CMZ

Accepting the recommendation of Swaminathan Committee, Government of India has now published the draft of the draft notification of CMZ. It is likely to publish the draft notification shortly in the Gazette by Government of India so that this legislation would be a reality within 60 days.

6. Concerns from Fisheries Sector.

- i) Swaminathan Committee has observed that neither Government of India nor the State Governments have taken serious note of the implementation of CRZ. No governments have prepared the Coastal Zone Management plan as envisaged. Most of the State Governments has not yet demarcated the HTL/LTL. The logic in recommending to withdraw such a legislation is not clearly understood. Instead a better mechanism would have been suggested to enforce the provision of the CRZ legislation. What is the guarantee that the proposed CMZ legislation would be implemented/enforced to benefit the Coastal people.
- ii) The Committee has observed that CRZ legislation has established and recognized the traditional rights of the fishing community. The measures emphasized under CRZ have positive impact on fisheries which ensure the economic development of Coastal areas. Even though the State Governments failed to implement the provision of the CRZ notification acknowledging the rights of the fishing community, the coastal people have generally accepted the CRZ legislation. There is no such mention of accepting the traditional rights of the main stake holders in the proposed CMZ legislation. Is it advisable to withdraw a legislation which was accepted by the main stake holders?
- iii) The Committee recommends the expansion of Coastal Zone to include the territorial waters. With this system the open sea upto 12 nautical miles would be classified under either CMZI or CMZII, both of them have got severe restrictive provisions. This is major implication for livelihood of fishing community. The rights of fishing communities to fish even in CMZI areas should be protected and promoted. The expansion of Coastal Zone the territorial sea cannot be accepted till clear modalities are worked out on the utilization of open sea under CMZ legislation. It need to be clarified that no part of the sea shall be diverted for any other purpose other than fishing.
- iv) The zonation proposed by Swaminathan Committee cannot be accepted by a state like Kerala where the population density is high. According to the

suggestion by the Committee almost all the coastal area of Kerala would fall under CMZII. As there is no stringent provisions to restrict the unsustainable developmental activities in this zone, large areas of coastal zone of the state would be diverted for activities - Declared tourism areas, Mining Sites, approved industrial estates, Special Economic Zone, Defence Installations, Power Plants etc.

- v) No time frame is suggested for the full implementation of CMZ in the Swaminathan Committee Report. A time may come another Committee would be appointed to review CMZ and they would suggest that CMZ legislation was ineffective and a fresh legislation would be introduced. In the absence of proper legislations the interested groups can continue violation and unsustainable developmental activities. There is an indication in the report that construction upto 2004 in the Coastal areas can be accepted.
- vi) Government of India while appointing the Swaminathan Committee in its TOR has suggested only to recommend necessary amendments to make CRZ legislation more effective. In contrary, Swaminathan Committee has suggested to withdraw CRZ legislation. The views of the Committee, cannot be accepted as much dilution has been suggested in the spirit of protecting the coastal areas of the country.

6. Further steps requested

- i) Government of India should bring out a policy note on CMZ instead of a draft notification on CMZ and circulated for a wide range of discussion.
- ii) Discussion/Consultation with State Governments, Coastal Panchayaths, Government Departments, Fisher folk organizations before any decision is taken on Swaminathan Committee Report.
- iii) The positive suggestion in the Swaminathan Committee can be incorporated in the CRZ notification in the form of amendments so that CRZ legislation is enforced in its true spirit.

THE ENVIRONMENT (PROTECTION) ACT, 1986



MINISTRY OF ENVIRONMENT & FORESTS
DEPARTMENT OF ENVIRONMENT, FORESTS & WILDLIFE
GOVERNMENT OF INDIA
NEW DELHI

The Environment (Protection) Act, 1986

No. 29 OF 1986

[23rd May, 1986]

An Act to Provide for the Protection and Improvement of Environment and for Matters Connected therewith.

WHEREAS decisions were taken at the United Nations Conference on the Human Environment held at Stockholm in June, 1972, in which India participated, to take appropriate steps for the protection and improvement of human environment;

AND WHEREAS it is considered necessary further to implement the decisions aforesaid in so far as they relate to the protection and improvement of environment and the prevention of hazards to human beings, other living creatures, plants and property;

BE it enacted by Parliament in the Thirty-seventh Year of the Republic of India as follows:

CHAPTER I

PRELIMINARY

1. (1) This Act may be called the Environment (Protection) Act, 1986.

(2) It extends to the whole of India.

(3) It shall come into force on such date as the Central Government may, by notification in the Official Gazette, appoint and different dates may be appointed for different provisions of this Act and for different areas.

Short
title, ex-
tent and
com-
mence-
ment.

Definitions.

2. In this Act, unless the context otherwise requires: —

- (a) "environment" includes water, air and land and the inter-relationship which exists among and between water, air and land, and human beings, other living creatures, plants, micro-organism and property;
- (b) "environmental pollutant" means any solid, liquid or gaseous substance present in such concentration as may be, or tend to be, injurious to environment;
- (c) "environmental pollution" means the presence in the environment of any environmental pollutant;
- (d) "handling", in relation to any substance, means the manufacture, processing, treatment, package, storage, transportation, use, collection, destruction, conversion, offering for sale, transfer or the like of such substance;
- (e) "hazardous substance" means any substance or preparation which, by reason of its chemical or physico-chemical properties or handling, is liable to cause harm to human beings, other living creatures, plants, micro-organism, property or the environment;
- (f) "occupier", in relation to any factory or premises, means a person who has control over the affairs of the factory or the premises and includes, in relation to any substance, the person in possession of the substance;
- (g) "prescribed" means prescribed by rules made under this Act.

CHAPTER II

GENERAL POWERS OF THE CENTRAL GOVERNMENT

Power
of Central
Government
to take
measures to

3. (1) Subject to the provisions of this Act, the Central Government shall have the power to take all such measures as it deems necessary or expedient for the purpose of protecting and improving the quality of the environment and preventing, controlling and abating environmental pollution.

(2) In particular, and without prejudice to the generality of the provisions of sub-section (i), such measures may include measures with respect to all or any of the following matters, namely: —

protect
and im-
prove en-
viron-
ment.

- (i) co-ordination of actions by the State Governments, officers and other authorities: —
 - (a) under this Act, or the rules made thereunder; or
 - (b) under any other law for the time being in force which is relatable to the objects of this Act;
- (ii) planning and execution of a nation-wide programme for the prevention, control and abatement of environmental pollution;
- (iii) laying down standards for the quality of environment in its various aspects;
- (iv) laying down standards for emission or discharge of environmental pollutants from various sources whatsoever;

Provided that different standards for emission or discharge may be laid down under this clause from different sources having regard to the quality or composition of the emission or discharge of environmental pollutants from such sources;

- (v) restriction of areas in which any industries, operations, or processes or class of industries, operations or processes shall not be carried out or shall be carried out subject to certain safeguards;
- (vi) laying down procedures and safeguards for the prevention of accidents which may cause environmental pollution and remedial measures for such accidents;
- (vii) laying down procedures and safeguards for the handling of hazardous substances;

4. (1) Without prejudice to the provisions of sub-section (3) of section 3, the Central Government may appoint officers with such designations as it thinks fit for the purposes of this Act and may entrust to them such of the powers and functions under this Act as it may deem fit.

Appointment of officers and their powers and functions.

(2) The officers appointed under sub-section (1) shall be subject to the general control and direction of the Central Government or, if so directed by that Government, also of the authority or authorities, if any, constituted under sub-section (3) of section 3 or of any other authority or officer.

5. Notwithstanding anything contained in any other law but subject to the provisions of this Act, the Central Government may, in the exercise of its powers and performance of its functions under this Act, issue directions in writing to any person, officer or any authority and such person, officer or authority shall be bound to comply with such directions.

Power to give directions

Explanation:—For the avoidance of doubts, it is hereby declared that the power to issue directions under this section includes the power to direct:—

- (a) the closure, prohibition or regulation of any industry, operation or process; or
- (b) stoppage or regulation of the supply of electricity or water or any other service.

6. (1) The Central Government may, by notification in the Official Gazette, make rules in respect of all or any of the matters referred to in section 3.

Rules to regulate environmental pollution.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely:—

- (a) the standards of quality of air, water or soil for various areas and purposes;
- (b) the maximum allowable limits of concentration of various environmental pollutants (including noise) for different areas;
- (c) the procedures and safeguards for the handling of hazardous substances;

- (d) the prohibition and restrictions on the handling of hazardous substances in different areas;
- (e) the prohibition and restrictions on the location of industries and the carrying on of processes and operations in different areas;
- (f) the procedures and safeguards for the prevention of accidents which may cause environmental pollution and for providing for remedial measures for such accidents.

CHAPTER III

PREVENTION, CONTROL AND ABATEMENT OF ENVIRONMENTAL POLLUTION

Persons carrying on industry operation, etc., not to allow emission or discharge of environmental pollutants in excess of the standards.

7. No person carrying on any industry, operation or process shall discharge or emit or permit to be discharged or emitted any environmental pollutant in excess of such standards as may be prescribed.

Persons handling hazardous substances to comply with procedural safeguard

8. No person shall handle or cause to be handled any hazardous substance except in accordance with such procedure and after complying with such safeguards as may be prescribed.

9. (1) Where the discharge of any environmental pollutant in excess of the prescribed standards occurs or is apprehended to occur due to any accident or other unforeseen act or event, the person responsible for such discharge and the person in charge of the place at which such discharge occurs or is apprehended to occur shall be bound to prevent or mitigate the environmental pollution caused as a result of such discharge and shall also forthwith:—

- (a) intimate the fact of such occurrence or apprehension of such occurrence; and
- (b) be bound, if called upon, to render all assistance, to such authorities or agencies as may be prescribed.

(2) On receipt of information with respect to the fact or apprehension of any occurrence of the nature referred to in sub-section (1), whether through intimation under that sub-section or otherwise, the authorities or agencies referred to in sub-section (1) shall, as early as practicable, cause such remedial measures to be taken as are necessary to prevent or mitigate the environmental pollution.

(3) The expenses, if any, incurred by any authority or agency with respect to the remedial measures referred to in sub-section (2), together with interest (at such reasonable rate as the Government may, by order, fix) from the date when a demand for the expenses is made until it is paid may be recovered by such authority or agency from the person concerned as arrears of land revenue or of public demand.

10. (1) Subject to the provisions of this section, any person empowered by the Central Government in this behalf shall have a right to enter, at all reasonable times with such assistance as he considers necessary, any place:—

- (a) for the purpose of performing any of the functions of the Central Government entrusted to him;
- (b) for the purpose of determining whether and if so in what manner, any such functions are to be performed or whether any provisions of this Act or the rules made thereunder or any notice, order, direction or authorisation served, made, given or granted under this Act is being or has been complied with;

Furnishing of information to authorities and agencies in certain cases.

Powers of entry and inspection.

- (c) for the purpose of examining and testing any equipment, industrial plant, record, register, document or any other material object or for conducting a search of any building in which he has reason to believe that an offence under this Act or the rules made thereunder has been or is being or is about to be committed and for seizing any such equipment, industrial plant, record, register, document or other material object if he has reasons to believe that it may furnish evidence of the commission of an offence punishable under this Act or the rules made thereunder or that such seizure is necessary to prevent or mitigate environmental pollution.

(2) Every person carrying on any industry, operation or process or handling any hazardous substance shall be bound to render all assistance to the person empowered by the Central Government under sub-section (1) for carrying out the functions under that sub-section and if he fails to do so without any reasonable cause or excuse, he shall be guilty of an offence under this Act.

(3) If any person wilfully delays or obstructs any person empowered by the Central Government under sub-section (1) in the performance of his functions, he shall be guilty of an offence under this Act.

2 of 1974.

(4) The provisions of the Code of Criminal Procedure, 1973, or, in relation to the State of Jammu and Kashmir, or any area in which that Code is not in force, the provisions of any corresponding law in force in that State or area shall, so far as may be, apply to any search or seizure under this section as they apply to any search or seizure made under the authority of a warrant issued under section 94 of the said Code or, as the case may be, under the corresponding provision of the said law.

Power to
take sample
and proce-
dure to be
followed in
connection
therewith

11. (1) The Central Government or any officer empowered by it in this behalf, shall have power to take, for the purpose of analysis, samples of air, water, soil or other substance from any factory, premises or other place in such manner as may be prescribed.

(2) The result of any analysis of a sample taken under sub-section (1) shall not be admissible in evidence in any legal proceeding unless the provisions of the sub-sections (3) and (4) are complied with.

(3) Subject to the provisions of sub-section (4), the person taking the sample under sub-section (1) shall:—

- (a) serve on the occupier or his agent or person in charge of the place, a notice, then and there, in such form as may be prescribed, of his intention to have it so analysed;
- (b) in the presence of the occupier or his agent or person, collect a sample for analysis.
- (c) cause the sample to be placed in a container or containers which shall be marked and sealed and shall also be signed both by the person taking the sample and the occupier or his agent or person;
- (d) send without delay, the container or the containers to the laboratory established or recognised by the Central Government under section 12.

(4) When a sample is taken for analysis under sub-section (1) and the person taking the sample serves on the occupier or his agent or person, a notice under clause (a) of sub-section (3), then:—

- (a) in a case where the occupier, his agent or person wilfully absents himself, the person taking the sample shall collect the sample for analysis to be placed in a container or containers which shall be marked and sealed and shall also be signed by the person taking the sample, and
- (b) in a case where the occupier or his agent or person present at the time of taking the sample refuses to sign the marked and sealed container or containers of the sample as required under clause (c) of sub-section (3), the marked and sealed container or containers shall be signed by the person taking the samples,

and the container or containers shall be sent without delay by the person taking the sample for analysis to the laboratory established or recognised under section 12 and such person shall inform the Government Analyst appointed or recognised under section 13 in writing, about the wilful absence of the occupier or his agent or person, or, as the case may be, his refusal to sign the container or containers.

12. (1) The Central Government may, by notification in the Official Gazette:—

- 222) establish one or more environmental laboratories;

Environmental
labora-
tories.

- (b) recognise one or more laboratories or institutes as environmental laboratories to carry out the functions entrusted to an environmental laboratory under this Act.

(2) The Central Government may, by notification in the Official Gazette, make rules specifying:—

- (a) the functions of the environmental laboratory;
- (b) the procedure for the submission to the said laboratory of samples of air, water, soil or other substance for analysis or tests, the form of the laboratory report thereon and the fees payable for such report;
- (c) such other matters as may be necessary or expedient to enable that laboratory to carry out its functions.

Government
Analysts.

13. The Central Government may by notification in the Official Gazette, appoint or recognise such persons as it thinks fit and having the prescribed qualifications to be Government Analysts for the purpose of analysis of samples of air, water, soil or other substance sent for analysis to any environmental laboratory established or recognised under sub-section (1) of section 12.

Reports of
Government
Analysts.

14. Any document purporting to be a report signed by a Government analyst may be used as evidence of the facts stated therein in any proceeding under this Act.

Penalty for
contraven-
tion of the
provisions
of the Act
and the
rules,
orders
and
directions.

15. (1) Whoever fails to comply with or contravenes any of the provisions of this Act, or the rules made or orders or directions issued thereunder, shall, in respect of each such failure or contravention, be punishable with imprisonment for a term which may extend to five years or with fine which may extend to one lakh rupees, or with both, and in case the failure or contravention continues, with additional fine which may extend to five thousand rupees for every day during which such failure or contravention continues after the conviction for the first such failure or contravention.

(2) If the failure or contravention referred to in sub-section (1) continues beyond a period of one year after the date of conviction, the offender shall be punishable with imprisonment for a term which may extend to seven years.

Offences by
companies

16. (1) Where any offence under this Act has been committed by a company, every person who, at the time the offence was committed,

was directly in charge of, and was responsible to, the company for the conduct of the business of the company, as well as the company, shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Provided that nothing contained in this sub-section shall render any such person liable to any punishment provided in this Act, if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a company and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any director, manager, secretary or other officer of the company, such director, manager, secretary or other officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

Explanation—For the purposes of this section:—

- (a) "company" means any body corporate and includes a firm or other association of individuals;
- (b) "director", in relation to a firm, means a partner in the firm.

17. (1) Where an offence under this Act has been committed by any Department of Government, the Head of the Department shall be deemed to be guilty of the offence and shall be liable to be proceeded against and punished accordingly:

Offences by
Government
Depart-
ments.

Provided that nothing contained in this section shall render such Head of the Department liable to any punishment if he proves that the offence was committed without his knowledge or that he exercised all due diligence to prevent the commission of such offence.

(2) Notwithstanding anything contained in sub-section (1), where an offence under this Act has been committed by a Department of Government and it is proved that the offence has been committed with the consent or connivance of, or is attributable to any neglect on the part of, any officer, other than the Head of the Department, such officer shall also be deemed to be guilty of that offence and shall be liable to be proceeded against and punished accordingly.

CHAPTER IV

MISCELLANEOUS

Protection
of action
taken in
good faith.

18. No suit, prosecution or other legal proceeding shall lie against the Government or any officer or other employee of the Government or any authority constituted under this Act or any member, officer or other employee of such authority in respect of anything which is done or intended to be done in good faith in pursuance of this Act or the rules made or orders or directions issued thereunder.

Cognizance
of offences.

19. No court shall take cognizance of any offence under this Act except on a complaint made by:—

- (a) the Central Government or any authority or officer authorised in this behalf by that Government; or
- (b) any person who has given notice of not less than sixty days, in the manner prescribed, of the alleged offence and of his intention to make a complaint, to the Central Government or the authority or officer authorised as aforesaid.

Information,
reports or
returns

20. The Central Government may, in relation to its functions under this Act, from time to time, require any person, officer, State Government or other authority to furnish to it or any prescribed authority or officer any reports, returns, statistics, accounts and other information and such person, officer, State Government or other authority shall be bound to do so.

Members,
officers and
employees
of the
authority
constituted
under
section 3
to be public
servants.

21. All the members of the authority, constituted, if any, under section 3 and all officers and other employees of such authority when acting or purporting to act in pursuance of any provisions of this Act or the rules made or orders or directions issued thereunder shall be deemed to be public servants within the meaning of section 21 of the Indian Penal Code.

Bar of
jurisdiction.

22. No civil court shall have jurisdiction to entertain any suit or proceeding in respect of anything done, action taken or order or direction issued by the Central Government or any other authority or

officer in pursuance of any power conferred by or in relation to its or his functions under this Act.

23. Without prejudice to the provisions of sub-section (3) of section 3, the Central Government may, by notification in the Official Gazette, delegate, subject to such conditions and limitations as may be specified in the notification, such of its powers and functions under this Act, [except the power to constitute an authority under sub-section (3) of section 3 and to make rules under section 25] as it may deem necessary or expedient, to any officer, State Government or other authority.

Power to
delegate.

24. (1) Subject to the provisions of sub-section (2), the provisions of this Act and the rules or orders made there in shall have effect notwithstanding anything inconsistent therewith contained in any enactment other than this Act.

Effect of
other laws

(2) Where any act or omission constitutes an offence punishable under this Act and also under any other Act then the offender found guilty of such offence shall be liable to be punished under the other Act and not under this Act.

25. (1) The Central Government may, by notification in Official Gazette, make rules for carrying out the purposes of this Act.

Power to
make rules.

(2) In particular, and without prejudice to the generality of the foregoing power, such rules may provide for all or any of the following matters, namely: —

- (a) the standards in excess of which environmental pollutants shall not be discharged or emitted under section 7;
- (b) the procedure in accordance with and the safeguards in compliance with which hazardous substances shall be handled or cause to be handled under section 8;
- (c) the authorities or agencies to which intimation of the fact of occurrence or apprehension of occurrence of the discharge of any environmental pollutant in excess of the prescribed standards shall be given and to whom all assistance shall be bound to be rendered under sub-section (1) of section 9;

- (d) the manner in which samples of air, water, soil or other substance for the purpose of analysis shall be taken under sub-section (1) of section 11;
- (e) the form in which notice of intention to have a sample analysed shall be served under clause (a) of sub-section (3) of section 11;
- (f) the functions of the environmental laboratories, the procedure for the submission to such laboratories of samples of air, water, soil and other substances for analysis or test; the form of laboratory report; the fees payable for such report and other matters to enable such laboratories to carry out their functions under sub-section (2) of section 12;
- (g) the qualifications of Government Analyst appointed or recognised for the purpose of analysis of samples of air, water, soil or other substances under section 13;
- (h) the manner in which notice of the offence and of the intention to make a complaint to the Central Government shall be given under clause (b) of section 19;
- (i) the authority or officer to whom any reports, returns, statistics, accounts and other information shall be furnished under section 20;
- (j) any other matter which is required to be, or may be, prescribed.

Rules
made
under
this Act
to be laid
before
Parliament.

26. Every rule made under this Act shall be laid, as soon as may be after it is made, before each House of Parliament, while it is in session, for a total period of thirty days which may be comprised in one session or in two or more successive sessions, and if, before the expiry of the session immediately following the session or the successive sessions aforesaid, both Houses agree in making any modification in the rule or both Houses agree that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be; so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

National Environment Policy 2006



Government of India
Ministry of Environment & Forests



National Environment Policy 2006

Approved by the Union Cabinet on 18th May, 2006



**Government of India
Ministry of Environment & Forests**



Contents

| Section | Title | Page No. |
|---------|---|----------|
| 1. | Preamble | 1 |
| 2. | Key Environmental Challenges: Causes and Impacts | 4 |
| 3. | Objectives of the National Environment Policy | 8 |
| 4. | Principles | 10 |
| 5. | Strategies and Actions | 15 |
| 5.1 | Regulatory Reforms | 16 |
| 5.1.1 | Revisiting the Policy and Legislative Framework | 16 |
| 5.1.2 | Process Related Reforms | 17 |
| 5.1.3 | Substantive Reforms | 18 |
| | Environment & Forest Clearances | |
| | Coastal areas | |
| | LMOs | |
| | Environmentally Sensitive Zones | |
| | Monitoring of Compliance | |
| | Use of Economic Principles in Environmental Decision-making | |
| 5.2 | Enhancing and Conserving Environmental Resources | 22 |
| 5.2.1 | Land Degradation | 22 |
| 5.2.2 | Desert Ecosystems | 23 |
| 5.2.3 | Forests and Wildlife | 24 |
| | Forests | |
| | Wildlife | |
| 5.2.4 | Biodiversity, Traditional Knowledge and Natural Heritage | 27 |
| 5.2.5 | Freshwater Resources | 28 |
| | Riversystems | |
| | Groundwater | |
| | Wetlands | |

| | | |
|-----------|--|-----------|
| 5.2.6 | Mountain Ecosystems | 34 |
| 5.2.7 | Coastal Resources | 35 |
| 5.2.8 | Pollution Abatement | 36 |
| | Air Pollution | |
| | Water Pollution | |
| | Soil Pollution | |
| | Noise Pollution | |
| 5.2.9 | Conservation of Manmade Heritage | 40 |
| 5.2.10 | Climate Change | 41 |
| 5.3 | Environmental Standards, etc. | 43 |
| 5.3.1 | Environmental Standards | 43 |
| 5.3.2 | EMS, Ecolabeling and Certification | 44 |
| 5.4 | Clean Technologies and Innovation | 46 |
| 5.5 | Environmental Awareness, Education, and Information | 47 |
| 5.6 | Partnerships and Stakeholder Involvement | 48 |
| 5.7 | Capacity Building | 49 |
| 5.8 | Research & Development | 50 |
| 5.9 | International Cooperation | 50 |
| 5.10 | Review of the Policy | 51 |
| 5.11 | Review of Implementation | 51 |
| 6. | Process of Formulation of this Policy | 52 |



Acknowledgements

The National Environment Policy, 2006 is the outcome of extensive consultations with experts in different disciplines, Central Ministries, Members of Parliament, State Governments, Industry Associations, Academic and Research Institutions, Civil Society, NGOs and the Public. We acknowledge and appreciate the keen interest and concern with which they reviewed earlier drafts of this policy and offered inputs and feedback for its improvement. A great deal of published research literature has also been reviewed. We find ourselves unable to acknowledge the respondents individually, or provide specific citations of the literature. Many of them will, no doubt, recognize their contributions in the document.

National Environment Policy, 2006



National Environment¹ Policy

Preamble

A diverse developing society such as ours provides numerous challenges in the economic, social, political, cultural, and environmental arenas. All of these coalesce in the dominant imperative of alleviation of mass poverty, reckoned in the multiple dimensions of livelihood security, health care, education, empowerment of the disadvantaged, and elimination of gender disparities.

The present national policies for environmental management are contained in the *National Forest Policy, 1988*, the *National Conservation Strategy and Policy Statement on Environment and Development, 1992*; and the *Policy Statement on Abatement of Pollution, 1992*. Some sector policies such as the *National Agriculture Policy, 2000*; *National Population Policy, 2000*; and *National Water Policy, 2002*; have also contributed towards environmental management. All of these policies have recognized the need for sustainable development in their specific contexts and formulated necessary strategies to give effect to such recognition. The National Environment Policy seeks to extend the coverage, and fill in gaps that still exist, in light of present knowledge and accumulated experience. It does not displace, but builds on the earlier policies.

The National Environment Policy seeks to extend the coverage, and fill in gaps that still exist, in light of present knowledge and accumulated experience. It does not displace, but builds on the earlier policies.

¹ The “Environment” comprises all entities, natural or manmade, external to oneself, and their interrelationships, which provide value, now or perhaps in the future, to humankind. Environmental concerns relate to their degradation through actions of humans.

Sustainable development concerns in the sense of enhancement of human well-being, broadly conceived, are a recurring theme in India's development philosophy.

Across the political spectrum of the country there has been recognition of the vital role natural resources play in providing livelihoods, and securing life-support ecological services. In this perspective a need for a comprehensive policy statement has been evident for some time in order to infuse a common approach to the various sectoral and cross-sectoral, including fiscal, approaches to environmental management. As our development challenges have evolved and our understanding of the centrality of environmental concerns in development has sharpened, there is also a need to review the earlier objectives, policy instruments, and strategies.

This dynamic requires an evolving and flexible policy framework, with a built in system for monitoring and review, and where necessary, revision. Sustainable development concerns in the sense of enhancement of human well-being, broadly conceived, are a recurring theme in India's development philosophy. The present day consensus reflects three foundational aspirations: *First, that human beings should be able to enjoy a decent quality of life; second, that humanity should become capable of respecting the finiteness of the biosphere; and third, that neither the aspiration for the good life, nor the recognition of biophysical limits should preclude the search for greater justice in the world.*

For this to occur there is a need for balance and harmony between economic, social and environmental needs of the country². India also plays an important role in several significant international initiatives concerned with the environment. It is a party to the key multilateral agreements, and recognises the interdependencies among, and transboundary character of, several environmental problems. The National Environment Policy (NEP) is also intended to be a statement of India's commitment to making a positive contribution to international efforts.

The *National Environment Policy* is a response to our national commitment to a clean environment, mandated in the Constitution in Articles 48 A and 51 A (g), strengthened by judicial interpretation of Article 21. It is recognized that maintaining a healthy environment is not the state's responsibility alone, but also that of every citizen. A spirit of partnership should thus be realized throughout the spectrum of environmental management in the country. While the state must galvanize its efforts, there should also be recognition by each individual - natural or institutional, of its responsibility towards maintaining and enhancing the quality of the environment.

The National Environment Policy..... is intended to mainstream environmental concerns in all development activities.

The National Environment Policy has been motivated by the above considerations and is intended to mainstream environmental concerns in all development activities. It briefly describes the key environmental challenges currently and prospectively facing the country, the objectives of environment policy, normative principles underlying policy action, strategic themes for intervention, broad indications of the legislative and institutional development

2. The Five Year Plan 2002-2007, Volume II, Chapter 1. Planning Commission, Government of India.

needed to accomplish the strategic themes, and mechanisms for implementation and review. It has been prepared through a process of extensive consultation with experts, as well as diverse stakeholders, and this process is also documented.

The National Environment Policy is intended to be a guide to action: in regulatory reform, programmes and projects for environmental conservation; and review and enactment of legislation, by agencies of the Central, State, and Local Governments. *The dominant theme of this policy is that while conservation of environmental resources is necessary to secure livelihoods and well-being of all, the most secure basis for conservation is to ensure that people dependent on particular resources obtain better livelihoods from the fact of conservation, than from degradation of the resource.* The policy also seeks to stimulate partnerships of different stakeholders, i.e. public agencies, local communities, academic and scientific institutions, the investment community, and international development partners, in harnessing their respective resources and strengths for environmental management.

The dominant theme of this policy is that while conservation of environmental resources is necessary to secure livelihoods and well-being of all, the most secure basis for conservation is to ensure that people dependent on particular resources obtain better livelihoods from the fact of conservation, than from degradation of the resource.





2 Key Environmental Challenges: Causes and Impacts

The key environmental challenges that the country faces relate to the nexus of environmental degradation with poverty in its many dimensions, and economic growth. These challenges are intrinsically connected with the state of environmental resources, such as land, water, air, and their flora and fauna. The proximate drivers of environmental degradation are population growth, inappropriate technology and consumption choices, and poverty, leading to changes in relations between people and ecosystems, and development activities such as intensive agriculture, polluting industry, and unplanned urbanisation. However, these factors give rise to environmental degradation only through deeper causal linkages, in particular, institutional failures, resulting in lack of clarity or enforcement of rights of access and use of environmental resources, policies which provide disincentives for environmental conservation (and which may have origins in the fiscal regime), market failures (which may be linked to shortcomings in the regulatory regimes), and governance constraints.

Environmental degradation is a major causal factor in enhancing and perpetuating poverty, particularly among the rural poor; when such degradation impacts soil fertility, quantity and quality of water, air quality, forests, wildlife and fisheries.

Environmental degradation is a major causal factor in enhancing and perpetuating poverty, particularly among the rural poor, when such degradation impacts soil fertility, quantity and quality of water, air quality, forests, wildlife and fisheries. The dependence of the rural poor, in particular, tribal societies, on their natural resources, especially biodiversity, is self-evident. Women in particular face greater adverse impacts of degradation of natural resources, being directly responsible for their collection and use, but rarely for

their management. The commitment of time and effort in collection of these resources has a direct impact on the capacity of rural women to devote time to raising and educating children, enhancing their earning skills, or participating in gainful livelihoods.

The poor are also more vulnerable to loss of resilience in ecosystems³. Large reductions in resilience may mean that the ecosystems, on which livelihoods are based, break down, causing distress. The loss of the environmental resource base can result in certain groups of people being made destitute, even if overall, the economy shows strong growth. Further, urban environmental degradation, through lack of (or inappropriate) waste treatment and sanitation, industry and transport related pollution, adversely impacts air, water, and soil quality, and differentially impacts the health of the urban poor. This, in turn, affects their capability to seek and retain employment, attend school, and enhances gender inequalities⁴, all of which perpetuate poverty.

Poverty itself can accentuate environmental degradation, given that institutional⁵ failures persist. For the poor, several environmental resources are complementary in production and consumption to other commodities (e.g. water in relation to agricultural production, fuel wood in relation to consumption of food), while a number of environmental resources are a source of income or food (e.g. fisheries, non-timber forest produce). This is frequently a source of cumulative causation, where poverty, gender inequalities, and environmental degradation mutually reinforce each other. Poverty and environmental degradation are also reinforced by, and linked to population growth, which in turn, depends on a complex interaction of diverse causal factors and stages of development. The social and economic context of population growth has been detailed in the National Population Policy 2000, which recognizes stabilization of population as a necessary condition for sustainable development.

Economic growth, in its turn, bears a dichotomous relationship to environmental degradation. On the one hand, growth may result in “excessive” environmental degradation through use of natural resources and generation of pollution aggravated by institutional failures. If impacts on the environmental

The loss of the environmental resource base can result in certain groups of people being made destitute, even if overall, the economy shows strong growth.



-
3. Resilience is the capacity of an ecosystem to recover from shocks, and surprises, whether manmade or natural. If a system loses resilience, it may be rapidly transformed to a wholly different (and unwelcome) state when subjected to even a temporary perturbation.
 4. For example, as money for medical treatment is preferentially allocated within households towards treatment of the wage-earning men folk.
 5. Which may relate to both formal institutions such as legal rights over resources, and traditional, informal institutions, such as community norms of resource management.

It is increasingly evident that poor environmental quality has adversely affected human health.

Institutional failures, referring to unclear or insufficiently enforced rights of access to, and use of, environmental resources, result in environmental degradation.

resource base are neglected, an incorrect picture is obtained from conventional monetary estimates of national income. On the other hand, economic growth permits improvement in environmental quality by making available the necessary resources for environmental investments, and generating societal pressures for improved environmental behaviour, and institutional and policy change. Unsustainable consumption patterns, particularly in industrialized countries also have serious adverse impacts on the environment, both local, and global. The global impacts are largely manifest in developing countries, and further accentuate poverty.

It is increasingly evident that poor environmental quality has adversely affected human health. Environmental factors are estimated as being responsible in some cases for nearly 20 percent of the burden of disease in India, and a number of environment-health factors are closely linked with dimensions of poverty (e.g. malnutrition, lack of access to clean energy and water). It has been shown that interventions such as reducing indoor air pollution, protecting sources of safe drinking water, protecting soil from contamination, improved sanitation measures, and better public health governance, offer tremendous opportunities in reducing the incidence of a number of critical health problems. It is also evident that these environmental protection measures would be difficult to accomplish without extensive awareness raising, and education, on good practices with respect to public and private behaviour.

Institutional failures, referring to unclear or insufficiently enforced rights of access to, and use of, environmental resources, result in environmental degradation because third parties primarily experience impacts of such degradation, without cost to the persons responsible for the damage. Such rights, both community based and individual, are critical institutions mediating



the relationships between humans and the use of the environment. Traditionally, village commons water sources, grazing grounds, local forests, fisheries, etc., have been protected by local communities from overexploitation through various norms, which may include penalties for disallowed behaviour. These norms, may, however, be degraded through the very process of development, including urbanization, and population growth resulting from sharp reduction in mortality, and also through state actions which may create conditions for the strengthening of individual over communitarian rights, and in doing so allow market forces to press for change that has adverse environmental implications. If such access to the community resources under weakened norms continues, the resources would be degraded, and the livelihoods of the community would suffer.

Policy failures can emerge from various sources, including the use of fiscal instruments, such as explicit and implicit subsidies for the use of various resources, which provide incentives for excessive use of natural resources. Inappropriate policy can also lead to changes in commonly managed systems, with adverse environmental outcomes.

Another major set of challenges arises from emerging global environmental concerns such as climate change, stratospheric ozone depletion, and biodiversity loss. The key is to operationalize the principle of common but differentiated responsibility of countries in relation to these problems. Multilateral regimes and programmes responding to these global environmental issues must not adversely impact the development opportunities of developing countries. Further, the sharing of global natural resources must proceed only on the basis of equal sharing per-capita across all countries.

Policy failures can emerge from various sources, including the use of fiscal instruments.





3 Objectives of the National Environment Policy

The principal Objectives of this policy are enumerated below. These Objectives relate to current perceptions of key environmental challenges. They may, accordingly, evolve over time:

- i. Conservation of Critical Environmental Resources:**
To protect and conserve critical ecological systems and resources, and invaluable natural and man-made heritage, which are essential for life-support, livelihoods, economic growth, and a broad conception of human well-being.
- ii. Intra-generational Equity: Livelihood Security for the Poor:**
To ensure equitable access to environmental resources and quality for all sections of society, and in particular, to ensure that poor communities, which are most dependent on environmental resources for their livelihoods, are assured secure access to these resources.
- iii. Inter-generational Equity:**
To ensure judicious use of environmental resources to meet the needs and aspirations of the present and future generations.
- iv. Integration of Environmental Concerns in Economic and Social Development:**
To integrate environmental concerns into policies, plans, programmes, and projects for economic and social development.

v. Efficiency in Environmental Resource Use:

To ensure efficient use of environmental resources in the sense of reduction in their use per unit of economic output, to minimize adverse environmental impacts.

vi. Environmental Governance:

To apply the principles of good governance (transparency, rationality, accountability, reduction in time and costs, participation, and regulatory independence) to the management and regulation of use of environmental resources.

vii. Enhancement of Resources for Environmental Conservation:

To ensure higher resource flows, comprising finance, technology, management skills, traditional knowledge, and social capital, for environmental conservation through mutually beneficial multistakeholder partnerships between local communities, public agencies, the academic and research community, investors, and multilateral and bilateral development partners.





4 Principles

This policy has evolved from the recognition that only such development is sustainable, which respects ecological constraints, and the imperatives of justice. The Objectives stated above are to be realized through various strategic interventions by different public authorities at Central, State, and Local Government levels. They would also be the basis of diverse partnerships. These strategic interventions, besides legislation and the evolution of legal doctrines for realization of the Objectives, may be premised on a set of unambiguously stated Principles depending upon their relevance, feasibility in relation to costs, and technical and administrative aspects of their application. The following Principles, may accordingly, guide the activities of different actors in relation to this policy. Each of these Principles has an established genealogy in policy pronouncements, jurisprudence, international environmental law, or international State practice:

i. Human Beings are at the Centre of Sustainable Development Concerns:

Human beings are at the centre of concerns for sustainable development. They are entitled to a healthy and productive life in harmony with nature.

ii. The Right to Development:

The right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

iii. Environmental Protection is an Integral part of the Development Process:

In order to achieve sustainable development, environmental protection shall constitute an integral part of the development process and cannot be considered in isolation from it.

iv. The Precautionary Approach:

Where there are credible threats of serious or irreversible damage to key environmental resources, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

v. Economic Efficiency:

In various public actions for environmental conservation, economic efficiency would be sought to be realized⁶.

This Principle requires that the services of environmental resources be given economic value, and such value to count equally with the economic values of other goods and services, in analysis of alternative courses of action.

Further implications of this Principle are as follows:

a) Polluter Pays⁷:

Impacts of acts of production and consumption of one party may be visited on third parties who do not have a direct economic nexus with the original act. Such impacts are termed “externalities”. If the costs (or benefits) of the externalities are not re-visited on the party responsible for the original act, the resulting level of the entire sequence of production or consumption, and externality, is inefficient. In such a situation, economic efficiency may be restored by making the perpetrator of the externality bear the cost (or benefit) of the same.

The policy will, accordingly, promote the internalization of environmental costs, including through the use of incentives based policy instruments, taking into

If the costs (or benefits) of the externalities are not re-visited on the party responsible for the original act, the resulting level of the entire sequence of production or consumption, and externality, is inefficient.



6. Economic efficiency refers to the maximization of welfare across all members of a society, given its human, natural, and manmade resources, its technology, and the preferences of its members. Welfare is reckoned as the aggregate of net value realized by each member of society, in his or her subjective perceptions, on a common monetary metric.

7. A polluter is one whose action potentially results in adverse impacts on third parties.

Efficiency of resource use may also be accomplished by the use of policy instruments that create incentives to minimise wasteful use and consumption of natural resources.



account the approach that the polluter should, in principle, bear the cost of pollution, with due regard to the public interest, and without distorting international trade and investment.

b) Cost Minimization:

Where the environmental benefits of a course of action cannot, for methodological or conceptual reasons, be imputed economic value (as in the case of “Incomparable Entities” [see below]), in any event the economic costs of realizing the benefits should be minimized.

Efficiency of resource use may also be accomplished by the use of policy instruments that create incentives to minimize wasteful use and consumption of natural resources. The principle of efficiency also applies to issues of environmental governance by streamlining processes and procedures in order to minimize costs and delays.

vi. Entities with “Incomparable”⁸ Values:

Significant risks to human health, life, and environmental life-support systems, besides certain other unique natural and man-made entities, which may impact the well-being, broadly conceived, of large numbers of persons, may be considered as “Incomparable” in that individuals or societies would not accept these risks for compensation in money or conventional goods and services. A conventional economic cost-benefit calculus would not, accordingly, apply in their case, and such entities would have priority in allocation of societal resources for their conservation without consideration of direct or immediate economic benefit⁹.

vii. Equity:

The cardinal principle of equity or justice requires that human beings cannot be treated differently based on irrelevant differences between them. Equity norms must be distinguished according to context, i.e. “procedural equity”, relating to fair rules for allocation of entitlements and obligations, and “end-result equity”, relating to fair outcomes in terms of distribution of entitlements and obligations. Each context, in addition, must be distinguished in terms of “intra-generational equity”, relating to justice within societies, and in particular, providing space for the participation of the underprivileged, and “inter-generational equity”, relating to justice between generations.

Equity, in the context of this policy refers to both equity in entitlements to, and participation of, the relevant publics, in processes of decision-making over use of environmental resources.

8. Termed “Incommensurable Values” in the relevant academic literature.

9. Examples of entities with “Incomparable Values” are unique historical monuments such as the Taj Mahal; charismatic species such as the Tiger; or unique landscapes, such as the Valley of Flowers.

viii. Legal Liability:

The present environmental redressal mechanism is predominantly based on doctrines of criminal liability, which have not proved sufficiently effective, and need to be supplemented.

Civil liability for environmental damage would deter environmentally harmful actions, and compensate the victims of environmental damage. Conceptually, the principle of legal liability may be viewed as an embodiment in legal doctrine of the “polluter pays” approach, itself deriving from the principle of economic efficiency.

The principle of legal liability may be viewed as an embodiment in legal doctrine of the “polluter pays” approach, itself deriving from the principle of economic efficiency.

The following alternative approaches to civil liability may apply:

a) Fault Based Liability

In a fault based liability regime a party is held liable if it breaches a pre-existing legal duty, for example, an environmental standard.

b) Strict Liability

Strict liability imposes an obligation to compensate the victim for harm resulting from actions or failure to take action, which may not necessarily constitute a breach of any law or duty of care¹⁰.

ix. Public Trust Doctrine:

The State is not an absolute owner, but a trustee of all natural resources, which are by nature meant for public use and enjoyment, subject to reasonable conditions, necessary to protect the legitimate interest of a large number of people, or for matters of strategic national interest.

x. Decentralization:

Decentralization involves ceding or transfer of power from a Central Authority to State and Local Authorities, in order to empower public authorities having jurisdiction at the spatial level at which particular environmental issues are salient, to address these issues.

xi. Integration:

Integration refers to the inclusion of environmental considerations in sectoral policymaking, the integration of the social and natural sciences in environment related policy research, and the strengthening of relevant linkages among various agencies at the Central, State, and Local Self-Government levels, charged with the implementation of environmental policies.

xii. Environmental Standard Setting:

Environmental standards must reflect the economic and social development situation in which they apply. Standards adopted in one society or context may have unacceptable economic and social costs if applied without discrimination in another society or context.

Environmental standards must reflect the economic and social development situation in which they apply.

10. In terms of the Supreme Court's decisions in the Shriram Gas Leak case and the Bhopal Gas Leak case, strict liability applies whenever the liable party damages a third party.

It is preferable to prevent environmental damage from occurring in the first place, rather than attempting to restore degraded environmental resources after the fact.

Setting environmental standards would involve several considerations, i.e. risks to human health, risks to other environmental entities, technical feasibility, costs of compliance, and strategic considerations.

xiii. Preventive Action:

It is preferable to prevent environmental damage from occurring in the first place, rather than attempting to restore degraded environmental resources after the fact.

xiv. Environmental Offsetting:

There is a general obligation to protect threatened or endangered species and natural systems that are of special importance to sustaining life, providing livelihoods, or general well-being. If for exceptional reasons of overriding public interest such protection cannot be provided in particular cases, cost-effective offsetting measures must be undertaken by the proponents of the activity, to restore as nearly as may be feasible, the lost environmental services to the same publics.





5 Strategies and Actions

The foregoing statement of policy Objectives and Principles are to be realized by concrete actions in different areas relating to key environmental challenges. A large number of such actions are currently under way, and have been for several years, in some cases, for many decades. In some aspects new themes would need to be pursued to realize the Principles and Objectives. Action plans would need to be prepared on identified themes by the concerned agencies at all levels of Government – Central, State/UT, and Local. In particular, the State and Local Governments would be encouraged to formulate their own strategies or action plans consistent with the National Environment Policy. Empowerment of Panchayats and the Urban Local Bodies, particularly, in terms of functions, functionaries, funds, and corresponding capacities, will require greater attention for operationalising some of the major provisions of this policy.

Integration of environmental concerns in all relevant development processes is among the Objectives of this policy. Further, inclusion of environmental considerations in sectoral policy making has also been recognized as among the Principles underpinning the policy. In order to operationalize these, a mechanism for ensuring necessary due diligence at all levels of government, will be institutionalized.

The following Strategic Themes, and outlines of actions to be taken in each, focus on both ongoing activities, functions, and roles, as well as new initiatives that are necessary. However, they are not necessarily a complete enumeration in each case.

Action plans would need to be prepared on identified themes by the concerned agencies at all levels of Government - Central, State/UT, and Local.



5.1 Regulatory Reforms:

The regulatory regimes for environmental conservation comprise a legislative framework, and a set of regulatory institutions. Inadequacies in each have resulted in accelerated environmental degradation on the one hand, and long delays and high transactions costs in development projects on the other. Apart from legislation which is categorically premised on environmental conservation, a host of sectoral and cross-sectoral laws and policies, including fiscal regimes, also impact environmental quality (some of these are discussed in the succeeding sections).

5.1.1 Revisiting the Policy and Legislative Framework:

The present legislative framework is broadly contained in the umbrella *Environment Protection Act, 1986*; the *Water (Prevention and Control of Pollution) Act, 1974*; the *Water Cess Act, 1977*; and the *Air (Prevention and Control of Pollution) Act, 1981*. The law in respect of management of forests and biodiversity is contained in the *Indian Forest Act, 1927*; the *Forest (Conservation) Act, 1980*; the *Wild Life (Protection) Act, 1972*; and the *Bio-diversity Act, 2002*. There are several other enactments, which complement the provisions of these basic enactments.

The following specific actions would be taken:

- a) Institutionalize a holistic and integrated approach to the management of environmental and natural resources, explicitly identifying and integrating environmental concerns in relevant sectoral and cross-sectoral policies, through review and consultation, in line with the National Environment Policy
- b) Identify emerging areas for new legislation, due to better scientific understanding, economic and social development, and development of multilateral environmental regimes, in line with the National Environment Policy.
- c) Review the body of existing legislation in order to develop synergies among relevant statutes and regulations, eliminate obsolescence, and amalgamate provisions with similar objectives, in line with the National Environment Policy. Further, encourage and facilitate review of legislation at the level of State and Local Governments with a view to ensuring their consistency with this policy.
- d) Take steps to adopt and institutionalize techniques for environmental assessment of sector policies and programmes to address any potential adverse impacts, and enhance potential favourable impacts.
- e) Ensure accountability of the concerned levels of Government (Centre, State, Local) in undertaking the necessary legislative changes in a defined time-frame, with due regard to the Objectives and Principles of National Environment Policy, in particular, ensuring the livelihoods and well-being of the poor by ensuring improved access to the necessary environmental resources.

5.1.2 Process Related Reforms:

(i) Approach:

The recommendations of the *Committee on Reforming Investment Approval and Implementation Procedures* (The Govindarajan Committee) which identified delays in environment and forest clearances as the largest source of delays in development projects, will be followed for reviewing the existing procedures for granting clearances and other approvals under various statutes and rules. These include the *Environment Protection Act*, *Forest Conservation Act*, the *Water (Prevention and Control of Pollution) Act*, the *Air (Prevention and Control of Pollution) Act*, the *Wildlife (Protection) Act*, and *Genetic Engineering Approval Committee (GEAC) Rules under the Environment Protection Act*. The objective is to reduce delays and levels of decision-making, realize decentralization of environmental functions, and ensure greater transparency and accountability.

In addition, the following actions will be taken:

- a) In order to ensure faster decision making with greater transparency, and access to information, use of information technology based tools will be promoted, together with necessary capacity-building, under all action plans.
- b) In order to realize greater decentralization, State level agencies may be given greater responsibility for environmental regulation and management. Such empowerment must, however, be premised on increased transparency, accountability, scientific and managerial capacity, and independence in regulatory decision making and enforcement action. Accordingly, States would be encouraged to set up Environment Protection Authorities on this basis.
- c) Mechanisms and processes would be set up to identify entities of “Incomparable Value” in different regions. It would be ensured that all regulatory mechanisms are legally empowered to follow the principles of good governance

(ii) Framework for Legal Action:

The present approach to dealing with environmentally unacceptable behaviour in India has been largely based on criminal processes and sanctions. Although criminal sanctions, if successful, may create a deterrent impact, in reality they are rarely fruitful for a number of reasons. On the other hand, giving unfettered powers to enforcement authorities may lead to rent-seeking.

Civil law, on the other hand, offers flexibility, and its sanctions can be more effectively tailored to particular situations. The evidentiary burdens of civil proceedings are less daunting than those of criminal law. It also allows for preventive policing through orders and injunctions.

Accordingly, a judicious mix of civil and criminal processes and sanctions will be employed in the legal regime for enforcement, through a review of the existing legislation. Civil liability law, civil sanctions, and

A judicious mix of civil and criminal processes and sanctions will be employed in the legal regime for enforcement, through a review of the existing legislation.



processes, would govern most situations of non-compliance. Criminal processes and sanctions would be available for serious, and potentially provable, infringements of environmental law, and their initiation would be vested in responsible authorities. Recourse may also be had to the relevant provisions in the Indian Penal Code, and the Criminal Procedure Code. Both civil and criminal penalties would be graded according to the severity of the infraction.

5.1.3 Substantive Reforms:

(i) Environment and Forests Clearances:

Environmental Impact Assessment (EIA) will continue to be the principal methodology for appraising and reviewing new projects. The assessment processes are under major revision in line with the Govindarajan Committee recommendations. Under the new arrangements, there would be significant devolution of powers to the State/UT level. However, such devolution, to be effective, needs to be accompanied by adequate development of human and institutional capacities.

Further, in order to make the clearance processes more effective, the following actions will be taken:

- a) Encourage regulatory authorities, Central and State, to institutionalize regional and cumulative environmental impact assessments (R/CEIAs) to ensure that environmental concerns are identified and addressed at the planning stage itself.
- b) Specifically assess the potential for chemical accidents of relevant projects as part of the environmental appraisal process
- c) Give due consideration, to the quality and productivity of lands which are proposed to be converted for development activities, as part of the environmental clearance process. Projects involving large-scale diversion of prime agricultural land would require environmental appraisal.
- d) Encourage clustering of industries and other development activities to facilitate setting up of environmental management infrastructure, as well as monitoring and enforcing environmental compliance. Emphasize post-project monitoring and implementation of environmental management plans through participatory processes, involving adequately empowered relevant levels of government, industry, and the potentially impacted community.
- e) Restrict the diversion of dense natural forests and areas of high endemism of genetic resources, to non-forest purposes, only to site-specific cases of vital national interest. No further regularisation of encroachment on forests should be permitted.
- f) Ensure that in all cases of diversion of forest, the essential minimum needed for the project or activity is diverted. The diverted area must not be cleared until the actual construction starts.
- g) Ensure provision for environmental restoration after decommissioning of industries, in particular mine closure in all approvals of mining plans, and institutionalise a system of post-monitoring of such projects.
- h) Formulate, and periodically update, codes of “good practices” for environmental management for different categories of regulated activities.

(ii) Coastal Areas:

Development activities in the coastal areas are regulated by means of the Coastal Regulation Zone notifications and Integrated Coastal Zone Management (ICZM) plans made under them. However, there is need to ensure that the regulations are firmly founded on scientific principles, including the physical, natural, and social sciences. This is necessary to ensure effective protection to valuable coastal environmental resources, without unnecessarily impeding livelihoods, or legitimate coastal economic activity, or settlements, or infrastructure development. Islands offer unique ecosystems and coastal planning and regulation in their case needs to take into account features such as their geological nature, settlement patterns, volcanic or coral nature of the island, size of the habitations, unique cultures, livelihood patterns, etc. Adequate environmental safeguards should be built into development projects in the islands, in particular those relating to tourism, high value agriculture, deep sea fishing, prospecting for oil and natural gas, etc. It is recognized that states will require both technical and financial resources for preparation of ICZM plans.



The following actions will be taken:

- a) Revisit the Coastal Regulation Zone (CRZ) notifications to make the approach to coastal environmental regulation more holistic, and thereby ensure protection to coastal ecological systems, coastal waters, and the vulnerability of some coastal areas to extreme natural events and potential sea level rise. The Integrated Coastal Zone Management (ICZM) plans need to be comprehensive, and prepared on strong scientific basis by experts with the participation of the local communities both in formulation and implementation. The ICZM plans should be reviewed at pre-determined intervals to take account of changes in geomorphology, economic activities, settlement patterns, and coastal and marine environmental conditions.
- b) Decentralize, to the extent feasible, the clearance of specific projects to State level environmental authorities, exempting activities, which do not cause significant environmental impacts, and are consistent with approved ICZM plans.

(iii) Living Modified Organisms (LMOs):¹¹

Biotechnology has immense potential to enhance livelihoods and contribute to the economic development of the country. On the other hand, LMOs may pose significant risks to ecological resources, and perhaps, human and animal health. In order to ensure that development of biotechnology does not lead to unforeseen adverse impacts, the following actions will be taken:

11. In general, Genetically Modified Organisms require evaluation of their potential benefits and risks as part of relevant regulatory processes. The subset of LMOs, may, however, owing to their potential for replication, involve environmental concerns in addition.

-
- a) Review the regulatory processes for LMOs so that all relevant scientific knowledge is taken into account, and ecological, health, and economic concerns are adequately addressed.
 - b) Periodically review the National Bio-safety Guidelines, and Bio-safety Operations Manual to ensure that these are based on current scientific knowledge.
 - c) Ensure the conservation of bio-diversity and human health when dealing with LMOs in transboundary movement in a manner consistent with the multilateral Bio-safety Protocol.

(iv) Environmentally Sensitive Zones:

Environmentally Sensitive Zones may be defined as areas with identified environmental resources having “Incomparable Values” which require special attention for their conservation.

In order to conserve and enhance these resources, without impeding legitimate socio-economic development of these areas, the following actions will be taken:

- a) Identify and give legal status to Environmentally Sensitive Zones in the country having environmental entities with “Incomparable values” requiring special conservation efforts.
- b) Formulate area development plans for these zones on a scientific basis, with adequate participation by the local communities.
- c) Create local institutions with adequate participation for the environmental management of such areas, to ensure adherence to the approved area development plans, which should be prepared in consultation with the local communities.

(v) Monitoring of Compliance:

Weak enforcement of environmental compliance is attributed to inadequate technical capacities, monitoring infrastructure, and trained staff in enforcement institutions. In addition, there is insufficient involvement of the potentially impacted local communities in the monitoring of compliance, and absence of institutionalized public-private partnerships in enhancement of monitoring infrastructure.

The following actions will be taken:

- a) Take measures, including capacity development initiatives to enable Panchayati Raj Institutions and urban local bodies to undertake monitoring of compliance with environmental management plans. Measures will also be taken to encourage municipalities to annually report their environmental performance to their governing bodies.
- b) Develop feasible models of public-private partnerships to leverage financial, technical, and management resources of the private sector in setting up and operating infrastructure for monitoring of environmental compliance, with ironclad safeguards against possible conflict of interest or collusion with the monitored entities.

(vi) Use of Economic Principles in Environmental Decision-making:

It is necessary that the costs associated with the degradation and depletion of natural resources be incorporated into the decisions of economic actors at various levels, to reverse the tendency to treat these resources as “free goods” and to pass the costs of degradation to other sections of society, or to future generations of the country.

At the macro-level, a system of natural resource accounting is required to assess whether in the course of economic growth we are drawing down, or enhancing, the natural resource base of production, including relevant depletable assets. In addition, the environmental costs and benefits associated with various activities, including sectoral policies, should be evaluated to ensure that these factors are duly taken into account in decision-making.

The current near exclusive reliance on fiats based instruments for environmental regulation do not permit individual actors to minimize their own costs of compliance. This leads, on the one hand, to non-compliance in many cases, and on the other, unnecessary diversion of societal resources from other pressing needs. Economic instruments, of which a large, feasible suite, has emerged through practical experience in several developed and developing countries, work by aligning the interests of economic actors with environmental compliance, primarily through application of “polluter pays”. This may ensure that for any given level of environmental quality desired, the society-wide costs of meeting the standard are minimized. However, in some cases, use of economic instruments may require intensive monitoring, which too may entail significant societal costs. On the other hand, use of existing policy instruments, such as the fiscal regime, may significantly reduce or eliminate the need for enhanced institutional capacities to administer the incentive based instruments. In future, accordingly, a judicious mix of incentives and fiats based regulatory instruments would be considered for each specific regulatory situation.



The following actions will be taken:

- a) Strengthen, including through capacity building, the initiatives, taken by the Central Statistical Organization in the area of natural resource accounting, with a view to its adoption in the system of national income accounts. Further strengthen in all respects, the system of collection, collation and analysis of all significant and relevant environmental monitoring data.
- b) Develop and promote the use of standardized environmental accounting practices and norms in preparation of statutory financial statements for large industrial enterprises, in order to encourage greater environmental responsibility in investment decision-making, management practices, and public scrutiny.
- c) Encourage financial institutions to adopt appropriate appraisal practices, so that environmental risks are adequately considered in the financing of projects.
- d) Facilitate the integration of environmental values into cost-benefit analysis, to encourage more efficient allocation of resources while making public investment decisions.
- e) Prepare and implement an action plan on the use of economic instruments for environmental regulation in specified contexts, including those relating to unsustainable production and consumption.
- f) Consider creation of a National Environment Restoration Fund from the net proceeds of economic instruments, user fees for access to specified natural resources, and voluntary contributions. The Fund may be used for restoration of environmental resources, including clean-up of toxic and hazardous waste legacies.

The causes of degradation of environmental resources lie ultimately in a broad range of policy, and institutional, including regulatory shortcomings, leading to the direct causes.

5.2. Enhancing and Conserving Environmental Resources:

Perverse production and consumption practices are the immediate causes of environmental degradation, but an exclusive focus on these aspects alone is insufficient to prevent environmental harm. The causes of degradation of environmental resources lie ultimately in a broad range of policy, and institutional, including regulatory shortcomings, leading to the direct causes. However, the range of policies, and legal and institutional regimes, which impact the proximate factors, is extremely wide, comprising fiscal and pricing regimes, and sectoral and cross-sectoral policies, laws, and institutions. Accordingly, apart from programmatic approaches, review and reform of these regimes to account for their environmental consequences is essential. In addition, there is lack of awareness of the causes and effects of environmental degradation, and how they may be prevented, among both specialized practitioners of the relevant professions, including policymakers, as well as the general public, which needs to be redressed. In this subsection, in respect of major categories of environmental resources, the proximate and deeper causes of their degradation, and specific initiatives for addressing them are outlined.

5.2.1 Land Degradation:

The degradation of land, through soil erosion, alkali-salinization, water logging, pollution, and reduction in organic matter content has several proximate and underlying causes. The proximate causes include loss of forest and tree cover (leading to erosion by surface water run-off and winds), unsustainable grazing, excessive use of irrigation (in many cases without proper drainage, leading to leaching of sodium and potassium salts), improper use of agricultural chemicals (leading to accumulation of toxic chemicals in the soil), diversion of animal wastes for domestic fuel (leading to reduction in soil nitrogen and organic matter), and disposal of industrial and domestic wastes on productive land.

These proximate causes of land degradation in turn, are driven by implicit and explicit subsidies for water, power, fertilizer and pesticides. Grazing lands are usually common property resources, and insufficient empowerment of local institutions for their management leads to overexploitation of the biomass base. The absence of conducive policies and persistence of certain regulatory practices reduces people's incentives for afforestation, and leads to reduced levels of green cover.

It is essential that the relevant fiscal, tariffs, and sectoral policies take explicit account of their unintentional impacts on land degradation, if the fundamental basis of livelihoods for the vast majority of our people is not to be irreparably damaged.



In addition, to such policy review, the following specific initiatives would be taken:

- a) Encourage adoption of science-based, and traditional sustainable land use practices, through research and development, extension of knowledge, pilot scale demonstrations, and large scale dissemination, including farmer's training, and where necessary, access to institutional finance.
- b) Promote reclamation of wasteland and degraded forestland, through formulation and adoption of multistakeholder partnerships, involving the land owning agency, local communities, and investors.
- c) Prepare and implement thematic action plans incorporating watershed management strategies, for arresting and reversing desertification, and expanding green cover.
- d) Promote sustainable alternatives to shifting cultivation where it is no longer ecologically viable, ensuring that the culture and social organisation of the local people are not disrupted.
- e) Encourage agro-forestry, organic farming, environmentally sustainable cropping patterns, and adoption of efficient irrigation techniques.

5.2.2 Desert Ecosystems:

The arid and semi-arid region of India covers 127.3 mha (38.8%) of India's geographical area and spreads over 10 states. The Indian desert fauna is extremely rich in species diversity of mammals and winter migratory birds. However the pressures of a rapidly increasing population on the natural resource base necessitate adoption of innovative and integrated measures for conservation of desert ecosystems. These pressures are enhanced by practices which lead to land degradation, as described above.

The needed measures include:

- a) Intensive water and moisture conservation through practices based on traditional and science based knowledge, and relying on traditional infrastructure.
- b) Enhancing and expanding green cover based on local species.
- c) Reviewing the agronomic practices in these areas, and promoting agricultural practices and varieties, which are well adapted to the desert ecosystem.



5.2.3 Forests and Wildlife:

(i) Forests:

Forests provide a multiplicity of environmental services. Foremost among these is the recharging of mountain aquifers, which sustain our rivers. They also conserve the soil, and prevent floods and drought. They provide habitat for wildlife and the ecological conditions for maintenance and natural evolution of genetic diversity of flora and fauna. They are the homes of traditional forest dependent communities. They yield timber, fuel wood, and other forest produce, and possess immense potential for economic benefits, in particular for local communities, from sustainable eco-tourism.



On the other hand, in recent decades, there has been significant loss of forest cover, although there are now clear signs of reversal of this trend. The principal direct cause of forest loss has been the conversion of forests to agriculture, settlements, infrastructure, and industry. In addition, commercial extraction of fuelwood, illegal felling, and grazing of cattle, has degraded forests. These causes, however, have their origins in the fact that the environmental values provided by forests are not realized as direct financial benefits by various parties, at least to the extent of exceeding the monetary incomes from alternative uses, including those arising from illegal use. Moreover, while since antiquity forest dwelling communities had generally recognized traditional community entitlements over the forests, on account of which they had strong incentives to use the forests sustainably and to protect them from encroachers, following the commencement of formal forest laws and institutions in 1865, these entitlements were

effectively extinguished in many parts of the country. Such disempowerment has led to the forests becoming open access in nature, leading to their gradual degradation in a classic manifestation of the “*Tragedy of the Commons*”. It has also led to perennial conflict between the forest dependent communities and the Forest Department, constituting a major denial of justice. The *Panchayats (Extension to the Scheduled Areas) Act, 1996*; and the relevant provisions of *Part IX of the Constitution* may provide a framework for restoration of the key traditional entitlements.

It is essential that women play a greater role in the management of natural resources.

It is essential that women play a greater role in the management of natural resources. While they have to bear the burden of natural resource degradation, they have little control over the management of these resources. Relevant provisions of the National Policy for the Empowerment of Women provide a framework for incorporating elements of proposed actions.

It is possible that some site-specific non-forest activities may yield overall societal benefits significantly exceeding that from the environmental services provided by the particular tract of forest. However, large scale forest loss would lead to catastrophic, permanent change in the country's ecology, leading to major stress on water resources and soil erosion, with consequent loss of agricultural productivity, industrial potential, living conditions, and the onset of natural disasters, including drought and floods. In any event, the environmental values of converted forests must be restored, as nearly as may be feasible, to the same publics.

The *National Forest Policy, 1988*; and the *Indian Forest Act, 1927*; as well as the regulations under it, provide a comprehensive basis for forest conservation. The *National Forest Commission*, set up in 2003, is reviewing the policy, legislative and institutional basis of forest management. Nevertheless, it is necessary, looking to some of the underlying causes of forest loss, to take some further steps. These include:



- a) Give legal recognition of the traditional entitlements of forest dependant communities taking into consideration the provisions of the *Panchayats (Extension to the Scheduled Areas) Act, 1996 (PESA)*. This would remedy a serious historical injustice, secure their livelihoods, reduce possibilities of conflict with the Forest Departments, and provide long-term incentives to these communities to conserve the forests.
- b) Formulate an innovative strategy for increase of forest and tree cover from the 2003 level of 23.69 percent of the country's land area, to 33 percent in 2012, through afforestation of degraded forest land, wastelands, and tree cover on private or revenue lands. Key elements of the strategy would include: (i) the implementation of multistakeholder partnerships involving the Forest Department, land owning agencies, local communities, and investors, with clearly defined obligations and entitlements for each partner, following good governance principles, to derive environmental, livelihood, and financial benefits; (ii) rationalization of restrictions on cultivation of forest species outside notified forests, to enable farmers to undertake social and farm forestry where their risk-return-term profiles are more favourable than cropping, (iii) universal adoption of community based practices such as Joint Forest Management, Van Panchayats and their variants, in forest management, with assured participation of women, throughout the country, (iv) focus public investments on enhancing the density of natural forests, mangroves conservation, and universalization of community based practices.
- c) Formulate an appropriate methodology for reckoning and restoring the environmental values of forests, which are unavoidably diverted to other uses.
- d) Formulate and implement a "Code of Best Management Practices" for dense natural forests, to realize the Objectives and Principles of National Environment Policy. Forests of high indigenous genetic diversity should be treated as entities with Incomparable Value.
- e) Denotify Bamboo and similar other species as 'Forest Species' under the *Forest Conservation Act*, to facilitate their cultivation outside notified forests, and encourage their productive utilisation in economic activities.
- f) Promote plantation of only such species as are conducive to the conservation and sustainability of given ecosystems.

(ii) Wildlife:

The status of wildlife in a region is an accurate index of the state of ecological resources, and thus of the natural resource base of human well-being. This is because of the interdependent nature of ecological entities (*“the web of life”*), in which wildlife is a vital link¹². Moreover, several charismatic species of wildlife embody “Incomparable Values”, and at the same time, comprise a major resource base for sustainable eco-tourism.



Conservation of wildlife, accordingly, involves the protection of entire ecosystems. However, in several cases, delineation of and restricting access to such Protected Areas¹³ (PAs), as well as disturbance by humans on these areas has led to man-animal conflicts. While physical barriers and better policing may temporarily reduce such conflict, it is also necessary to address their underlying causes. These may largely arise from the non-involvement of relevant stakeholders in identification and delineation of PAs, as well as the loss of traditional entitlements of local people, especially tribals, over the PAs. There is also a strong need for creation of corridors to ensure proper genetic flows across habitats. Since wildlife does not remain confined to particular areas, there is also need to ensure greater protection, and habitat enhancement outside the PAs.

In respect of Wildlife Conservation, the following actions will be pursued:

- a) Expand the Protected Area (PA) network of the country, including Conservation and Community Reserves, to give fair representation to all bio-geographic zones of the country. In doing so, develop norms for delineation of PAs in terms of the Objectives and Principles of the National Environment Policy, in particular, participation of local communities, concerned public agencies, and other stakeholders, who have a direct and tangible stake in protection and conservation of wildlife, to harmonize ecological and physical features with needs of socio-economic development.
- b) Revisit the norms, criteria and needs of data for placing particular species in different schedules of the Wildlife Protection Act.
- c) Formulate and implement programs for conservation of endangered species outside protected areas, while reducing the scope for man-animal conflict.

12. For example, the presence of predators (“tigers”) indicates that the prey base (“deer”) is sound, in turn indicating that the vegetative cover (“grass”) is healthy, for which the conservation of soil, water, and absence of pollution is essential. The last indicate conditions conducive to human health and livelihoods.

13. Protected areas may include forest as well as non-forest ecosystems. e.g. deserts, marine sanctuaries, etc.

- d) Empower, build capacities, and facilitate access to finance and technology, for local people, in particular tribals, who are relocated from PAs, or live in the fringe areas, for provision of ecotourism services in the PAs.
- e) Paralleling multistakeholder partnerships for afforestation, formulate and implement similar partnerships for enhancement of wildlife habitat in Conservation Reserves and Community Reserves, to derive both environmental and eco-tourism benefits.
- f) Promote site-specific eco-development programmes in fringe areas of PAs, to restore livelihoods and access to forest produce by local communities, owing to access restrictions in PAs.
- g) Strengthen capacities and implement measures for captive breeding and release into the wild, identified endangered species.
- h) Review and tighten the provisions of relevant legislation to enhance their deterrence. Further, strengthen institutional measures and capacities of enforcement authorities, with respect to intelligence collection, investigation, and prosecution, to deal with wild life crime.
- i) Ensure that human activities on the fringe areas of PAs do not degrade the habitat or otherwise significantly disturb wildlife.

5.2.4 Biodiversity, Traditional Knowledge, and Natural Heritage:

Conservation of genetic diversity, is crucial for development of improved crop varieties resistant to particular stresses, new pharma products, etc., apart from ensuring the resilience of ecosystems. Traditional Knowledge (TK), referring to ethno-biology knowledge possessed by local communities, is the basis of their livelihoods, and also a potent means of unlocking the value of genetic diversity through reduction in search costs.

Natural heritage sites, including endemic “biodiversity hotspots”, sacred groves and landscapes, are repositories of significant genetic and eco-system diversity, and the latter are also an important basis for eco-tourism. They are nature's laboratories for evolution of wild species in response to change in environmental conditions.

India is fortunate in having, through the efforts of dedicated scientists over many decades,¹⁴ developed vast inventories of floral and faunal resources, as well as ethno-biology knowledge. India is, thus well-placed to tap this enormous resource base for benefits for the country as a whole, and local communities in particular, provided that the genetic resources are conserved, and appropriate Intellectual Property Rights (IPRs) conferred on local communities in respect of their ethno-biology knowledge.

A large-scale exercise has been completed for providing inputs towards a National Biodiversity Strategy and Action Plan. These inputs would be reviewed in terms of the Objectives and Principles of National Environment Policy, scientific validity, financial and administrative feasibility, and legal aspects. In any event, the following measures would be taken:



14. For example, in institutions such as Botanical Survey of India (BSI), the Zoological Survey of India (ZSI), the Bombay Natural History Society (BNHS), and others.

- a) Strengthen the protection of areas of high endemism of genetic resources (“biodiversity hot spots”), while providing alternative livelihoods and access to resources to local communities who may be affected thereby.
- b) Pay explicit attention to the potential impacts of development projects on biodiversity resources and natural heritage. In appraisal of such projects by cost-benefit analysis, assign values to biodiversity resources at or near the upper end of the range of uncertainty. In particular, ancient sacred groves and “biodiversity hotspots” should be treated as possessing “Incomparable Values”.
- c) Enhance *ex-situ* conservation of genetic resources in designated gene banks across the country. Genetic material of threatened species of flora and fauna must be conserved on priority.
- d) The Patents Act, 1970 addresses several aspects of the issue of disclosure. The Act mandatorily requires disclosure of source and geographical origin of biological material used in an invention while applying for patents. Failure to disclose and wrongful disclosure are allowed as grounds for opposition to the grant of patent and patent may be revoked on these grounds. The Patent Act also requires the applicant to furnish a declaration with regard to having obtained necessary permission of the competent authority to use the biological material from India. There is need to harmonize these provisions with the Biodiversity Conservation Act, in particular to enable local communities holding traditional knowledge of use of such biological material to benefit from providing access to such knowledge.
- e) There is need to formulate an appropriate system for Prior Informed Consent and Fair and Equitable Benefit sharing in respect of biological material and traditional knowledge of use of such biological material to enable the country and local communities respectively to derive economic benefits from providing access. These issues are complex and therefore, modalities for their implementation need to be carefully worked out. Towards this end, attempt would be made to attain greater congruence between these Trade Related Aspects of Intellectual Property Rights.



5.2.5 Freshwater Resources:

India's freshwater resources comprise the single most important class of natural endowments enabling its economy and its human settlement patterns. The freshwater resources comprise the river systems, groundwater, and wetlands. Each of these has a unique role, and characteristic linkages to other environmental entities.

(i) River Systems:

India's river systems typically originate in its mountain eco-systems, and deliver the major part of their water resources¹⁵ to the populations in the plains. According to the Third Assessment Report of the Intergovernmental Panel on Climate Change (IPCC, 2001) almost 67% of the glaciers in the Himalayan mountain range have retreated in the past decade. Available records suggest that the

15. The National Water Policy, 2002 prioritizes water use needs in the following order: drinking water, irrigation and agricultural use, hydropower, ecological services, industrial, navigation, and tourism.

Gangotri glacier is retreating by about 30 meters per year. Elevated global mean temperature may increase net melting rates resulting in glacial retreat and consequent adverse impact on flows in major rivers.

Rivers are also subject to siltation from sediment loads due to soil loss, itself linked to loss of forest and tree cover. They are also subject to significant net water withdrawals along their course, due to agricultural, industrial, and municipal use; as well as pollution from human and animal waste, agricultural run-offs, and industrial effluents. Although the rivers possess significant natural capacity to assimilate and render harmless many pollutants, the existing pollution inflows in many cases substantially exceed such natural capacities. This fact, together with progressive reductions in stream flows, ensures that the river water quality in the vast majority of cases declines as one goes downstream. The results include loss of aquatic flora and fauna, leading to loss of livelihoods for river fisherfolk, significant impacts on human health from polluted water, increased drudgery for poor, rural women in collecting drinking water from distant water bodies, loss of habitat for many bird species, and loss of inland navigation potential. Apart from these, India's rivers are inextricably linked with the history and religious beliefs of its peoples, and the degradation of important river systems accordingly offends their spiritual, aesthetic, and cultural sensibilities. The direct causes of river degradation are, in turn, linked to several policies and regulatory regimes. These include tariff policies for irrigation systems and industrial use, which, through inadequate cost-recovery, provide incentives for overuse near the headworks' of irrigation systems, and drying up of irrigation systems at the tail-ends. This results in excessive cultivation of water intensive crops near the headworks, which may lead to inefficient water use, water logging and soil salinity and alkalinity. The irrigation tariffs also do not yield resources for proper maintenance of irrigation systems, leading to loss in their potential. In particular, resources are generally not available for lining irrigation canals to prevent seepage loss. These factors result in reduced flows in the rivers. Pollution loads are similarly linked to pricing policies leading to inefficient use of agricultural chemicals, and municipal and industrial water use. In particular, revenue yields for the latter two are insufficient to install and maintain sewage and effluent treatment plants, respectively. Pollution regulation for industries is typically not based on formal spatial planning to facilitate clustering of industries to realize scale economies in effluent treatment, resulting in relatively high costs of effluent treatment, and consequent increased incentives for non-compliance. There is, accordingly need to review the relevant pricing policy regimes and regulatory mechanisms, in terms of their likely adverse environmental impacts.

Although the rivers possess significant natural capacity to assimilate and render harmless many pollutants, the existing pollution inflows in many cases substantially exceed such natural capacities.

Pollution loads are similarly linked to pricing policies leading to inefficient use of agricultural chemicals, and municipal and industrial water use.

The following comprise elements of an action plan for river systems:

- a) Promote research in glaciology to evaluate the impacts of climate change on glaciers and river flows.
- b) Promote integrated approaches¹⁶ to management of river basins by the concerned river authorities, considering upstream and downstream inflows and withdrawals by season, interface between land and water, pollution loads and natural regeneration capacities, to ensure maintenance of adequate flows, in particular for maintenance of in-stream ecological values, and adherence to water quality standards throughout their course in all seasons.
- c) Consider and mitigate the impacts on river and estuarine flora and fauna, and the resulting change in the resource base for livelihoods, of multipurpose river valley projects, power plants, and industries.
- d) Consider mandating the installation of water saving closets and taps in the building bye-laws of urban centres, and other available regulatory mechanisms.
- e) Integrate conservation and wise use of wetlands into river basin management involving all relevant stakeholders, in particular local communities, to ensure maintenance of hydrological regimes and conservation of biodiversity.
- f) Incorporate a special component in afforestation programmes for afforestation on the banks and catchments of rivers and reservoirs to prevent soil erosion and improve green cover.

(ii) Groundwater:

Groundwater is present in underground aquifers in many parts of the country. Aquifers near the surface are subject to annual recharge from precipitation, but

the rate of recharge is impacted by human interference. Deep aquifers, on the other hand, occur below a substratum of hard rock. The deep aquifers generally contain very pure water, but since they are recharged only over many millennia, must be conserved for use only in periods of calamitous drought, such as may happen only once in several hundred years. The boundaries of groundwater aquifers do not generally correspond to the spatial jurisdiction of any local public authorities or private holdings, nor are they easily discernable, nor can withdrawals be easily monitored, leading to the unavoidable situation of groundwater being an open access resource.

The water table has been falling rapidly in many areas of the country in recent decades. This is largely due to withdrawal for agricultural, industrial, and urban use, in excess of annual recharge. In urban areas, apart from withdrawals for domestic and



16. The National Water Policy, 2002, further expands on this strategy.

industrial use, housing and infrastructure such as roads, prevent sufficient recharge. In addition, some pollution of groundwater occurs due to leaching of stored hazardous waste and use of agricultural chemicals, in particular, pesticides. Contamination of groundwater is also due to geogenic causes, such as leaching of arsenic and fluoride from natural deposits. Since groundwater is frequently a source of drinking water, its pollution and contamination leads to serious health impacts.

The direct causes of groundwater depletion have their origin in the pricing policies for electricity and diesel. In the case of electricity, wherever individual metering is not practiced, a flat charge for electricity connections makes the marginal cost of electricity effectively zero. Subsidies for diesel also reduce the marginal cost of extraction to well below the efficient level. Given the fact that groundwater is an open access resource, the user then “rationally” (i.e. in terms of his individual perspective), extracts groundwater until the marginal value to him equals his now very low marginal cost of extraction.¹⁷ The result is inefficient withdrawals of groundwater by all users, leading to the situation of falling water tables. Support prices for several water intensive crops with implicit price subsidies aggravate this outcome by strengthening incentives to take up these crops rather than less water intensive ones. In coastal areas this overexploitation and inadequate recharge of ground water may also cause serious problem of saline ingress, leading to adverse health impacts and loss of land productivity.

Falling water tables have several perverse social impacts, apart from the likelihood of mining of deep aquifers, “the drinking water source of last resort”. The capital costs of pump sets and bore wells for groundwater extraction when water tables are very deep may be relatively high, with no assurance that water would actually be found. In such a situation, a user who may be a marginal farmer able to borrow the money only at usurious rates of interest, may, in case water is not found, find it impossible to repay his debts. This may lead to destitution, or worse. Even if the impacts were not so dire, there would be excessive use of electricity and diesel.

The efficient use of groundwater would, accordingly, require that the practice of non-metering of electric supply to farmers be discontinued in their own enlightened self-interest. It would also be essential to progressively ensure that the environmental impacts are taken into account in setting electricity tariffs, and diesel pricing.

Increased run-off of precipitation in urban areas due to impermeable structures and infrastructure prevents natural groundwater recharge. This is an additional cause of falling water tables in urban areas as large quantities of ground water are pumped out for urban use. In rural areas several cost-effective rainwater

The direct causes of groundwater depletion have their origin in the pricing policies for electricity and diesel.

The efficient use of groundwater would, accordingly, require that the practice of non-metering of electric supply to farmers be discontinued in their own enlightened self-interest.

17. The marginal cost of extraction equals the marginal cost to the farmer of power (“zero”) or diesel, and a small labour and depreciation cost. The capital cost of a bore well as well as the flat rate connection charge are sunk costs and do not count in the marginal cost of water.

harvesting and artificial recharge techniques have been proven to enhance groundwater recharge. A number of effective traditional water management techniques to recharge groundwater have been discontinued by the local communities due to the onset of pump sets extraction, and need to be revived. Finally, increase in tree cover, is also effective in enhancing soil moisture retention and preventing soil erosion.

Pollution of groundwater from agricultural chemicals is also linked to their improper use, once again due to pricing policies, especially for chemical pesticides, as well as agronomic practices, which do not take the potential environmental impacts into account. While transiting through soil layers may considerably eliminate organic pollution loads in groundwater, this is not true of several chemical pesticides. The pesticides themselves may become a source of pollution when it leaches into the ground water.

The following actions will be taken:

- a) Take explicit account of impacts on groundwater tables of electricity tariffs and pricing of diesel.
- b) Promote efficient water use techniques, such as sprinkler or drip irrigation, among farmers. Provide necessary pricing, inputs, and extension support to feasible and remunerative alternative crops which may be raised by efficient water use.
- c) Ensure availability of ground water potential maps through a designated institution.
- d) Support practices of rain water harvesting and artificial recharge and revival of traditional methods for enhancing groundwater recharge.
- e) Mandate water harvesting and artificial recharge in all new constructions in relevant urban areas, as well as design techniques for road surfaces and infrastructure to enhance groundwater recharge. Promote capacity development of relevant stakeholders and provide web based information on water harvesting techniques.
- f) Prepare and implement a comprehensive strategy for regulating use of ground water by large industrial and commercial establishments on the basis of a careful evaluation of aquifer capacity and annual recharge.
- g) Support R&D in cost effective techniques suitable for rural drinking water projects for remedial measures and removal of arsenic, fluoride, and other toxic substances and mainstream their adoption in rural drinking water schemes in relevant areas.
- h) Improve productivity per unit of water consumed in industrial processes, by making water assessments and water audits mandatory in identified industries and utilities.
- (i) Suitable sites for dumping the toxic waste material may be identified and remedial measures may be taken to prevent the movement of the toxic waste in the ground water.
- (j) Excessive use of fertilizers, pesticides and insecticides are the main non point source of the pollution. These pollutants contribute to the pollution of the ground water as well as surface water. The optional utilization of fertilizers, pesticides and insecticides should be encouraged for improving the water quality.

(iii) Wetlands:

Wetlands¹⁸, natural and manmade, freshwater or brackish, provide numerous ecological services. They provide habitat to aquatic flora and fauna, as well as numerous species of birds, including migratory species. The density of birds, in particular, is an accurate indication of the ecological health of a particular wetland. Several wetlands have sufficiently unique ecological character as to merit international recognition as Ramsar Sites.¹⁹

Wetlands also provide freshwater for agriculture, animal husbandry, and domestic use, drainage services, and provide livelihoods to fisherfolk. Larger wetlands may also comprise an important resource for sustainable tourism and recreation.²⁰

They may be employed as an alternative to power, technology, and capital intensive municipal sewage plants; however, if used for this purpose without proper reckoning of their assimilative capacity, or for dumping of solid and hazardous waste, they may become severely polluted, leading to adverse health impacts. The inadvertent introduction of some alien species of flora in wetlands²¹ have also degraded their ecology.

Wetlands are under threat from drainage and conversion for agriculture and human settlements, besides pollution. This happens because public authorities or individuals having jurisdiction over wetlands derive little revenues from them, while the alternative use may result in windfall financial gains to them. However, in many cases, the economic values of wetlands' environmental services may significantly exceed the value from alternative use. On the other hand, the reduction in economic value of their environmental services due to pollution, as well as the health costs of the pollution itself, are not taken into account while using them as a waste dump. There also does not yet exist a formal system of wetland regulation outside the international commitments made in respect of Ramsar sites. A holistic view of wetlands is necessary, which looks at each identified wetland in terms of its causal linkages with other natural entities, human needs, and its own attributes.



18. The Ramsar Convention defines wetlands as, 'areas of marsh, fen, peat land or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres', thereby giving a wide scope to the term.

19. For example, the Chilka Lagoon and the East Kolkata Wetlands.

20. For example, the Dal Lake (Srinagar), the Ootacamund Lake, and the Nainital Lake.

21. e.g. Water Hyacinth.

The following actions will be taken:

- a) Set up a legally enforceable regulatory mechanism for identified valuable wetlands, to prevent their degradation and enhance their conservation. Develop a national inventory of such wetlands.
- b) Formulate conservation and prudent use strategies for each significant catalogued wetland, with participation of local communities, and other relevant stakeholders.
- c) Formulate and implement eco-tourism strategies for identified wetlands through multistakeholder partnerships involving public agencies, local communities, and investors.
- d) Take explicit account of impacts on wetlands of significant development projects during the environmental appraisal of such projects; in particular, the reduction in economic value of wetland environmental services should be explicitly factored into cost-benefit analyses.
- e) Consider particular unique wetlands as entities with “Incomparable Values”, in developing strategies for their protection.
- f) Integrate wetland conservation, including conservation of village ponds and tanks, into sectoral development plans for poverty alleviation and livelihood improvement, and link efforts for conservation and sustainable use of wetlands with the ongoing rural infrastructure development and employment generation programmes. Promote traditional techniques and practices for conserving village ponds.

5.2.6 Mountain Ecosystems:

Mountain ecosystems play a key role in providing forest cover, feeding perennial river systems, conserving genetic diversity, and providing an immense resource base for livelihoods through sustainable tourism. At the same time, they are among the most fragile of ecosystems in terms of susceptibility to anthropogenic shocks. There has been significant adverse impact on mountain ecosystems by

way of deforestation, submergence of river valleys, pollution of freshwater sources, despoliation of landscapes, degradation of human habitat, loss of genetic diversity, plantation of species not conducive to conservation of the mountain environment, retreat of glaciers, and pollution. The most significant proximate causes of these are illegal logging and commercial fuel wood collection, besides faulty construction of infrastructure, unplanned urbanization and lack of enforcement of building bye-laws, absence or disrepair of sanitation systems, setting up of polluting industries, large scale mining of low unit value minerals, climate change, and excessive use of agricultural chemicals. The underlying causes relate to absence of conducive policies to enable local communities to derive adequate financial returns from afforestation and non-consumptive use of forest resources, pricing policies for agricultural chemicals, inadequate



enforcement of pollution standards, poor institutional capacities for urban and regional planning and municipal regulatory functions, and preparation of environmental impact assessments of infrastructure; besides absence of consensus on means of financing municipal infrastructure. Clearly, there is need to address these shortcomings through review of the relevant sectoral and cross-sectoral policies, and institutional capacity building.

Additionally, the following elements of an Action Plan will be taken up:

- a) Adopt appropriate land use planning and watershed management practices for sustainable development of mountain ecosystems.
- b) Adopt “best practice” norms for infrastructure construction in mountain regions to avoid or minimize damage to sensitive ecosystems and despoiling of landscapes.
- c) Encourage cultivation of traditional varieties of crops and horticulture by promotion of organic farming, enabling farmers to realize a price premium.
- d) Promote sustainable tourism through adoption of “best practice” norms for tourism facilities and access to ecological resources, and multistakeholder partnerships to enable local communities to gain better livelihoods, while leveraging financial, technical, and managerial capacities of investors.
- e) Take measures to regulate tourist inflows into mountain regions to ensure that these remain within the carrying capacity of the mountain ecology.
- f) Consider particular unique mountain scapes as entities with “Incomparable Values”, in developing strategies for their protection.

5.2.7 Coastal Resources:

Coastal environmental resources comprise a diverse set of natural and manmade assets, including mangroves, coral reefs, estuaries, coastal forests, genetic diversity, sand dunes, geomorphologies, sand beaches, land for agriculture and human settlements, coastal infrastructure, and heritage sites. These provide habitats for marine species, which, in turn comprise the resource base for large numbers of fisherfolk, protection from extreme weather events, a resource base for sustainable tourism, and agricultural and urban livelihoods. In recent years there has been significant degradation of coastal resources, for which the proximate causes include poorly planned human settlements, improper location of industries and infrastructure, pollution from industries and settlements, and overexploitation of living natural resources. In the future, sea level rise due to climate change may have major adverse impacts on the coastal environment. The deeper causes of these proximate factors lie in inadequate institutional capacities for, and participation of local communities in, formulation



and implementation of coastal management plans, the open access nature of many coastal resources, and lack of consensus on means of provision of sanitation and waste treatment.

The following further actions will be taken up:

- a) Mainstream the sustainable management of mangroves into the forestry sector regulatory regime, ensuring that they continue to provide livelihoods to local communities.
- b) Disseminate available techniques for regeneration of coral reefs, and support activities based on application of such techniques.
- c) Explicitly consider sea-level rise and vulnerability of coastal areas to climate change and geological events, in coastal management plans, as well as infrastructure planning and construction norms.
- d) Adopt a comprehensive approach to Integrated Coastal Management by addressing linkages between coastal areas, wetlands, and river systems, in relevant policies, regulation, and programs.
- e) Develop a strategy for strengthening regulation, and addressing impacts, of ship-breaking activities on human health, and coastal and near marine resources.

The impacts of pollution may differentially impact the poor, or women, or children, or developing regions, who may also have relatively low contributions to its generation, and accordingly the costs and benefits of abatement may have important implications for equity.

5.2.8 Pollution Abatement:

Pollution is the inevitable²² generation of waste streams from the production and consumption of anything. Pollution directly impacts the quality of the receiving medium, i.e. air, water, soil, or electromagnetic spectrum, and when this impaired medium acts upon a receptor, say, a living being, also impacts the receptor. In general, the impacts on the receptor are adverse, but not always.²³ Typically, ecosystems have some natural capacities to assimilate pollution; however, these vary considerably with the nature of the pollutant and the ecosystem. In general, it is cheaper to reduce the emissions of pollution, than to mitigate it after generation, or to treat the receiving medium or receptor. The impacts of pollution may differentially impact the poor, or women, or children, or developing regions, who may also have relatively low contributions to its generation, and accordingly the costs and benefits of abatement may have important implications for equity.

(i) Air Pollution:

Air pollution may have adverse impacts on human health, as well the health of other living entities, manmade heritage, and life-support systems, such as global climate. Depending upon the lifetime of the pollutants, the location of the source, and the prevailing air currents, the receptors may be located at homestead, local, regional, or global levels, at time intervals from near instantaneous, to several decades.

22. "Inevitable", as a consequence of the operation of a fundamental natural law, that of increase in entropy of systems taken together with their surroundings, a derivation from the second law of thermodynamics. "Inevitable", however, does not mean that waste generation cannot be reduced (up to a point) within the limits given by the natural law, or rendered to less harmful forms or recycled.

23. For example, several organic waste streams may have adverse impacts on human health if ingested, but may have value as plant fertilizer.

The direct causes of air pollution are emissions from the use of fossil energy, and other industrial processes, and some consumption activities. The deeper causes arise in a multiplicity of policy, and institutional, including regulatory shortcomings, in particular, inefficient pricing of fossil fuel based energy. Indoor air pollution, a special case, arises from the low societal status of women, leading to continued use of polluting, inefficient biomass stoves, besides pricing policies for agricultural chemicals which lead to substitution of biomass based fertilizer by chemicals, the biomass then being used inefficiently as fuel. These deeper causes need to be addressed through policies and programmes for redressing women's status, and dialogue aimed at consideration of the environmental impacts of pricing policies for agricultural chemicals.



In addition, the following specific actions will be taken:

- a) Take an integrated approach to energy conservation and adoption of renewable energy technologies, including hydropower, by appropriately linking efforts to improve conversion, transmission, distribution, and end-use efficiency, and R&D in, and dissemination of renewable energy technologies. Remove policy, legal, and regulatory barriers to setting up decentralized generation and distribution systems for power and other secondary energy forms, based on local primary energy resources.
- b) Accelerate the national programmes of dissemination of improved fuelwood stoves, and solar cookers, suited to local cooking practices and biomass resources.
- c) Strengthen the monitoring and enforcement of emission standards for both point and non-point sources.
- d) Prepare and implement action plans for major cities for addressing air pollution for both point and non-point sources, relying on a judicious combination of fiats and incentive based instruments.
- e) Formulate a national strategy for urban transport to ensure adequate investment, public and private, in low-pollution mass transport systems.
- f) Promote reclamation of wastelands by energy plantations for rural energy through multistakeholder partnerships involving the land owning agencies, local communities, and investors.
- g) Strengthen efforts for partial substitution of fossil fuels by bio-fuels, through promotion of biofuels plantations, promoting relevant research and development, and streamlining regulatory certification of the new technologies.



(ii) Water Pollution:

The direct and indirect causes of pollution of surface (river, wetlands) water sources, groundwater, and coastal areas have been discussed above.

The following comprise further elements of an action plan:

- a) Develop and implement, initially on a pilot scale, public-private partnership models for setting up and operating effluent and sewage treatment plants. Once the models are validated, progressively use public resources, including external assistance, to catalyze such partnerships. Enhance the capacities of municipalities for recovery of user charges for water and sewage systems.
- b) Prepare and implement action plans for major cities for addressing water pollution, comprising regulatory systems relying on a appropriate combination of fiats and incentive based instruments, projects implemented through public agencies as well as public-private partnerships for treatment, reuse, and recycle where applicable, of sewage and wastewater from municipal and industrial sources, before final discharge to water bodies.
- c) Take measures to prevent pollution of water bodies from other sources, especially waste disposal on lands.
- d) Enhance capacities for spatial planning among the State and Local Governments, with adequate participation by local communities, to ensure clustering of polluting industries to facilitate setting up of common effluent treatment plants, to be operated on cost recovery basis. Ensure that legal entity status is available for common effluent treatment plants to facilitate investments, and enable enforcement of standards.
- e) Promote R&D in development of low cost technologies for sewage treatment at different scales, in particular, replication of the East Kolkata wetlands and other bio-processing based models for sewage treatment, to yield multiple benefits.
- f) Take explicit account of groundwater pollution in pricing policies of agricultural inputs, especially pesticides, and dissemination of agronomy practices. Encourage Integrated Pest Management (IPM) and use of biodegradable pesticides.

(iii) Soil Pollution:

Similarly, the immediate and deeper causes of soil pollution have been considered above. Management of industrial and municipal waste is the major cause of soil pollution and is a serious challenge in terms of magnitude and required resources.

An Action Plan will comprise:

- a) Develop and implement viable models of public-private partnerships for setting up and operating secure landfills, incinerators, and other appropriate techniques for the treatment and disposal of toxic and hazardous waste, both industrial and biomedical, on payment by users, taking the concerns of local communities into account. The concerned local communities and State Governments must have clear entitlements to specified benefits from hosting such sites, if access is given to non-local users. Develop and implement strategies for clean up of toxic and hazardous waste dump legacies, in particular in industrial areas, and abandoned mines, and reclamation of such lands for future, sustainable use.
- b) Survey and develop a national inventory of toxic and hazardous waste dumps, and an online monitoring system for movement of hazardous wastes. Strengthen capacities of institutions responsible for monitoring and enforcement in respect of toxic and hazardous wastes.
- c) Strengthen the legal arrangements and response measures for addressing emergencies arising out of transportation, handling, and disposal of hazardous wastes, as part of the chemical accidents regime.
- d) Strengthen the capacities of local bodies for segregation, recycling, and reuse of municipal solid wastes- recognizing inter-alia the positive impacts it may have on the welfare of safai-karamcharis, and setting up and operating sanitary landfills, in particular through competitive outsourcing of solid waste management services.
- e) Give legal recognition to, and strengthen the informal sector systems of collection and recycling of various materials. In particular enhance their access to institutional finance and relevant technologies.
- f) Promote organic farming of traditional crop varieties through research in and dissemination of techniques for reclamation of land with prior exposure to agricultural chemicals, facilitating marketing of organic produce²⁴ in India and abroad, including by development of transparent, voluntary, science-based labelling schemes.
- g) Promote biodegradable and recyclable substitutes for non-biodegradable materials, and develop and implement strategies for their recycle, reuse, and final environmentally benign disposal, including through promotion of relevant technologies, and use of incentive based instruments.
- h) Develop and enforce regulations and guidelines for management of e-waste, as part of the hazardous waste regime.
- i) Promote, through incentives, removal of barriers, and regulation, the beneficial utilisation of generally non-hazardous waste streams such as fly ash, bottom ash, red mud, and slag, including in cement and brick making, and building railway and highway embankments.



24. There is considerable evidence of consumer preference for organic produce, which thereby may command a substantial premium.



(iv) Noise Pollution:

Persistent exposure to elevated noise levels has been established to result in significant adverse health impacts. While in many instances, the identification of a particular sound as “noise” is unambiguous, in the case of others, such as “music” or “chanting” or “fireworks displays”, it is inherently subjective. In all such cases, societal well-being would require that exposure levels to third parties be maintained below levels at which significant adverse health impacts may occur. At the same time, it needs to be understood that certain environments in which people choose to live and work necessarily involve a certain level of noise.

The following will comprise elements of an Action Plan on abatement of noise pollution:

- a) Make appropriate distinctions between different environments in terms of setting ambient noise standards, e.g. rural versus urban; educational and medical establishments versus other areas, night-time versus daytime in residential areas, areas in the vicinity of road, rail, airport infrastructure, and protected areas, etc.
- b) Distinguish between noise standards in the context of occupational exposure (with protection measures), and environmental exposure to third parties.
- c) Formulate noise emissions norms (e.g. loudspeaker, automobile horns, fireworks ratings) appropriate to various activities to ensure that exposure levels to third parties who are not participants in the activity do not exceed prescribed ambient standards.
- d) Include ambient noise as among the environmental quality parameters to be routinely monitored in specified urban areas.
- e) Encourage dialogue between State/Local Authorities and religious/community representatives on the adoption of enforceable durations, timings, and use of loudspeakers/fireworks, etc, in case temporary exceedance of prescribed ambient noise standards for observance of traditional religious/cultural/social events cannot be avoided.

5.2.9 Conservation of Manmade Heritage:

Manmade heritage reflects the prehistory, history, ways of living, and culture, of a people. In the case of India, such heritage is at the core of our national identity. At the same time, considerable economic value, and livelihoods may be derived from conservation of manmade heritage and their sustainable use, through realization of their tourism potential.

The criteria for, and processes of identification of heritage sites, besides legislation and fiscal measures to ensure that they are not damaged or converted by direct human interference, are outside the scope of the National Environment Policy. However, the impact of environmental quality on their conservation is an environmental policy concern. Heritage sites may be impacted by pollution, or they may face threats of inundation or conversion by development projects. Several prominent heritage sites may be held to possess “Incomparable Values”.



The following action points will be pursued:

- a) In setting ambient environmental standards, especially for air quality, the potential impacts on designated heritage sites must be taken into account.
- b) Heritage sites considered to have “Incomparable Values” would merit stricter standards than otherwise comparable situations, and particular attention should be paid to monitoring and enforcement of environmental standards in their case. Integrated regional development plans should be drawn up, with participation of the local community, to shift polluting activities or render them much less polluting, to treat waste streams, to review transportation options, and adopt building norms which maintain the overall heritage ambience of the area.
- c) Impacts on designated heritage sites must be considered at the stage of developing the terms of reference for environmental impact assessments of projects, and consideration given to the potential impacts during appraisal, in terms of the Objectives and Principles of the National Environment Policy.

5.2.10 Climate Change:

Climate change, resulting from anthropogenic emissions of a suite of gases (called “greenhouse gases” or GHGs) due to fossil fuel use, certain agricultural and industrial activities, and deforestation, leading to their increasing concentrations in the atmosphere, has the potential, over the next few generations, to significantly alter global climate. This would result in large changes in ecosystems, leading to possibly catastrophic disruptions of livelihoods, economic activity, living conditions, and human health. On the other hand, abatement of GHGs, would involve significant economic costs.



While climate change is a global environmental issue, different countries bear different levels of responsibility for increase in atmospheric GHGs concentrations. Further, the adverse impacts of climate change will fall disproportionately on those who have the least responsibility for causing the problem, in particular, developing countries, including India.

India's GHG emissions in 1994 were 1228 million ton (Mt) CO₂ equivalent²⁵, which is below 3% of global GHG emissions. In per-capita terms, it is 23 per cent of the global average, and 4 per cent of USA, 8 per cent of Germany, 9 per cent of UK, and 10 per cent of Japan, per capita emissions in 1994. In terms of the GHG intensity of the economy, in Purchasing Power Parity terms, India emitted a little above 0.4 ton CO₂ equivalent per 1000 US dollars in 2002, which is lower than the global average.

In terms of primary energy use, India's share of renewable energy (being a nonGHG emitting energy form) at 36 per cent is far higher than industrialized countries can hope to reach in many decades. Since GHG emissions are directly linked to economic activity, India's economic growth will necessarily involve increase in GHG emissions from the current extremely low levels. Any constraints on the emissions of GHG by India, whether direct, by way of emissions targets, or indirect, will reduce growth rates.

On the other hand, India's policies for sustainable development, by way of promotion of energy efficiency, appropriate mix of fuels and primary energy sources including nuclear, hydro and renewable sources, energy pricing, pollution abatement, afforestation, mass transport, besides differentially higher growth rates of less energy intensive services sectors as compared to manufacturing, results in a relatively GHGs benign growth path.



Anthropogenic climate change, significant responsibility for which clearly does not lie with India or other developing countries, may, on the other hand, have likely adverse impacts on India's precipitation patterns, ecosystems, agricultural potential, forests, water resources, coastal and marine resources, besides increase in range of several disease vectors. Large-scale resources would clearly be required for adaptation measures for climate change impacts, if catastrophic human misery is to be avoided. Accordingly, the following will comprise essential elements of India's response to climate change:

25. India's initial National Communication to the UN Framework Convention on Climate Change (UNFCCC), 2004.

- a) Adherence to the principle of common but differentiated responsibilities and respective capabilities of different countries in respect of both mitigation of GHGs, and adaptation measures.
- b) Reliance on multilateral approaches, as opposed to bilateral or plurilateral or unilateral measures.
- c) Equal per-capita entitlements of global environmental resources to all countries.
- d) Over-riding priority of the right to development.
- e) Identify key vulnerabilities of India to climate change, in particular impacts on water resources, forests, coastal areas, agriculture, and health.
- f) Assess the need for adaptation to future climate change, and the scope for incorporating these in relevant programmes, including watershed management, coastal zone planning and regulation, forestry management, agricultural technologies and practices, and health programmes.
- g) Encourage Indian Industry to participate in the Clean Development Mechanism (CDM) through capacity building for identifying and preparing CDM projects, including in the financial sector.
- h) Participate in voluntary partnerships with other countries both developed and developing, to address the challenges of sustainable development and climate change, consistent with the provisions of the UN Framework Convention on Climate Change.

5.3 Environmental Standards, Management Systems, Certification, and Indicators:

5.3.1 Environmental Standards:

Environmental Standards refer both to the acceptable levels of specified environmental quality parameters at different categories of locations (“ambient standards”), as well as permissible levels of discharges of specified waste streams by different classes of activities (“emission standards”).

It is now well understood that environmental standards cannot be universal, and each country should set standards in terms of its national priorities, policy objectives, and resources. These standards, may, of course, vary (in general, become more stringent) as a country develops, and has greater access to technologies and financial resources for environmental management. While within the country different states, UTs and local bodies may adopt stricter standards, based on local considerations, they would require concurrence of the Central Government to ensure adherence to the provisions of this policy. Environmental standards also need to relate to other measures for risk mitigation in the country, so that a given societal commitment of resources for achieving overall risk reduction²⁶ yields the maximum aggregate reduction in risk.



26. Environmental quality is not the only source of societal risk; virtually every activity of humans is fraught with risk. Other sources of risk, which may be regulated, include safety standards for vehicles, aircraft, water, food and pharma, contagious diseases (quarantine and immunizations), etc. Risk mitigation in each case involves societal costs; these must be weighed against the potential benefits.

The tendency to prescribe specific abatement technologies should also be eschewed, since these may unnecessarily increase the unit and societal costs of achieving the ambient environmental quality.

Specific considerations for setting ambient standards in each category of location (residential, industrial, environmentally sensitive zones, etc.) include the reductions in potential aggregate health risks (morbidity and mortality combined in a single measure²⁷) to the exposed population; the risk to sensitive, valuable ecosystems and manmade assets; and the likely societal costs, of achieving the proposed ambient standard.

Similarly, emissions standards for each class of activity need to be set on the basis of general availability of the required technologies,²⁸ the feasibility of achieving the applicable environmental quality standards at the location (specific or category) concerned with the proposed emissions standards, and the likely unit costs of meeting the proposed standard. It is also important that the standard is specified in terms of quantities of pollutants that may be emitted, and not only by concentration levels, since the latter can often be easily met through dilution, with no actual improvement in ambient quality. The tendency to prescribe specific abatement technologies should also be eschewed, since these may unnecessarily increase the unit and societal costs of achieving the ambient environmental quality, and in any case because a technology that is considered ideal for meeting a given emission standard may not be acceptable on other relevant parameters, including possibly other sources of societal risk.

The following specific actions will be taken:

- a) Set up a permanent machinery comprising experts in all relevant disciplines to review notified ambient and emissions standards in the light of new scientific and technological information as they become available, and changing national circumstances, ensuring adequate participation by potentially impacted communities, and industry associations.
- b) Strengthen the testing infrastructure and network for monitoring ambient environmental quality, including through participation by local communities, and public-private partnerships. Progressively ensure real-time, and on-line availability of the monitoring data.

5.3.2 Environmental Management Systems, Ecolabeling and Certification:

Environmental Management Systems (EMS), such as ISO 14000, by requiring the adoption of standardized environmental management practices, documenting their actual use, and credible third party verification of the fact, may significantly ease the public burden of monitoring and enforcement of prescribed emissions standards. On the other hand, their adoption may involve transaction costs, which, for small and medium enterprises may be significant in relation to their total investment. Global harmonization of EMS²⁹, however, is a safeguard against adoption of arbitrary national EMS regimes to serve as non-tariff barriers.

27. E.g. "Disability Adjusted Life Years" (DALY).

28. Specifically, that a range of technologies from numerous vendors should be available, to preclude windfall gains to one or a small set of manufacturers and resultant high costs of the technologies.

29. Global harmonization of EMS however relates to achievement of national, not externally imposed emission standards.

Ecolabeling (and other voluntary certification mechanisms) differ from the EMS in that they address the preferences of environmentally conscious consumers, rather than ensuring adherence to national environmental standards. They may involve review of the entire product cycle, from sourcing raw materials, to final disposal of the product after use, and since they are concerned primarily with consumer preferences, may relate to external or ad-hoc, rather than national environmental standards. Further, at present, non-public bodies have established several labeling schemes in India's export destinations, with no satisfactory evidence of being based on scientific knowledge, or participation by the potentially affected producers. Moreover, they may be based on prescriptions of production processes, and not only of the product characteristics, and for this reason, their mandatory application is inconsistent with provisions of the WTO regime.

Ecolabels, etc., clearly have the potential to be employed as trade barriers, at least by competing firms in the export destinations, if not directly by their Governments. The obtaining of an ecolabel, especially one granted by an agency located in a developed country, may involve large transactions costs. However, ecolabeled products may command significant price premia, as well as ease of entry to markets. On the other hand, the fact of a large, rapidly growing, environmentally conscious consumer base in India itself, may provide the required leverage to realize significant advantages from mutual recognition of ecolabeling schemes.



The following actions will be taken:

- a) Encourage industry associations to promote the adoption of ISO 14000 among their members, through provision of technical and training support. Mainstream promotion of ISO 14000 in the small-scale sector in the various promotion schemes for the sector.
- b) Encourage adoption of EMS through purchase preference for ISO 14000 goods and services for Government procurement, except for items reserved for the small-scale sector at any given time. Mandate ISO 14000 when a sufficient number of domestic suppliers for each good or service have ISO 14000 certification.³⁰
- c) Formulate “Good Practice Guidelines” for ecolabels to enhance their scientific basis, transparency, and requirements of participation. Promote the mutual recognition of Indian and foreign ecolabels, which adhere to the Good Practice Guidelines, to ensure that Indian exporters enhance their market access at lower costs.

30. Even firms which sell only part of their output to government may be expected to obtain ISO 14000 certification, since it would not be cost-effective for them to maintain separate production lines for certified and non-certified products.

- d) Promote “good practices” norms in all relevant sectors to conserve natural resources and reduce adverse environmental impacts, covering siting, choice of materials, use of appropriate energy efficiency and renewable energy options, and addressing solid wastes generation, effluents and sewage handling, gaseous emissions, and noise.



5.4 Clean Technologies and Innovation:

Clean technologies, as distinct from “end-of-pipe” abatement technologies minimize the generation of waste streams in the production processes and utilize waste from other consumption goods and production processes, rather than treating the waste after generation. In general, clean technologies are less intensive in use of raw materials and energy, than conventional technologies, which rely on pollution abatement after generation. For this reason, they may also offer significant cost advantages to the producer.

Barriers to the adoption of clean technologies are, first, the fact that many of them are proprietary, and protected by strong patent regimes held abroad. The vendors, accordingly, would be able to extract large premiums in the absence of competitive substitutes. In such cases a project specific approach will be adopted in respect of enhancing

market access. Second, lack of capacity in development financial institutions for appraisal of proposals for switching existing production facilities to clean technologies. Third, the lack of coordination in R&D efforts in India aimed at developing a shelf of commercially viable clean technologies. The last should also be viewed against the fact that in future, almost all commercial transfers of production technology worldwide may be for clean technologies.

The following will comprise elements of an Action Plan:

- a) Encourage capacity building in the financial sector for appraising clean technology switchover project proposals.
- b) Set up a mechanism to network technology research institutions in the country, public and private, for cooperation in technology research and development and adaptation, information, and evaluation of clean technologies. Create a database of such technologies, and promote dissemination of new technologies developed both in India and abroad.
- c) Consider use of revenue enhancing fiscal instruments to promote shifts to clean technologies in both existing and new units.
- d) Promote adoption of clean technologies by industry, in particular in the small and medium sector, through regulatory and fiscal measures, and standards setting.

5.5 Environmental Awareness, Education, and Information:

Enhancing environmental awareness is essential to harmonize patterns of individual behaviour with the requirements of environmental conservation. This would minimize the demands placed on the monitoring and enforcement regimes; in fact, large-scale non-compliance would simply overwhelm any feasible regulatory machinery. Awareness relates to the general public, as well as specific sections, e.g. the youth, adolescents, urban dwellers, industrial and construction workers, municipal and other public employees, etc. Awareness involves not only internalization of environmentally responsible behaviour, but also enhanced understanding of the impacts of irresponsible actions, including to public health, living conditions, sanitation, and livelihood prospects.



Environmental education is the principal means of enhancing such awareness, both among the public at large, and among focused groups. Such education may be formal, or informal, or a combination of both. It may rely on educational institutions at different levels; the print, electronic, or live media; and various other formal and informal settings. Several steps to expand and enrich the content of the environment awareness and education programmes have been taken. The Supreme Court has also mandated that environmental education must be imparted at all levels, including higher education in the formal system. However, there is need for further strengthening the existing programmes and making them more inclusive and participatory.

Access to environmental information is the principal means by which environmentally conscious stakeholders may evaluate compliance by the concerned parties with environmental standards, legal requirements, and covenants. They would thereby be enabled to stimulate necessary enforcement actions, and through censure, motivate compliance. Access to information is also necessary to ensure effective, informed participation by potentially impacted publics in various consultation processes, such as for preparation of environmental impact assessments, and environment management plans of development projects.

Access to environmental information is the principal means by which environmentally conscious stakeholders may evaluate compliance by the concerned parties with environmental standards, legal requirements, and covenants.

The National Natural Resources Management System (NNRMS) was set up in 1983 for optimally managing the natural resources and environment of the country using an optimal mix of remote sensing and conventional techniques. Remote Sensing and data, both satellite and aerial, is being used extensively in the country for mapping and managing the natural resources and environment, over the past three decades.

The following actions will be taken:

- a) Develop and operate an online, real time, publicly accessible environmental information system to provide all relevant information on key environmental resources and parameters, including ambient quality, as well as major point sources of pollution, and make archival data available in convenient format.
- b) Further promote the use of Remote Sensing data to provide valuable inputs on the extent and quality of forests, wildlife habitats, biodiversity, wastelands, wetlands, groundwater, deserts, rivers, etc., and monitor pollution and its impacts.
- c) Mainstream scientifically valid environment content in the curricula of formal education, at primary, secondary, tertiary, and professional levels, focusing on the content appropriate at each stage, and without increasing the course load overall, besides non-formal programmes, such as adult education. Special mid-career training programmes may be conducted for groups with special responsibilities, e.g. the judiciary, policy makers, legislators, industrial managers, city and regional planners, and voluntary and community based organizations.
- d) Prepare and implement a strategy for enhancing environmental awareness among the general public, and special groups, by professional production and airing of information products through diverse media catering to the different target groups. The media products should, as far as possible, eschew focusing on the achievements of public agencies, but instead document real world events of human interest. The production, as well as dissemination may involve public, private, and voluntary agencies. Ensure that adequate financial resources are available for the purpose.

5.6 Partnerships and Stakeholder Involvement:

Conservation of the environment requires the participation of multiple stakeholders, who may bring to bear their respective resources, competencies, and perspectives, so that the outcomes of partnerships are superior to those of each acting alone. Implementing and policy making agencies of the

Government, at Central, State, Municipal, and Panchayat levels; the legislatures and judiciary; the public and private corporate sectors; financial institutions; industry associations; academic and research institutions; independent professionals and experts; the media; youth clubs; community based organizations; voluntary organizations; and multilateral and bilateral development partners, may each play important roles in partnerships for the formulation, implementation, and promotion of measures for environmental conservation.

Institutions of local self-government have an important role in management of the environment and natural resources. The 73rd and 74th Constitutional amendments provide the framework for their empowerment. Further policy and legislative changes are necessary to enable them to actually realize such a role, and participate in various partnerships in this context.



A number of specific themes for partnerships have been identified above. A generic classification of some, not exhaustive, possible partnerships is as follows:

- a) Public-Community Partnerships, by which public agencies and local communities cooperate in the management of a given environmental resource, each partner bringing agreed resources, assuming specified responsibilities, and with defined entitlements, e.g. Joint Forestry Management.
- b) Public-Private Partnerships, by which specified public functions with respect to environmental management are contracted out competitively to private providers, e.g. monitoring of environmental quality.
- c) Public-Community-Private Partnerships, in terms of which the partners assume joint responsibility for a particular environmental function, with defined obligations and entitlements for each, with competitive selection of the private sector partner, e.g. afforestation of degraded forests.
- d) Public-Voluntary Organization Partnerships, similar to public-private partnerships, in respect of functions in which voluntary organizations may have a comparative advantage over others, the voluntary organizations, in turn, being selected competitively, e.g. environmental awareness raising.
- e) Public-Private-Voluntary Organization Partnerships, in which the provision of specified public responsibilities is accomplished on competitive basis by the private sector, and the provision is monitored by competitively selected voluntary organizations, e.g. “Build, Own, Operate” sewage and effluent treatment plants.
- f) It is also essential that all partnerships are realized through, and are carried out in terms of the principles of good governance, in particular, transparency, accountability, cost effectiveness, and efficiency.
- g) Youth constitute the most vibrant segment of the country's population. Their strength needs to be harnessed and channelised in protection and conservation of environment. They also need to be involved in relevant stakeholder participation.



5.7 Capacity Building:

The multi-stakeholder character of environmental issues and continuous developments in the field of environment, make it necessary to have a continuing focus on capacity building in all concerned institutions: public, private, voluntary, academic, research, and the media.

The following actions are necessary:

- a) Review the present institutional capacities at the Central and State levels, in respect of enforcement of environmental laws and regulations. Prepare and implement suitable programs for enhancement of the capacities, as required.
- b) Incorporate in all environmental programmes a capacity development component, with sufficient earmarked funds.
- c) Ensure continuous upgradation of knowledge and skills of the scientific and technical personnel involved in environmental management in public institutions at all levels: Central, State, and Local, through dedicated capacity building programs.

5.8 Research and Development:

In order to rapidly advance scientific understanding of environmental issues, it is necessary to promote properly focussed research by competent institutions. A continuous engagement with the scientific community, in government, academic, and private institutions, will provide important insights for policy making and regulation, including in the field of multilateral negotiations, and help realize deeper and broader skills in the scientific community.

Key areas of research are as follows (not in order of priority, which is changeable over time):

- Taxonomies of living natural resources.
- Research leading to better understanding of ecological processes and pathways.
- Research which provides direct inputs to policy making.
- R&D in technologies for environmental management and clean production.



The following actions would be taken:

- a) Periodically identify and prioritize areas for research.
- b) Establish a research programme in priority areas within the Government, with expected outputs clearly specified.
- c) Encourage research in priority areas outside the Government, with necessary financial and institutional support.

5.9 International Cooperation:

India has participated in major international events on the environment, since 1972. The country has contributed to, and ratified several key multilateral agreements on environmental issues in recognition of the transboundary nature of several environmental problems, and has complied with its commitments. It has also participated in numerous regional and bilateral programs for environmental cooperation. Given the need to enhance our own capacities to comply with our commitments, and ensure sustained flows of resources for environmental management, the following steps would be taken:

-
- a) Avail of multilateral and bilateral cooperation programs, for capacity building for environmental management, particularly in relation to commitments under multilateral instruments.
 - b) Participate in mechanisms and arrangements under multilateral agreements for enhancing flows of resources for sustainable development.
 - c) Provide assistance to other developing countries, in particular for scientific and technical capacity building for environmental management.

5.10 Review of the Policy:

We live in a rapidly changing global community, in a rapidly developing, highly diverse country. The environmental issues that are salient as of now may evolve over time, and new ones may take their place. Scientific understanding of environmental matters would advance rapidly. Changes in economic structure, technologies, resource availability, in each case nationally as well as globally, are likely, as are evolution of global environmental regimes, and norms arising from jurisprudence.

To set forth an immutable National Environment Policy in this dynamic situation would be unwise. A prudent course would be to provide for updating every few years in light of new knowledge and developments, and a comprehensive review in about a decade.

The following provisions are, accordingly made for review, updating, and renewal of the National Environment Policy:

- a) Undertake consultations every three years with groups of diverse stakeholders, i.e. researchers and experts, community based organizations, industry associations, and voluntary organizations, and update the National Environment Policy.
- b) In the third of the three-year reviews, undertake a more comprehensive examination of the scientific and policy understanding of environmental issues, redefine the Objectives and Principles, and recast the Strategic Themes for Action. A new National Environment Policy should be the outcome.

5.11 Review of Implementation:

Any policy is only as good as its implementation. The National Environment Policy outlines a significant number of new and continuing initiatives for enhancing environmental conservation. These require the coordinated actions of diverse actors, for the major part organized and stimulated by one or more public agencies.

While coordination and review mechanisms are necessary in respect of the individual action plans under each of the strategic themes at relevant operational levels, a formal, periodic high level review of implementation of the different elements of the National Environment Policy is essential. This would enhance accountability of the different public agencies responsible for implementation. It would also reveal practical issues in implementation, including absence of political will at concerned levels, or official indifference.

Accordingly, the Cabinet or a nominated Committee of the Cabinet may be requested to review the implementation of the National Environment Policy, once a year, within three months from the close of the previous fiscal year. The findings of the review should be publicly disclosed, so that stakeholders are assured of the seriousness of the Government in ensuring implementation of the Policy.





6 Process of Formulation of this Policy:

The preparation of this Policy has involved inputs and consultations with diverse experts, and stakeholders.

A draft of the National Environment Policy was prepared through an intensive process of consultation within the Government and inputs from experts. The draft, in English and Hindi was posted on the website of the Ministry of Environment and Forests and responses were invited from individuals and organizations, through advertisements in national and regional newspapers.. The draft was open for public consultation from 21st August, 2004 to 31st December, 2004. Consultations were held with concerned Ministries of the Central Government, and all State/UT governments at meetings of the State Environment Ministers and senior officials. The latter were encouraged to undertake local level public consultations. The draft was also provided to the Members of Parliament and their views and suggestions were invited. The Ministry of Environment and Forests also held consultations with representatives of major academic and research institutions, and key Industry Associations, Voluntary Organisations, and individuals who are well known in the field. Detailed summaries of responses were prepared and the various concerns expressed by the respondents were addressed. Many of the suggestions received have been incorporated in the Policy.

Photographs :

CEE Photo Bank : Page No. 23, 27, 37, 39, 46, 47, 48, 49, 50
Manoj Dholakia : Cover, Page No. 1, 3, 4, 5, 7(T.R.) 8, 9, 10, 11, 12, 14, 15,
22, 24, 26, 28, 30, 33, 35, 38, 40, 41, 51, 52
P. M. Dalwadi : Page No. 25
Shekhar Dattatri : Page No. 19, 21
Vivek Desai : Page No. 6
Dinesh Shukla : Page No. 16, 42, 43
Ajay Tambe : Page No. 34

Designed and Printed by

Centre for Environment Education (CEE)

Thaltej Tekra, Ahmedabad-380054.

Phone: 91-79-26858002 • Fax: 91-79-26858010

E-mail: cee@ceeindia.org • Website: www.ceeindia.org

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

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

June, 1992

KAMAL NATH

Minister
Environment & Forests Government of India

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)

June, 1992

CONTENTS

PREFACE

1.0 PREAMBLE

2.0 ENVIRONMENTAL PROBLEMS: NATURE AND DIMENSIONS

3.0 ACTIONS TAKEN

4.0 CONSTRAINTS AND AGENDA FOR ACTION

5.0 PRIORITIES AND STRATEGIES FOR ACTION

5.1 Population Control

5.2 Conservation of natural resources

5.2.1 Land and water

5.2.2 Atmosphere

5.2.3 Bio-diversity

5.2.4 Biomass

6.0 DEVELOPMENT POLICIES FROM ENVIRONMENTAL PERSPECTIVES

6.1 Agriculture & Irrigation

6.1.1 Agriculture

6.1.2 Irrigation

6.2 Animal Husbandry

6.3 Forestry

6.4 Energy generation and use

6.5 Industrial Development

6.6 Mining and Quarrying

6.7 Tourism

6.8 Transportation

6.9 Human settlements

7.0 INTERNATIONAL COOPERATION

8.0 SUPPORT POLICIES AND SYSTEMS

8.1 Strengthening of institutions and legislation

8.2 Natural resource accounting

8.3 Training and orientation programmes

8.4 Promoting environmental awareness

8.5 Promoting appropriate environmental technologies

8.6 Rehabilitation of project oustees

8.7 Role of non-governmental organizations
8.8 Women and Environment

9.0 CONCLUSION

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.

1

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.



Wildlife Protection (Regulation of Exports and Imports) Amendment Act 1999

No. 12, 1999

**An Act to amend the *Wildlife Protection (Regulation
of Exports and Imports) Act 1982*, and for related
purposes**



Wildlife Protection (Regulation of Exports and Imports) Amendment Act 1999

No. 12, 1999

An Act to amend the *Wildlife Protection (Regulation of Exports and Imports) Act 1982*, and for related purposes

[Assented to 8 April 1999]

The Parliament of Australia enacts:

1 Short title

This Act may be cited as the *Wildlife Protection (Regulation of Exports and Imports) Amendment Act 1999*.

Wildlife Protection (Regulation of Exports and Imports) Amendment Act 1999 No. 12, 1999

1

2 Commencement

This Act commences 28 days after the day on which it receives the Royal Assent.

3 Schedule(s)

Each Act that is specified in a Schedule to this Act is amended or repealed as set out in the applicable items in the Schedule concerned, and any other item in a Schedule to this Act has effect according to its terms.

Schedule 1—Amendment of the Wildlife Protection (Regulation of Exports and Imports) Act 1982

1 Subsection 4(1)

Insert:

Convention listed animal means an animal of a species included in Appendix I, II or III to the Convention.

Note: These species are included in those listed in Schedules 1, 2, 2A and 3.

Convention listed plant means a plant of a species included in Appendix I, II or III to the Convention.

Note: These species are included in those listed in Schedules 1, 2, 2A and 3.

2 After subsection 4(2A)

Insert:

(2B) For the purposes of this Act, if a thing is represented by an accompanying document, the package or a mark or label, or from any other circumstances, to be:

- (a) the skin, feathers, horns, shell or any other part of a Convention listed animal; or
- (b) part of a Convention listed plant; or
- (c) reproductive material from a Convention listed animal or a Convention listed plant; or
- (d) an article produced by or from, or derived from, one or more Convention listed animals or one or more Convention listed plants, whether with or without any other material;

then the thing is taken to be a specimen derived from the Convention listed animal or the Convention listed plant, or from each Convention listed animal or Convention listed plant, as the case requires.

Note: This subsection has the effect (among other things) of widening the scope of sections 21, 22 and 53, which are offence provisions relating to the export, import and possession of specimens.

3 After subsection 4(2B)

Insert:

(2C) However, the import or export of a thing that is taken under subsection (2B) to be a specimen derived from an animal or plant of a particular kind is not to be taken to be in accordance with a permit or authority only because of the operation of that subsection.

Example: A person labels tiger bone as the bone of a Convention listed animal that the person is authorised by a permit to import, and imports the tiger bone. The mere fact that the tiger bone is labelled in that way does not mean that its import is in accordance with a permit.

4 At the end of section 21 (after the penalty)

Add:

Note: Because of the operation of subsection 4(2B), it may be an offence under this section to export a thing that is represented to be a Convention listed animal or plant (including an article, such as medicine, produced or derived from such an animal or plant).

5 At the end of section 22 (after the penalty)

Add:

Note: Because of the operation of subsection 4(2B), it may be an offence under this section to import a thing that is represented to be a Convention listed animal or plant (including an article, such as medicine, produced or derived from such an animal or plant).

6 At the end of subsection 53(1)

Add:

Note: Because of the operation of subsection 4(2B), the import of a thing represented to be a Convention listed animal or plant (including an article, such as medicine, produced or derived from such an animal or plant) may have been in contravention of this Act.

CONVENTION ON WETLANDS (Ramsar, Iran, 1971)

Information paper on cultural aspects of wetlands (draft)^[1]

Section I

General context and rationale on the cultural aspects of wetlands

Acknowledgement: The Ramsar Bureau is most grateful to Mr. Thymio Papayannis, Special Advisor to the Secretary General, for having accepted the responsibility of drafting this COP8 document. The Bureau extends this appreciation to the many individuals that have enthusiastically assisted Mr Papayannis in this task.

Wetlands, water, life and culture

1. Wetlands have provided valuable resources and refuge for human populations and many other life forms since the very beginning of human life on Earth. Major civilizations have been established on their shores and have depended upon their resources, and especially upon water. Settlements, including major cities such as Amsterdam, Bangkok, Tunis and Venice, have been built in wetlands or in their immediate vicinity^[2].

Box 1: The Nile in Ancient Egypt

Nowhere is the intricate relation between water, wetlands and human survival better illustrated than in the case of the Nile River and ancient Egypt. The cyclical ebb and flow of the river waters determined the fortunes and fate of the powerful civilization that grew in the area and left its weighty marks.

During *Akhet*, the season of inundation, the Nile flooded *kmt*, “the black land”, which included most of the flat plains along its banks. This allowed planting of wheat and barley in September, during the season of *Peret*, which were harvested in March or April. *Shemu*, the summer season of drought followed, and the life-sustaining cycle was repeated. During the Old Kingdom, in the 3rd millennium B.C., it was the kings who were supposed to maintain *Ma’at*, the cosmic order, and guarantee the continuity of the Nile cycle.

Climatic oscillations, however, led to the dramatic decrease of the Nile flow at certain periods [Fagan 1999]. As a result, only a small part of cultivated lands was flooded and the impact was dramatic, with large scale famine unavoidable. This eroded the power of the kings and led to massive political unrest. Thus the Old Kingdom collapsed after 2160 B.C. in a background of extended hunger and political turmoil in Southern Egypt. This phenomenon has been often been repeated in Egyptian history in more recent times.

2. Malaria in many parts of the world became a negative factor and drove populations away from wetlands. It also created one of the main reasons for the drainage of wetlands, until the discovery of quinine provided an effective remedy to the on-slaught of *Anopheles anopheles*. Thus the conquest of plains and their use for agriculture entailed a heavy health cost for the populations that initiated them^[3].
3. Human activities of some sort and intensity have existed in almost all wetlands. The abandonment of traditional activities of the primary sector during the 20th century decreased the importance of some wetlands as a direct resource base for human survival. Still many of their other values to people have begun to be understood and appreciated. These include a regulatory role in the water cycle, flood abatement,

aquifer recharge, retention of nutrients and pollutants, shore protection, educational and recreational opportunities.

Box 2 : Tonle Sap Lake in Cambodia

During the rainy season, Tonle Sap, or Great Lake, fed by the overflowing waters of the Mekong River, grows to six times its normal size, to more than 16,000 square kilometres, thus absorbing floods and releasing the water gradually. One of the largest freshwater bodies in Southeast Asia, Tonle Sap has been the home of a fisher population living in traditional wooden houses on stilts (as in the village of Chhnok Trou), with extensive use of reeds and very characteristic fishing and transport boats and artefacts.

Lately, however, the situation is changing rapidly and radically. Internal migration and explosive population growth have increased the pressures on the lake, and have almost completely destroyed local architecture. The lake pollution is rising, both from domestic sources and from cultivation; forest logging is increasing the inflow of silt, while shallow areas, necessary for fish spawning, are being drained. In addition, dam construction has decreased freshwater flow into the lake. Overfishing and illegal practices are quite common. The result is a dramatic reduction in fish catches, which used to supply more than 60% of the protein consumption in Cambodia. In parallel, the rich local culture of the fisher communities is being bastardised and rapidly eroding.

The Cambodian government has started a new initiative to face effectively the problems at Tonle Sap, but strong and sustained efforts will be necessary to reverse the current negative trends.

4. From the very beginning, water – along with air and food – has been understood as an absolute necessity for survival. After the gradual shift from hunter / gatherer clans to agricultural societies, water became an essential prerequisite for food production. Its abundant availability created the basis for great civilizations, as in the case of the Nile for the Egyptians and the Euphrates and Tigris for the Mesopotamians. Its scarcity in periods of drought brought down the same powerful societies. It is only natural, therefore, that water was venerated in many religions and the ‘blessing of the waters’ has been a common ritual. Wetlands in turn, as a major source of water, were equally respected. Thus their values, and especially their cultural values, have been inextricably linked. In a contemporary framework, water is often associated with flow, while wetlands with stagnant waters. However, this distinction is simplistic, as water in aquifers can remain static, while coastal lagoons can experience a very dynamic water regime during different times of the year. In any case, rivers may be classified as wetlands under the Ramsar definition, and their floodplains experience dynamic water movement in times of floods.
5. Wetlands are diverse ecosystems and range from great rivers and lakes to desert oases, from Alpine lakes to coastal lagoons, from underground karstic systems to shorelines with depth down to 6 meters. There are, however, certain similarities in their physical characteristics and functions, as well as in the rich variety of flora and fauna species they host. As to the cultural and other social values of wetlands, which have come into the limelight during recent years, a strong specificity (certainly regional and often local) characterises them and adds a new dimension to their diversity.
6. Yet, and in spite of all conservation and wise use efforts, wetland destruction has continued in many parts of the world, in developed and developing countries alike. In others, the appreciation of wetland values has led to significant projects for the restoration of lost or heavily degraded wetlands, at great cost. These have shown conclusively how very difficult it is to restore to some degree the values and eco-

logical functions of destroyed or degraded wetlands. They have also demonstrated that it is practically impossible to restore, once lost, their cultural and historical values. These values are often associated with inanimate objects, such as buildings and other structures. However, a large part of them are borne by local societies, woven in their social fabric, and are lost in a few generations after wetlands are destroyed. It should be stressed here that the loss of wetlands does not only remove important resources, but also causes profound social damage to local populations.

Box 3: The case of Lake Carla

In the centre of Greece, the fertile region of Thessaly depended for water until the beginning of the 20th century on seven lakes. None exist today. Lake Carla, the last and largest, a major Mediterranean wetland known for its fisheries and the large populations of migratory birds it hosted, was drained in the early '60s to provide agricultural land. As a result, the local society that depended on lake fisheries was destroyed, taking with it the traditions associated with this important activity. Many inhabitants moved to the cities, while some attempted to cultivate the land drained.

The results soon proved disastrous. For irrigation, the water of the lake was replaced by intense pumping. This caused a dramatic drop in the level of aquifers (today down to 300 meters in certain places) and the beginning of intrusion of salt water, although the sea was a few kilometres away. The fields soon became salinated and as a result cultivation became more and more difficult and less productive, while large parts of the lake bottom were abandoned. Pollution from agricultural and industrial run-off, initially filtered by the wetland, was led untreated into the Pagasitikos Bay, causing severe algae blooms and other eutrophication problems.

At present, a large government project has started with funding from the European Commission to restore a considerable part of the lake. It is hoped that, if successful, it will re-establish some of its functions and values. The rich cultural heritage of the Carla fisheries, however, cannot be recreated, but perhaps some of its remnants (boats and tools) will be preserved in a local museum to be established.

Rationale of concern for cultural aspects

7. The concern for the cultural values associated with wetlands and water is recent and has been limited to certain specialised circles of scientists, such as archaeologists and anthropologists. Lately, however, those responsible for wetland conservation and management have begun to pay attention to this question, within the broader context of the socio-economic approach. As a result, cultural values have become an issue of concern for the Convention on Wetlands. In April 2000, the Mediterranean Wetlands Committee, meeting in Djerba, Tunisia, devoted its technical session to this theme and developed guiding principles for the inclusion of cultural values in wetland sustainable use in the Mediterranean region. A year later, the Committee, meeting in Sesimbra, Portugal, debated the theme "Mediterranean Salinas: Cultural heritage and sustainability". World Wetlands Day 2002 was focused on cultural values and a set of fact sheets and poster were produced and widely disseminated. Ramsar's COP8 general theme is "Wetlands – water, life and culture" and its agenda includes Technical Session 5 on the theme "Cultural aspects of wetlands as a tool for their conservation and sustainable use". In addition, the Ramsar Bureau has been developing links with the European Archaeological Council and other groups of social scientists concerning the key importance of wetlands for archaeological and cultural landscape heritage conservation. The reasons of this growing interest are many and the major ones are mentioned below.

Box 4 : A positive concern for the cultural values of wetlands

The Ramsar Contracting Parties from Central and Western Asia, gathered at a regional meeting hosted in Tehran by the Islamic Republic of Iran on 3-5 February 2002, issued the ***Tehran Communiqué***, which includes the following statement:

“Recognizing the vital role of wetland ecosystems for biodiversity conservation and for the well-being of human communities; and welcoming the theme for World Wetlands Day 2002 and the 8th meeting of the Conference of the Parties (COP8), on “Wetlands: Water, Life, and Culture” which explores the cultural values of wetlands as a tool for their conservation, and emphasises the importance of people’s engagement in conservation efforts, we undertake to explore cultural issues in our national and local contexts and seek to make our public more aware of the cultural, as well as the natural, values of wetlands.”

8. As through the ages many human settlements have been located close to wetlands, significant archaeological remnants are found today within them or in their vicinity. Beyond isolated structures, these may include entire ancient cities, such as Nicopolis, in the Amvrakikos Gulf of Western Greece, some of them inhabited even today, as in the case of Empúrias, in Catalonia, Spain.
9. However, the particular interest of wetlands from the archaeological point of view is that they carry and preserve records of human activities through the ages, which cannot be found in other environments. Especially peatlands, due to their anoxic and waterlogged conditions, preserve well organic matter, such as wood, leather and textiles, as well as pollen, insects, plants and bodies, materials that in drier conditions degrade rapidly. Recent archaeological excavations in wetlands, carried out mainly in the United Kingdom, have unearthed a treasure of objects which permit a much better understanding of their period.
10. Wooden elements from prehistoric settlements have been found preserved in the muddy bottom of the Black Sea, informing us of their structure. Well-maintained ships have been discovered in Venice and Marseille. Thus wetlands, even if degraded or destroyed, retain a high degree of archaeological importance.

Box 5 : Sunken ships in the Venice Lagoon

In the autumn of 2001, a 1-hectare area of the Venice lagoon was temporarily drained at the site of a lost island, which included the 11th century Augustinian monastery of San Marco in Boccalama. The monastery was abandoned in 1347, the island was turned into a cemetery for plague victims, and it disappeared into the water in the 16th century, due to land subsidence.

The ensuing archaeological research not only found the traces of the monastery, but also discovered in good conditions two large ships, a galley (38 m. long by 5 m. wide) and a transport vessel (24 m. and 6 m.), which had been sunk to the bottom and covered with sand. Presumably they were on the verge of decommissioning and had been sent to act as barricades for the protection of the vulnerable island. Both were dated to the early years of the 14th century and their remains provided invaluable information on the construction of boats of that period.

Archaeological authorities have detailed information about 300 such cultural areas of interest in the bottom of the Venice Lagoon, whose locations are kept secret until excavation becomes feasible.

11. It should not be forgotten, however, that cultural values are not only associated with the past (either remote or recent), but also with the present, as culture evolves and is being created, in one form or another, on a continuous basis.
12. From a broader perspective, a large percentage of Ramsar sites have major cultural significance, as demonstrated by their corresponding Ramsar Information Sheets (RIS)^[4], as they include many of the elements that constitute cultural values.
13. Thus the importance of the cultural values of wetlands may broaden their appeal to significant sectors of society not initially concerned with nature conservation. These include not only specialists in the various forms of culture, from archaeology to music, but also the considerable segment of the wider public interested in culture. In this way, powerful alliances can be created, which would be of benefit to both sides.
14. As a result of the efforts to combine cultural values with the natural environment in wetlands, a single integrated interpretive tourism modality can be created, with strong attraction possibilities. The financial benefits and employment that could be generated through this will be a great asset for local communities, and will enhance their appreciation of wetlands as resources. These in turn will increase the economic valuation of wetlands and contribute to their conservation and wise use. Such an approach can be valid in many wetlands with significant cultural values, where visitors can be attracted to both their cultural and natural heritage. A particular case is the sites that have already a very strong visitor interest for their monuments, but little yet for their natural elements. In all cases, care must be taken that such activities do not exert undue pressures on wetlands.
15. It is not only financial considerations that concern local communities, and more particularly indigenous people. For them, culture is part of their tradition and social identity. Thus a fuller recognition of the significance, and sometimes the uniqueness, of the cultural values of wetlands should increase their self-esteem and their readiness to safeguard particular sites, and especially Ramsar sites. Experience throughout the world has shown that the conservation and wise use of wetlands depends to a considerable degree on the links of local populations to them. Enhancement of the cultural values, wherever they still exist, and efforts to preserve them where they are at risk of disappearing, can become a powerful tool in

strengthening the links of local populations to their wetlands, their 'sense of place', and thus involve them actively in their conservation.

Section II

Cultural values of wetlands

Inventory of cultural values

16. Without entering into the discussion of the exact definition of culture and the nature of cultural values, it seems evident that in the case of wetlands, these values emerge from a variety of elements, tangible or intangible, material or spiritual, ancient or contemporary. These can be identified, experienced and appreciated in many different ways, singly, combined or in an integrated manner. To view them separately is sometimes useful in analysing and describing them. However, they are all bound together by wetland space and are integral parts of it. In addition, many of them retain links to one another. Thus an inventory of the most significant cultural values of wetlands might include the ten categories listed below (which could be grouped in various other ways).

- 16.1 **Paleontological and archaeological records** in wetland water and sediments and especially peat. This category could be extended to include archaeological findings in the immediate vicinity of wetlands or in clear relation to them.

Box 6 : Research in French rivers and lakes

With the encouragement of the General Direction of Cultural Affairs, Ministry of Culture, through its Regional Services of Archaeology, and with the active participation of academic institutions, careful excavations and research have been carried out during the 1990s in the rivers and lakes of France and the neighbouring areas of Switzerland. The results have been registered in a wide variety of publications.

- 16.2. **Cultural landscapes and agro- and other production ecosystems**, as transformed by human action related to traditional primary production activities. This would include rice fields (flat or terraced), salinas, lagoons or estuaries exploited for fisheries, and other similar areas.

Box 7: Landscape poetry: the rice fields in Nepal and other Asian countries

Since the birth of agriculture, human primary sector activities have modelled the land on the basis of production needs and at the expense of immense labour. In traditional societies, the results were often landscapes of great beauty, in complete harmony with nature.

A case of exceptional beauty is the rice fields in Nepal. Formed through centuries of human toil in a steeply sloping land, the paddies follow the contours and trace their sinuous lines along hills and valleys. When flooded with water, their silvery surface produces miracles of reflection on the land, as one travels on the narrow and winding road from Kathmandu to Butwal. In parallel, and besides the production of rice, the ricefields provide important services in managing water flow, minimising erosion, and contributing to biodiversity.

Similar landscapes are found in many other parts of Asia, such as in Binong on the island of Java and the Philippine Cordilleras.

- 16.3 **Historical structures** in or related to wetlands, including buildings and settlements, hydraulic works, water mills, transport systems (such as jetties, roads, and bridges).

Box 8: The water wheels of Hamah in Syria

To raise water from the lower part of the town of Hamah to its higher neighbourhoods, an ingenious system was devised many centuries ago. A number of immense water wheels have been constructed, with diameters approaching twenty metres. Placed on the river that crosses the town, they are turned by its flow, thus lifting the water to the higher level.

The wheels are made of large pieces of wood, cleverly connected to give them stability and strength. They do not have symmetrical and concentric spokes, but the cross pieces are placed off centre, thus relieving the axle from direct stresses. Their construction and maintenance is the task of specialised workmen that inherit the knowledge from generation to generation.

Besides their utilitarian purpose, the water wheels create an imposing landmark in the heart of the town and have become an important tourist attraction. Unfortunately, due to the drought of the last years, water flow in the river has dwindled, and now only one wheel is still in operation, just for the visitors. It is feared that, if the situation continues, the techniques and cultural values associated with them will be lost.

- 16.4 **Artefacts**, and in particular transport equipment (such as boats and carts) and tools used in traditional activities related to wetland resources.

Box 9 : Traditional wooden boats as cultural artefacts

Boats made out of wood are a common and distinctive feature of practically all wetlands. Used mainly for fishing and transportation, they have existed since Neolithic times. Although no systematic study has been done on them, there are certain general features that can be pointed out.

- Wetland boats and the methods of their construction have changed very little during the past three millennia. As a result, their characteristic forms have remained practically unchanged, and have evolved slowly and slightly.
- Wood has been the most commonly used material, although there have been cases of reed and papyrus use (such as in India, Mesopotamia, and the Andean lakes). Contemporary materials, and especially reinforced artificial resins, have been introduced, but have been in use mainly in the developed world, due to their high cost.
- Invariably, they are flat-bottomed and keel-less so that they can go into very shallow waters. Their sides are often elevated for functional reasons, in particular to increase their carrying capacity.
- Oars or poles have been the main method of locomotion, which is slow, but silent and inexpensive. The introduction of internal combustion engines changed considerably the conditions of exploitation of wetlands, although their initial and operational costs are high.
- On the aesthetic side, traditional wetland boats are often of great beauty, as they combine austere functionality with a sleek elegance.

- 16.5 Past and present **collective water and land use management systems** (such as irrigation, water distribution and drainage associations, and traditional dispute settlement practices).

Box 10: Sustainable water management in India^[5]

In most parts of India, the perennial water cycle of drought and floods determines the life of inhabitants. Through the years, very sophisticated methods for using water effectively and economically have been developed and applied by local societies, in a decentralised manner, helping to create stable local governance institutions.

Tank irrigation systems are one of these methods. In the State of Tamil Nadu, there are today 39,202 tanks, some of them very ancient, which account for 22.9% of consumption. However, this share is decreasing, due to encroachment, urbanization, siltation and neglect. Efforts are being made to improve their rehabilitation, maintenance and use. Water harvesting is also a traditional approach in a climate of social solidarity. To promote it, water pilgrimages (*paani yatras*) are being organized this year in Chennai and Pondicherry. Their aim is to highlight participatory, efficient, sustainable and low-cost water management methods, interacting with the responsible organizations and communities.

Box 11: Traditional and modern water management in Ecuador^[6]

In the Ecuadorian part of the Andes, a large percentage of the irrigated land (320,000 of 400,000 hectares) has been managed traditionally through ancient community-based systems. In the '70s and '80s, however, the State intervened and started imposing a centralised management of water resources, through the *Instituto ecuatoriano de recursos hidráulicos*, which attempted to modernise the traditional water rights system. After 30 years of 'hydrological bureaucracy', the results were inter-community conflicts, split concessions, and ineffective operation.

To correct the situation, recent governments have attempted to apply a new, liberal approach, through a water privatization scheme (proposed by the World Bank and first applied in Chile). The political and economic crisis in Ecuador during the 1990s has not facilitated the implementation of the new system, which has been vigorously contested from many sides. At present, local communities are facing the problems of fragmented and inefficient water management and an endless series of conflicts over water rights, having lost their traditional wisdom, cohesion and mechanisms, without interest and investments from the markets and with minimal state advice and support. Yet all three sides must cooperate to find a common, satisfactory *modus operandi*.

Box 12 : Water management in the Arab world

Following faithfully the teaching of the Qur'an, and inhabiting essentially arid regions, the Arab people devised a comprehensive and wise approach to water management which had profound impacts in many parts of the world as the Islamic religion spread. Some of the main ones are the following:

The concept of *al-hima* is an obligation to establish reserve areas for the public good, which would be required for the conservation and wise management of rangelands and pastures, forest and woodlands, watershed and wildlife. The importance of these reserves for the conservation of wetlands and water resources cannot be underestimated.

The equitable management, however, of water resources made necessary the existence of social mechanisms for resolving disputes. Thus water tribunals were established, which met in public and heard complaints, before passing judgment. This efficient system was transmitted from the Moors to the Spaniards and are still in existence, for example in the city of Valencia, Spain .

On the technical level, many Arab cities (such as Fez and Marrakech in Morocco) had very complex networks for water distribution. These necessitated specialised expertise in construction and maintenance, which was provided by skilled workmen organized in guilds, with their own traditions and culture. Recently, efforts are being made to re-establish both the skills lost and the corresponding forms of social organization.

- 16.6 **Traditional techniques for exploiting wetland resources** (salt, rice, fish, reeds etc.) and their associated products and structures. Some of them may be still in practice, while others already abandoned.
- 16.7 **Languages, customary law systems, political structures, roles and customs**, including oral traditions, as they exist in the memories of local inhabitants or have perhaps been recorded in the past and can be found in appropriate bibliographic sources.
- 16.8 **Traditional knowledge**, including traditional medicine and ethnobotany. Such knowledge is practiced today in many places. In others it is at risk or has already been lost, due to many factors.
- 16.9 **Mythology, beliefs and religious aspects, including sacred sites and ritual ceremonies**. As water is one of the critical elements for sustaining life, it is natural that it has given rise to a multitude of beliefs. Thus, from mythology and the religious beliefs of indigenous societies to the contemporary teachings of the major churches, one common thread is reverence for water. On a broader level, many of the churches have become sensitive in recent years to nature conservation and the sustainable use of its resources, as stewardship of the Creation and veneration of the Creator, and have restudied their traditional texts from this perspective.

Box 13 : The sacred nature of water

In most religions, water is considered a sacred element of great importance. As the Qur'an states: "We made from water every living thing"^[7]. Some other examples of the religious use of water:

- The sacred bathing in the Ganges.
- The sacrament of baptism in Christianity.
- Ablutions before prayer in Islam.
- The blessing of the waters in many religions.

16.10 **The arts** that have drawn inspiration from wetlands and water include mainly:

- a) many expressions of popular art, such as "naïve" and other forms of painting, including engravings on rocks, sculptures, carvings and hand-crafts in general, as well as music, dance, poetry, etc., and including traditional festivals in many parts of the world;
- b) literature, such as Swift G. (1983), *Waterland*, William Heinemann Ltd, London, UK, pp. 310.;
- c) painting and sculpture, such as the landscapes of Joseph Mallord William Turner (1775-1851) and John Constable (1776-1837) and the work of Chinese and Japanese artists for many centuries;
- d) music and dance (see table below); and
- e) cinema and theatre, such as "Rizzo amaro" (Italy) and the "African Queen" (Lake Victoria).

Naturally, there are great differences from society to society, but generally water and wetlands have provided inspiration for many of the art forms.

Table 1: Characteristic classical music works related to wetlands and/or water

| <i>Composer</i> | <i>Period</i> | <i>Title</i> |
|---------------------------|---------------|--------------------------------------|
| Handel, Georg Friedrich | 1685-1759 | Water Music Suite |
| Respighi, Ottorino | 1879-1936 | Fontane di Roma (Fountains of Rome) |
| | | Gli Ucelli (The Birds) |
| Schubert, Franz Peter | 1797-1828 | Trout Quintet |
| Smetana, Bedrich | 1824-1884 | Vltava |
| Tchaikovski, Peter Ilyich | 1840-1893 | Swan Lake |
| Telemann, Georg Philipp | 1681-1767 | Hamburg Ebb and Flood |

Box 15 : Japanese water music^[8]

“On September 4 (2001), we organized ‘The Japan Water Sound Night’ at the site of the opening ceremony. The event attracted a capacity audience. The performance of melodies on a water theme, played by *shakuhachi* (bamboo flute), *koto* (Japanese harp) and *kozutsumi* (Japanese hand drum), received a standing ovation at the end. Through this concert, I recognized the characteristics of both the universal as well as the local features in common of ‘water and music’.” Hideacu Toda

Current situation and trends

17. The current situation concerning wetlands and their cultural values is far from satisfactory. Obviously, substantial wetland loss (well documented in all regions) also destroys the cultural values associated with them. The plight of indigenous people, natural guardians of wetland values, has resulted in the gradual or rapid erosion of those values. In addition, globalization has an impact on traditional cultures and has caused widespread homogenization, reinforced by industrial development, urbanization, intensive agriculture, and mass tourism pressures. Thus the technical and social framework for preserving wetland values is not propitious and the current trends, unless reversed, are far from positive.
18. Substantial archaeological knowledge related to wetlands has been gathered during the recent past, although not in every part of the globe, but there has been little effort to manage and conserve this invaluable heritage. The European Archaeological Council estimates that in England 90% of blanket bogs and 94% of raised bogs, both depositories of archaeological treasures, have been destroyed during the past century by agriculture, forestry, landfill, and peat extraction. The situation is similar in other parts of the world. Often such destruction occurs before archaeological research is carried out and, through it, knowledge is acquired and preserved.
19. Other forms of cultural expression related to wetlands have been neglected because of lack of understanding and appreciation. Perhaps an exception is traditional salt extraction and salinas, where considerable work has been carried out in recent years, especially in the Mediterranean [Petanidou 1997]. However, a growing interest in traditional civilizations is growing, perhaps as a natural response to globalization, and this might assist in the rediscovery of wetland cultural values.

Box 16 : Maintaining the cultural values of salinas [MedWet 2001]

Salinas (salines, salt-pans) are shallow, usually coastal, lagoons in which saline water is allowed to evaporate under the heat of the sun and the resulting salt crystals are gathered for domestic and industrial use. They provide habitats for many species and maintain high cultural values, in buildings, artefacts, exploitation methods, landscapes, and life styles. In many parts of the world, however, salinas are today facing intense pressures in the face of changing social values and economic stresses, notably their conversion from low intensity to mechanised production, or their abandonment or conversion to other uses such as urbanization, rice production, or aquaculture. All of these affect their role as a cultural landscape and the co-existence of sustainable salt production and natural biodiversity.

On the other hand, networks to promote such solutions have been established. For traditionally managed salinas there exist opportunities to maintain such management, working with salters and local communities, in recognition that it maintains both their cultural and historic values and landscapes and their wetlands and biodiversity importance. As this may not be economically feasible on a large scale, traditional management should be applied in at least part of each salina. For the rest, management regimes can be developed that maximise the maintenance of biodiversity without jeopardising salt production capacity, and that capitalise on the tourism potential of such systems, through appropriate infrastructure (salt museums, ecotourism facilities, guided visits, etc.).

In addition, abandoned salina sites can be returned to a natural state as saltmarshes, including the maintenance of their hydrology, as long as property rights are respected and economic considerations taken into account.

Cultural aspects and the Convention on Biological Diversity (CBD)

20. CBD established an Ad hoc Open-ended Inter-Sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity. Article 8(j) deals with the maintenance of knowledge, innovations and practices of indigenous and local communities.
21. On the recommendation of the Ad Hoc Working Group, CBD COP6 [adopted Decision VI/xx with recommendations for the conduct of cultural, environmental and social impact assessment regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities.
22. [The Decision requests the Ad Hoc Working Group to carry out further work on guidelines for the conduct of cultural, environmental and social impact assessments, with the aim of strengthening the social and cultural aspects, to complement, and in conjunction with guidelines for incorporating biodiversity-related issues into environmental assessment legislation and/or processes and in strategic environmental assessment. The Decision addresses those secretariats of intergovernmental agreements, agencies, organizations and processes whose mandate and activities involve potential significant impacts.
23. [The CBD recommendations state that through the cultural impact assessment process, issues that are of particular cultural concern should be identified, such as beliefs and religions, customary practices, forms of social organization, systems of natural resources use, including patterns of land use, places of cultural signifi-

cance, sacred sites and ritual ceremonies, languages, customary law systems, political structures, roles and customs. The recommendations also state that there is a need to respect both the custodians and holders of traditional knowledge and the knowledge itself, and that the possible impacts on all aspects of cultural, including sacred, sites should therefore be taken into consideration while developing cultural impact assessments.]

24. [CBD COP6 also adopted Decision VI/xx on the Outline of the Composite report on the status and trends regarding knowledge, innovations and practices of indigenous and local communities relevant to the conservation and sustainable use of biodiversity, and the plan and timetable for its preparation. Phase 1 of the preparation of the Report will include issues related to the state of the retention of traditional biodiversity-related knowledge, and the identification and assessment of measures and initiatives to protect, promote and facilitate the use of traditional knowledge. Subsequent phases of the preparation of the Report will include issues related to the relationship between biological, cultural and linguistic diversity, identification of national and community level processes that may threaten the maintenance, preservation and application of traditional knowledge, and lessons learned and identification of best practices for the maintenance, preservation and application of traditional knowledge.]

Conclusions: a major role for Ramsar

25. The Convention on Wetlands, including the Contracting Parties, the Ramsar Bureau and its regional activities (such as the Mediterranean Wetlands Initiative, MedWet), as well as its International Organization Partners, should play a key role in the implementation of the Guiding principles that follow and in catalysing the launching of the proposed actions. In this process, the Convention on Wetlands should actively seek partners from the cultural sector and decentralise as much as possible the necessary activities, retaining only a general coordination role. In a first phase, these efforts could perhaps be incorporated in the work plan of the Ramsar Bureau. In the medium term, however, once the programme starts expanding, it will require more substantial human (and, therefore, financial) inputs to carry out the tasks agreed, which must be secured through appropriate fundraising.
26. In addition, the debate concerning the use of cultural values as one of the criteria for the listing of Ramsar sites should continue. In this context, it should be noted that the 26th meeting of the Standing Committee discussed a range of issues concerning the role of cultural and socio-economic issues in the Convention, including the question of a new criterion, and how to enhance that role, and requested the preparation of a discussion document to facilitate debate on this matter at COP8 in Technical Session 5.

“Decision SC26-14: The Standing Committee determined to have a broad-ranging discussion on the role of cultural and socio-economic issues in the Convention, and on how to enhance that role, and requested the preparation of a discussion document to facilitate talks at COP8. Uganda was invited to work with the Bureau, the Chair of STRP and any other Party and IOP interested to contribute, in the preparation of the discussion paper.”

27. It should also be noted that a paper prepared by the CBD Secretariat and Ramsar Bureau concerning the CBD and Ramsar approaches to criteria and classification of inland water ecosystems will be considered by CBD COP6 (April 2002). This paper notes that the CBD includes some criteria (notably concerning wild relatives of domesticated species; species, communities, or genes of social, scientific, or cultural importance; and importance for research) that Ramsar does not. The COP8 discussion paper should also examine the CBD's suggestions and the extent to which they might make expansion of the Ramsar Criteria desirable.

28. Thus the approval by Ramsar COP8 of a Resolution on the cultural values of wetlands should constitute the launching platform for the sustained efforts of the Convention in this field, which must have both a medium-term (5 years) and a long-term (20 years) horizon.

Box 18 : Cultural values and societies: a plea from Wetlands International

"In many cases, not just some cultural values, but entire societies with all their social and cultural values depend fully on well-functioning wetlands or specific wetland habitats. (Significant) ecological change can thus destroy not just some cultural values, but the foundation of culture: the human societies including their cultural heritage that have formed over thousands or years in these particular habitats or in relation to (some of) their functions. Almost any indigenous society that relies on wetlands or wetland productivity for its basic livelihood falls under this. All of these have their own, often unique cultural and social features. It will be easy to make a very long list of such societies and the wetlands on which they depend. In some regions or even countries over half the population may fall in this category.

Destruction of the wetlands or wetland functions on which these societies depend can be regarded as an infringement on the human rights of these societies/cultures and could amount to "cultural genocide".

Cultures and their environment do change and evolve of course, and they cannot be "preserved" as museum pieces. However, there is a major difference between, on the one hand, a culture adapting from within to gradually changing environmental, social and economic conditions (which generally allows building on and enriching the cultural heritage), and on the other hand, a culture being confronted with an "overnight" annihilation of its (wetland) resource base (for instance as a result of a dam, deforestation, pollution, drainage, etc), which may lead to a complete disintegration of the society and its cultural heritage.

I, therefore, would like to plead for a ninth criterion for Ramsar site designation."

Marcel Silvius, Wetlands International

29. All of this work on cultural values of the Convention on Wetlands must be based on a sound scientific basis. It is proposed, therefore, that a special working group for that purpose be established in the framework of STRP, which should include experts on cultural heritage management.

References

This paper has been based on the references cited below:

Bragader, A. A. *et al* (1994), *Environmental Protection in Islam*, IUCN, Gland, Switzerland and Cambridge, UK, 134 pp.

Davidson, N. (2001), "Wetlands and cultural heritage conservation", Ramsar Bureau, Gland, Switzerland, 4 pp.

Donahue, J. M. and B. R. Johnston (eds.) (1998), *Water, Culture and Power: Local Struggles in a Global Context*, Island Press, Washington, D.C., USA, 396 pp.

Current Archaeology: Wetlands Special Issue, No. 172, Vol. XV No. 4, February 2001, The Friary Press, Dorchester, UK, 40 pp.

European Archaeological Council (2000), "A strategy for the heritage management of wetlands", 10 pp.

- European Archaeological Council (2000), *The Heritage Management of Wetlands in Europe*, EAC Occasional Paper No. 1, 207 pp.
- Fagan, B. (1999), *Floods, Famine and Emperors – El Niño and the fate of Civilizations*, Basic Books, New York, NY, USA, 284 pp.
- Kempf, E. (ed.) (1993), *The Law of the Mother*, Sierra Club Books, USA, 296 pp.
- McNeely, J. and D. Pitt (eds.) (1985), *Culture and Conservation: the Human Dimension in Environmental Planning*, published by Croom Helm, 1985, 308 pp.
- MedWet (2000), "Conclusions of the Technical Session on: Cultural aspects of Mediterranean wetlands and their potential contribution to the sustainable use of wetland resources", MedWet/Com3, Djerba, Tunisia, 1-5 April 2000, 5 pp.
- MedWet (2001), "Conclusions of the Technical Session on: Salinas, tradition and sustainable management", MedWet/Com4, Sesimbra, Portugal, 20-23 May 2000, 6 pp.
- Papayannis, Th. (1992), "Greek wetlands: cultural values and tertiary sector activities", in P. A. Gerakis (ed.), *Conservation and Management of Greek Wetlands*, IUCN, pp. 157-174.
- Petanidou, Th. (1997), *Salt in European History and Civilization*, Hellenic Saltworks S.A., Athens, Greece, 384 pp.
- Price, N. S., M. K. Talley Jr. and A. M. Vaccaro (eds.) (1996), *Historical and Philosophical Issues in the Conservation of Cultural Heritage*, The Getty Conservation Institute, Los Angeles, USA, 500 pp.
- Pritchard, D. (2000), "Values: Don't be shy!", 2 pp.
- Ramsar Bureau (2001), "Cultural Sheets", Gland, Switzerland, 22 pp.
- SEHUMED (2000), "Proposal for a Resolution for the management of the cultural heritage in wetlands", Valencia, Spain, 3 pp.

Annex

Draft Guiding principles for identifying the cultural aspects of wetlands and incorporating them into the effective management of sites

General principles

1. This document proposes a number of general principles for identifying, preserving and reinforcing the cultural values of wetlands, which could be supplemented with additional ones at future meetings of the Conference of the Parties, as more knowledge and experience are obtained. Some of them may overlap, but this is only natural as cultural values are often related and require an integrative approach.
2. There is a strong link between **wetland conservation and benefits to people**. In addition, a positive correlation between conservation and the sustainable use of wetlands has been repeatedly demonstrated. Therefore, conservation requires the involvement of indigenous and local communities and cultural values offer excellent opportunities for this.

Guiding principle 1 – Identifying cultural aspects and collaborators

To make the best possible use of the opportunities offer by cultural aspects for involving indigenous and local communities in wetland conservation, a systematic effort is necessary when undertaking wetland management planning to:

- a) identify the governmental and non-governmental organizations and/or individuals within the communities and in the wider vicinity of the wetland site concerned with cultural issues;
- b) contact these organizations and/or individuals to explain the links between cultural values and wetland conservation, in order to enlist their active support;
- c) work closely with them to prepare a first inventory of all cultural aspects listed below in the section on Specific guidance, both existing cultural aspects and those that may have disappeared;
- d) identify the cultural aspects that may have the best potential to contribute to effective management of the site; and
- e) for cultural aspects that may have disappeared, filter those strongly related to wetlands and water and assess the possibility to re-establish them, with the view to undertake trial efforts in this direction.

3. On the cultural level, **wetlands and water** should be treated in an integrated manner, as their inextricable links have existed since early civilizations and are still pertinent today. It is reasonable, therefore, to consider wetlands and water as one entity when assessing or promoting the cultural aspects related to them.

Guiding principle 2 - Linking the cultural aspects of wetlands and water

In order to make a close link between the cultural aspects of wetlands and water in general:

- a) promote the understanding by decision-makers and the public of the role of wetlands in the water cycle;
- b) identify such linkages in oral traditions, religion and mythology and the arts and make them widely known;
- c) place particular emphasis on traditional methods of water management related to wetlands, and draw from them useful lessons and public awareness material;
- d) identify opportunities provided by religious/cultural events and festivals focusing on water to advance the notions of wetland conservation and wise use; and
- e) continue to present water as a key issue in wetland management and in the application of the Convention on Wetlands.

4. The protection of **cultural landscapes** which have resulted from traditional human activities should be an important component of policy and management objectives. Traditional activities often created landscapes compatible with the natural environment, of considerable biodiversity and of a unique beauty. Examples include the sculptural rice fields in many parts of Southeast Asia, the canals of the Neretva River in Croatia, and the land terracing in most Mediterranean islands. In numerous parts of the world, the traditional activities that have moulded the landscape for millennia are regressing or disappearing. As a result, the landscapes dependent from them are starting to erode and may also disappear with time, leading to the loss of their cultural values.

Guiding Principle 3 - Protecting the wetland-related cultural landscapes

In order to achieve the long term conservation of wetland-related cultural landscapes:

- a) proceed to identify and inventory them, including their conservation status and their prospects to be maintained in the long term;
- b) encourage official recognition at the national and international level of wetland-related cultural landscapes as part of the national and, where appropriate, international heritage, with a view to provide to them effective protection status;
- c) promote their protection in policies that concern them directly or may affect them indirectly;
- d) ensure that these landscapes are taken into account in territorial planning and in the determination and control of land and water uses;
- e) in the case of wetland-related cultural landscapes that still maintain some of the traditional activities that have formed them, as in the case of salinas, promote economic and regulatory measures for stimulating these activities and ensuring their sustainability. Wherever this proves impossible, search for other means to maintain the beauty and function of the cultural landscapes; and
- f) where advisable and useful, promote the inclusion of wetland-related cultural landscapes in tourism promotion activities.

5. Invaluable lessons can be learned from **traditional approaches to water and wetland resources management** (especially sustainable use, floods, recurrent drought and desalinization), which can be useful in developing contemporary approaches to the same issues. These approaches are still practiced with good results in many parts of the world, such as the Saharan oases, with highly effective and sustainable results.

Guiding principle 4 - Learning from traditional approaches

Before promoting and/trying to incorporate new water management technologies and approaches:

- a) make an inventory of the traditional approaches to water resources management, both those still in practice and, if possible, those that have been abandoned;
- b) undertake a careful analysis and assessment of their advantages and weaknesses;
- c) study the possibilities of improving these approaches through the careful use of cost-effective contemporary and innovative methods. The goal should be to meld the old with the new, not necessarily to replace the traditional practices;
- d) test the composite approaches in selected pilot cases; and
- e) make the lessons learnt widely known, in developing and developed countries and in countries with economies in transition.

6. Traditional **self-management practices** that have demonstrated their value over time should be strengthened, as they led to the empowerment of local societies, and constitute in themselves an invaluable part of the socio-cultural assets. That is why contemporary governance approaches should be introduced in a balanced and sensitive manner taking them into account. The role of 'elders' or socially recognized community leaders in allocating resources equitably, for example, which was widely respected in many countries, has had a stabilising influence which would be lost if they were replaced by government services or the private sector. Special care, therefore, should be taken when applying modern governance systems that traditional ones are not discarded, but are instead complemented and can benefit from contemporary technological and management developments.

Guiding principle 5 - Maintaining self-management practices

The steps outlined in Guiding Principle 4 are also applicable in this case. In addition:

- a) analyse the social characteristics of traditional self-management practices and extract lessons useful for the present and the future;
- b) in case of practices already abandoned, assess the reasons of their abandonment and determine whether they could be re-established, wholly or in part;
- c) for each new resource management proposal, evaluate the cultural and social impact that it might have (see Guiding principle 25 on cultural impact assessment below); and
- d) ensure the active participation in management of local societies and indigenous people, using the Ramsar guidelines contained in Ramsar Handbook 5.

7. The cultural aspects of wetlands have the potential to become a strong element of interest and attraction for a considerable percentage of visitors, bringing benefits to local populations and demonstrating the importance of wetlands; but this will not occur automatically. **Educational and interpretive activities** in wetlands (ecotourism and cultural routes, eco-museums, etc.) should be promoted in an organized and consistent manner, taking into account the carrying capacity of each site.

Guiding principle 6 – Incorporating cultural aspects in educational and interpretive activities in wetlands

In order to incorporate cultural aspects in educational and interpretive activities at wetland sites:

- a) take into account all appropriate cultural aspects in management planning, and treat them distinctly in all its phases, from preliminary inventories and analysis, to final proposals;
- c) make provisions to provide appropriate infrastructure, facilities and services for visitors, by including them in spatial planning of wetland sites and of their surrounding areas;
- d) institute visitor control and monitoring tools and mechanisms to minimise the damage that they may cause on fragile habitats and other sensitive elements of natural and cultural heritage. Special attention should be given to the control of mechanised traffic, which should be restricted to certain designated areas only, while alternate means of transport should be provided; and
- e) in addition, include sections on the cultural aspects of wetlands in eco-museums, visitors' centres and other similar facilities, and consider the production of pertinent publications about this matter.

8. **Gender, age and social role issues** should be explicitly taken into account to identify the roles played in relation to cultural aspects by women and men and by members of the group at different stages of their life cycles. In the case of women, in many cases, they are the custodians of traditional management practices and social habits (such as modes of preparing food), are in charge of natural resources use, in particular water, and are the ones who transmit the cultural values to the new generations. Men, in turn, may be the custodians and practitioners of particular cultural aspects, such as hunting, an activity with strong cultural components, both in traditional and modern societies. Members of the group may have particular roles according to their ages, for example as members of the group that have had their initiation into adulthood at the same time, youth groups (both of men and females), and the elders. In addition, there are social roles that have strong and significant cultural components, including those of the traditional or elected local authority, local land owners and business leaders, teachers, medical doctors, religious figures, artists, traditional healers, shamans, and fortune-tellers. Thus gender, age and social role issues should be taken into account in the entire process, starting from the planning and inventory phases.

Guiding principle 7 – Ensuring adequate treatment of gender, age and social role issues

In order to ensure an adequate and equitable treatment of gender, age and social role issues in relation to the cultural aspects of wetlands:

- a) invite representatives of local women and men groups, age groups and members of the community with recognized and valued social roles to participate in the initial inventory of cultural aspects and in the identification of their significance;
- b) evaluate ways and means to involve these groups and individuals in an appropriate manner in wetland management;
- c) ensure an active role of such groups and individuals in educational and public awareness campaigns directed at appreciating the cultural aspects of wetlands, as a tool to ensure their effective management; and
- d) promote the participation of community groups in the development of tourist and other income-earning activities related to cultural aspects, ensuring that there is no discrimination due to gender and/or age in the access to the benefits.

9. The **differences of approach** between culture specialists and wetland managers should be **bridged**, as they have interests which should not be in conflict. Up to now their concerns have seemed to be divergent. In recent times, however, culture specialists have started understanding the impact of environmental issues on the cultural heritage. From their side, wetland managers, normally trained in the natural sciences, have become increasingly sensitive to aesthetic considerations in planning visitors' facilities and exhibitions, to the importance of the remnants of older civilizations in or close to the sites under their responsibility, and to other cultural aspects. Thus a propitious climate has been developing, which should facilitate collaboration and eventually synergy between the concerns of these specialists.

Guiding principle 8 - Bridging the differences of approach

In order to bridge the different approaches that may exist between specialists coming from different backgrounds in the natural and social sciences:

- a) make efforts to find a common language between the two disciplines and define carefully some key concepts such as 'cultural values' and 'management of cultural values', and if necessary chose a more easily accepted concept such as "cultural aspects";
- b) promote the understanding of each others' objectives and attempt to agree upon certain common ones;
- c) include culture specialists in wetland management project teams, from the initial project development phases; and
- d) develop a joint methodology for managing cultural values in wetlands, benefiting from the scientific background and the experience of both sides. This can best be done through pilot cases, where collaboration can be nurtured in a controlled environment and the results evaluated and then exported for wider use (see specific examples in the next section)

10. **Collaboration with international organizations concerned with cultural issues and with the interface between culture and biodiversity and culture and development** should be established and strengthened, as appropriate. Such organizations may include:

- Convention on Biological Diversity;
- Convention Concerning the Protection of the World Cultural and Natural Heritage (World Heritage Convention), focusing on World Heritage Sites overlapping with Ramsar Sites (see also paragraph 42 below);
- International Committee on Archaeological Heritage Management (ICAHM);
- International Council of Museums (ICOM), with a focus on the appropriate methods of presenting cultural elements in wetland sites;
- International Council on Monuments and Sites (ICOMOS), mainly in developing guidelines for the protection of historic buildings and structures;
- UNESCO;
- WARP – the Wetlands Archaeological Research Project, a network with 300 members worldwide;
- World Bank, coordinating donor interest and support^[9];
- European Archaeological Council^[10].

Guiding principle 9 - Mobilising international cooperation in the area of culture issues related to wetlands

In order to reinforce the capacity of the Ramsar Administrative Authorities and wetland managers to incorporate fully the cultural aspects of wetlands into their management, identify the international and regional institutions that have an expertise on this matter or that may be interested in developing it, and enlist their support in international, regional, national and local activities aimed at incorporating or reinforcing the inclusion of cultural aspects in the management of wetlands.

Specific guidance

11. The above general Guiding principles can be further complemented by reference to some of the key cultural aspects of wetlands, taking into account regional, national and local specificities.
12. **Paleontological and archaeological records** in wetland water sediments and especially peat. In some cases, the first requirement on this matter could be the promotion of applied research. This is necessary because a large part of the cultural heritage of wetlands is still hidden and its discovery, conservation and enhancement present difficult scientific and practical problems. As funds for such research are often limited and the time necessary for it long, rapid survey methods may provide a cost- and time-effective approach. The results of such research could improve vastly the existing knowledge of wetland cultural heritage, and could also help in raising public awareness of the cultural richness existing in them, thus augmenting substantially their values and attraction to both local inhabitants and visitors. The second requirement is to encourage an interest in cultural values among specialised groups such as the International Peat Society, the International Mires Conservation Group, the Society of Wetland Scientists and others.

Guiding principle 10 - Encouraging applied research on paleontological and archaeological records in wetland water sediments and especially peat

The following actions may be required:

- a) to promote thematic applied research, as well as archaeological fieldwork on specific sites, through systematic programmes of survey and excavation, on issues that may include:
 - a.i) historic models of wetland exploitation, providing also useful lessons for future sustainable use;
 - a.ii) effects of re-wetting on organic archaeological and palaeo- environmental evidence, including issues of water quality;
 - a.iii) history of the hydrology of cultural heritage sites;
 - a.iv) development of new methods for rapid assessment of potential cultural content in cases of imminent threats;
 - a.v) preservation of archaeological remains *in situ*, to analyse the changing burial environment of wetland sites; and
 - a.vi) balancing educational and recreational access to wetlands with the need to protect their archaeological heritage.
- b) to develop rapid survey methods to assess wetland sites with high cultural potential to which efforts should be concentrated in a first phase;
- c) to use the results of such research for education and public awareness purposes, to enhance knowledge and appreciation of wetland values; and
- d) to encourage specialised wetland groups to include cultural values in their programmes.

13. **Wetland-related cultural landscapes and traditional production and agro-ecosystems (ricefields, salinas, exploited estuaries etc.).** In many cases cultural landscapes and traditional production systems are under threat due to technological innovations and changes in the socio-economic conditions. There is a need to take a proactive approach to their conservation and, when required, their revitalization.

Guiding principle 11 - Safeguarding wetland-related cultural landscapes and traditional production systems

The required actions may include:

- a) to proceed to a detailed inventory of the existing cultural landscapes in each country, including the identification of the traditional production activities that are at their origin, and recording their conservation status and the prospects for their long-term viability;
- b) to promote in-depth feasibility studies for the sustainability of the activities that originated the cultural landscapes and/or those that are being practiced on them;
- c) to identify complementary activities that can reinforce the economic feasibility of such activities (such as education, ecotourism and sports); and
- d) to work with governments and, where appropriate, aid agencies and international donors, to develop programmes aimed at the long-term conservation of wetland-related cultural landscapes.

14. **Historical structures** (buildings and settlements, hydraulic works, transport systems, etc) in wetlands or closely related to them. Sufficient knowledge already exists on the conservation and restoration of such structures. Yet they are very numerous and in danger of disappearance in many places.

Guiding principle 12 - Protecting historical structures in wetlands or closely related to them

The following actions may be required:

- a) to identify historical structures such buildings and settlements, hydraulic works, transport systems, etc., located in wetlands or closely related to them, and to inventory them through description and photographic and drafting means, registering their conservation status;
- b) to study their historical, architectural and technical characteristics, encouraging, where appropriate, schools of architecture to include such work in their programmes;
- c) to consider assigning to these structures an appropriate protection status (such as 'listing'), and thus preserving them from eventual demolition;
- d) to develop projects and/or programmes for their long-term conservation, including their purchase if necessary, restoration, and maintenance; and
- e) to consider converting these structures, where appropriate, into visitor centres, eco-museums, conference centres and/or hotels, with the aim to ensure their maintenance, taking into account the sharing of benefits with the local communities and other stakeholders.

15. **Wetland-related artefacts** (transport equipment and tools). In wetland fisheries, for example, only traditional wooden boats could be allowed, thus encouraging their construction and use.

Guiding principle 13 - Preserving wetland-related artefacts

The following actions may be required:

- a) to identify and inventory all wetland-related artefacts and tools used in each site;
- b) to consider ways and means to maintain them in use, if at all feasible, especially in the case of traditional boats;
- c) to develop projects to ensure that the know-how to produce them is not lost;
- d) to identify and apply appropriate incentives for their maintenance, use and production;
- e) to collect ancient artefacts, to restore and conserve them, and to mount exhibitions in local museums or in visitor centres; and
- f) to organize thematic museums, preferably close to wetland sites, if rich material is available.

16. Past and present **collective water and land use management systems** (such as irrigation, water distribution and drainage associations, and traditional dispute settlement practices). Insufficient attention has been given to such social organization structures, which, for a given period of time, have been a sophisticated and effective response to specific problems, most of them focusing on the critical resource of water and on its equitable allocation; and yet they have been integral parts of the traditional culture and may contain invaluable lessons for the present and the future. In addition, some locations and structures associated with them merit preservation.

Guiding principle 14 - Preserving collective water and land use management systems

The actions required may include:

- a) to identify, analyse and record the existence of collective water and land use management systems;
- b) to assess the possibility of their maintenance or, if this is not possible, their partial integration in contemporary management systems;
- c) to preserve and enhance the tangible elements associated with them;
- d) to incorporate the results in educational and public information activities; and
- e) to work with local government structures and civic societies to enlist their participation in the maintenance of these systems.

17. **Traditional techniques for exploiting wetland resources** (salt, rice, fish, reeds, etc.) and their associated products and structures. In a rapidly changing world, it is not possible to maintain artificially traditional production methods and products, but given their social and cultural significance and the growing interest in at least some countries in naturally-produced food, efforts should be made to maintain traditional techniques

Guiding principle 15 - Maintaining traditional techniques used in wetlands and/or around them, and the resulting products

The following actions may be required:

- a) to encourage the careful and sensitive study of the economic aspects of traditional production systems in wetlands and/or around them, and of the resulting products;
- b) to devise imaginative methods for promoting and marketing traditional products, including extensive use of the Internet; and
- c) to associate local techniques and products with education and sensitization campaigns on the cultural aspects of wetlands.

18. **Wetland-related oral traditions.** Such traditions are still maintained and transmitted by word of mouth from generation to generation in many societies, and in particular among indigenous people, as a means of transmitting knowledge and social values. In many societies, though, as the means of communication and of information storing and dissemination became more sophisticated, starting with printing and expanding with electronic and digital means, some of these traditions were not considered important enough to be recorded. So they are in great danger of being forgotten and lost.

Guiding principle 16 - Safeguarding wetland-related oral traditions

The following actions may be required:

- a) to record in a systematic manner wetland-related oral traditions;
- b) to promote the appreciation of the value of these traditions as part of the cultural heritage and to encourage local groups to maintain them;
- c) to consider establishing an archive of oral traditions in digital form; and
- d) to disseminate by all appropriate means the information collected.

19. **Wetland-related traditional knowledge.** The Convention on Biological Diversity is considering this issue through the Ad-Hoc Open-ended Inter Sessional Working Group on Article 8(j) and Related Provisions^[11]. The Ad-Hoc Group defines traditional knowledge as “the knowledge, innovations and practices of indigenous and local communities around the world. Developed from experience gained over the centuries and adapted to the local culture and environment, traditional knowledge is transmitted orally from generation to generation. It tends to be collectively owned and takes the form of stories, songs, folklore, prov-

erbs, cultural values, beliefs, rituals, community laws, local language, and agricultural practices, including the development of plant species and animal breeds. Traditional knowledge is mainly of a practical nature, particularly in such fields as agriculture, fisheries, health, horticulture, and forestry.” In addition, especially in medicine, there is a resurgence of the systematic practice of traditional methods, including the use of medicinal plants, hot springs, mud baths, etc.

Guiding principle 17 - Keeping traditional knowledge alive

The actions required may include:

- a) to search for linkages between such traditional knowledge and wetlands, and in particular with wetland flora;
- b) to establish systematic cooperation with the organizations interested in this matter, such as the Society for Economic Botany, the International Society for Ethnobiology, the Center for International Ethnomedicinal Education and Research, the Society for Medical Anthropology, and others;
- c) to urge that the Ad-Hoc Open-ended Inter Sessional Working Group on Article 8(j) and Related Provisions of the Convention on Biological Diversity incorporates fully all wetland-related issues in its work and that the Ramsar Administrative Authorities and the Ramsar Bureau contribute to the preparation of the CBD's Composite report on the status and trends regarding the knowledge, innovations and practices of indigenous and local communities relevant to the conservation and sustainable use of biodiversity;
- d) to disseminate information about traditional medicines related to wetlands as part of public awareness activities, and to encourage the trends to use again traditional medicines in societies that had, to a large extent, abandoned them, in those aspects related to wetlands and water.

20. **Wetland-related religious aspects, beliefs and mythology:** Religion in its broader interpretation, most often solidly based on a long historical development, can be an important medium for reaching and mobilising a large number of people in most parts of the world. Its traditional links with water can be strengthened to convey a powerful message. Beliefs and mythology, in particular foundation myths, may also have a powerful significance for the conservation of wetlands, in particular those in, or related to, sacred sites.

Guiding principle 18 – Incorporating wetland-related religious beliefs and mythology-related aspects in the efforts to conserve wetlands

The following actions may be required:

- a) to study in detail for each religion and belief and mythological systems their links with nature, water and wetlands, with the active participation of religious institutions and leaders and the custodians and practitioners of the belief and mythological systems in indigenous and local communities;
- b) to use this knowledge to present the conservation and sustainable use message in the appropriate form;
- c) to work with the churches and/or religious leaders and the appropriate members of indigenous and local communities to encourage them to convey these messages and to participate actively in the efforts for the respectful management of the Creation.

21. **Wetland-related aspects of the arts** can provide a very significant medium for approaching and sensitising the wider public. In all societies, the arts play an important role, and in many of them the arts are embedded in their very structure and are of particular significance. The “arts” include all forms of popular art as well as the professional expressions in the fields of music, singing, dance, painting, literature and cinema production.

Guiding principle 19 - Using the arts for wetland conservation

The required actions may include:

- a) to identify art forms and specific works that have been inspired by wetlands and water, in cooperation with artists and art-related institutions at the local and national level;
- b) to use and promote these art expressions as means to advance the conservation and wise use of wetlands;
- c) to cultivate the interest of the art community in wetland and water management;
- d) to incorporate appropriate art in visitor reception facilities and especially in eco-museums; and
- e) to sensitize wetland managers, and all those involved with wetlands and water, to culture and to the art forms that express it.

Implementing the Guiding principles

22. The Guiding principles listed above should be implemented systematically through a variety of means, many of which are indicated in detail in the corresponding guiding principle. In addition, the general measures included below would greatly facilitate the implementation process .
23. **Inventory and the Ramsar Information Sheet (RIS) for the designation of Wetlands of International Importance.** The cultural aspects of wetlands should be fully incorporated in wetland inventory systems. Cultural aspects should also be recorded with as much detail as possible in the RIS, so as to take them into account when preparing management plans for these sites.

Guiding principle 21- Recording cultural aspects in the Ramsar Information (RIS)

The actions required may include:

- a) to ensure that cultural aspects are fully incorporated in all wetland inventory systems, with the cooperation of experts on identification and recording of cultural elements;
- b) to ensure that when filling out the RIS for new designations of Wetlands of International Importance, as well as when preparing updates of the RIS of Ramsar sites designated in the past, the cultural aspects of the sites in question are fully researched and reflected in the RIS.

24. **Management planning.** Cultural aspects of wetlands should be fully incorporated in the management planning of sites, as a means to involve the concerned indigenous and local communities and stakeholders that feel identified with these cultural aspects.

Guiding principle 22 – Incorporating the cultural aspects of wetlands in management planning

The required actions may include:

- a) to research and inventory all relevant cultural aspects in the site in question and to select those that will be subject of concrete management interventions, with the active participation of the concerned communities, groups, institutions and individuals, taking into account these Guiding principles; and
- b) to incorporate in the management plan specific activities addressed to the cultural aspects of the site.

25. **Monitoring mechanisms** for wetland ecological character should include indicators related to cultural aspects. In general, indicators are measurable - and therefore objective - means for identifying and documenting trends, both positive and negative. They are also invaluable for communicating these trends in a convincing way to decision-makers and the public. Usually, within the wetland monitoring context, indicators are set for ecological and often social parameters, but not yet for cultural ones.

Guiding principle 23 - Monitoring cultural values

The required actions may include:

- a) to prepare and incorporate indicators for cultural parameters in the monitoring of the status of ecological character of wetlands and its change or possible change, on the basis of scientific work of development and testing such indicators; and
- b) to train practitioners in the gathering of cultural-related data and its interpretation.

26. Protection and enhancement of wetland-related cultural aspects should be incorporated in **legal and institutional frameworks**; in turn, nature and culture protection measures should be integrated and streamlined. In this context, it should be realised that policies and measures addressing wetland conservation are often implemented with a degree of laxity, while legislation for the protection of archaeological heritage is much stricter. Streamlining the two should ensure a higher degree of implementation (and if necessary enforcement) of both, avoiding the least common denominator effect.

Guiding principle 24 – Making use of institutional and legal instruments

The required actions may include:

- a) to review the existing legal and institutional framework concerning wetlands and water, on the one hand, and cultural values on the other, and identify weaknesses (see Ramsar Handbook 3);
- b) to incorporate cultural-related issues in national wetland policies or equivalent instruments; and
- c) to enact or when necessary strengthen legislation for the conservation of cultural wetland landscapes.

27. **Environmental impact assessments (EIAs)**, when adequately applied, have proven useful in mitigating negative impacts from development activities on wetlands. They should be now extended to include cultural values as well, as a means for their conservation and enhancement. Within the framework of the Convention on Biological Diversity, [CBD COP6 has adopted Decision VI/xx containing Recommendations for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities.]

Guiding principle 25 - Assessing the impacts on cultural values

To actions required may include:

- a) to propose and encourage, when required, modifications/additions in the existing national legislation governing the application of environmental impact assessments (EIA) to incorporate proper consideration of the cultural aspects of wetlands;.
- b) to include the cultural aspects of wetlands in all EIAs of wetland and water development and management projects, as well as of any projects or programmes that may affect wetlands;
- c) to promote the incorporation of similar considerations in the process for the enactment and enforcement of legislation on strategic environmental assessment (SEA); and
- [d) to apply the Recommendations for the conduct of cultural, environmental and social impact assessments regarding developments proposed to take place on, or which are likely to impact on, sacred sites and on lands and waters traditionally occupied or used by indigenous and local communities, adopted under Decision VI/xx of the Convention on Biological Diversity.]

28. Wetland-related **communication, education and public awareness (CEPA)** actions concerning the cultural aspects of wetlands should be instituted and strengthened, as they are practically non-existent at present. The reasons may be both limited understanding and appreciation of the issue, as well as lack of appropriate material and trained personnel.

Guiding principle 26 - Improving wetland-related communication, education and public awareness (CEPA) in the area of the cultural aspects of wetlands

Actions required may include:

- a) to sensitize teachers at the various levels of education, starting with schools in the wider vicinity of major wetland sites, about the cultural aspects of these sites;
- b) to develop educational and public awareness materials and training modules;
- c) to encourage the production and dissemination of videos and films on the cultural aspects of wetlands;
- d) to design and launch public awareness campaigns, addressed to local inhabitants, the wider public, and wetland visitors, on the values and significance of the cultural aspects of wetlands and their recovery when they are been lost or abandoned;
- e) to incorporate the promotion of the cultural aspects of wetlands in national and local tourism campaigns, taking into account the carrying capacity of each wetland in relation to its potential for tourism activities; and
- f) to use the mass media and wetland-related traditional festivals as means to disseminate information and appreciation of the cultural aspects of wetlands.

29. The **quality labeling** of wetland-related traditional products could be promoted as a means to maintain traditional production practices, which are often rich in cultural values. The increasing demand of healthy food and ecologically sound products is today reinforced by the growing interest on local specificities, as a counterweight to a globalised and homogenised world. Relating traditional products from wetland sites with cultural elements can assist in making use of these social trends and lead to a greater demand for them.

Guiding principle 27 - Promoting quality labelling of traditional wetland products

The required actions may include:

- a) to identify appropriate partners from the private and public sectors for promoting wetland-related products and to undertake efforts to relate these;
- b) to promote the quality and origin labeling of wetland products as a means to increase their attractiveness and demand;
- c) to encourage advertising campaigns of wetland products under the responsibility of appropriate national and local authorities as well as of the interested communities and the private sector; and
- d) to ensure that the economic benefits of these undertakings reach the local communities, thus making possible the maintenance of traditional production activities.

30. **Development of projects** for conserving cultural aspects of wetlands should be promoted and **donors** should be encouraged to support such initiatives. It is evident that the application of the principles contained in this guidance require considerable funding. At present such funding is either absent or exists in limited amounts through the budgets of central and sub-national cultural services and institutions.

Guiding principles 28 - Finding the necessary resources

The required actions may include:

- a) to incorporate cultural activities in wetland management projects, which would allow resources to be channelled to this sector;
- b) to identify funds for basic research on the cultural aspects of wetlands through specialised financing lines at the national and international level; and
- c) to create awareness among donors of the contribution of cultural aspects to the sustainable use of wetland resources.

31. In many countries, **horizontal cooperation** on wetlands and water – even at the government level, and between clearly related sectors – is weak or absent. Thus operational relations between government sectors dealing with wetlands and water and those with culture should be established, as in most countries they do not exist today.

Guiding principle 29 - Encouraging cross-sectoral cooperation

The actions required may include:

- a) to initiate dialogue between the sectors dealing with wetlands and water and the sectors dealing with cultural issues;
- b) as a first step, to invite the culture sector representatives to participate as full members in the National Ramsar/Wetland Committees;
- c) to undertake joint policy reviews aimed at the conservation of both the natural and cultural heritage in wetlands; and
- d) in all cases, to ensure the active participation of indigenous and local communities and stakeholders in such collaborative processes (see Ramsar Handbook 5)

Proposed actions

32. Maintaining and enhancing the cultural values of wetlands will require long-term efforts by a wide variety of actors and stakeholders throughout the world. The following list of suggestions should be considered by the Convention and its collaborators for implementation when the required resources are identified or become available.

Wider actions

33. A short- and medium-term **strategy** for the identification, safeguard and use of the cultural aspects of wetlands should be developed, defining measurable and realistic objectives, a clear distribution of roles and responsibilities, activities to be carried out with priorities assigned, the resources required, and appropriate indicators to allow the monitoring of progress made. The Convention should coordinate this task, but wide participation of all the relevant organizations interested in this matter. The strategy should include both a general approach and regional components. It could be drafted during 2003, widely circulated for comments and indications of commitment to its implementation, and submitted for endorsement by Ramsar COP9.
34. As part of the Strategy, a systematic **inventory of cultural aspects** based on the Ramsar Information Sheet (RIS) of Ramsar sites should be organized and maintained and their results widely disseminated. Compatible methods and tools for such inventories should be prepared in advance and widely disseminated, so that the information collected is both verifiable and comparable.
35. Universities and other research and learning institutions should be encouraged to undertake more **applied research** to increase the knowledge of all cultural aspects related to wetlands and the results disseminated in a form useful to wetland managers and policy makers. In addition, existing scientific knowledge of cultural aspects should be found through bibliographic research and repackaged and disseminated so that it can become accessible to those responsible for wetlands.
36. **Examples of good practice** in the area of identification, safeguarding and use of the cultural aspects of wetlands should be identified and made widely known. This work could be organized on a regional basis. The Mediterranean Wetland Initiative (MedWet) could take the lead and identify such examples in the Mediterranean Basin. Ramsar Contracting Parties and/or its International Organization Partners could undertake similar work for other regions. In a first phase, the pilot cases selected could be posted on the Ramsar Web site, while their publication and dissemination in an appropriate form should be envisaged.
37. **Practical tools, mechanisms and other concrete guidance** should be provided to those responsible for wetland management, complemented by training and know-how transfers. As first steps a practical manual (see point 40 below) and a training module should be produced. This should constitute one of the first projects to be developed and launched, once the executant(s) and potential donors are identified.
38. A wide **programme of public awareness activities** concerning the cultural aspects of wetlands should be organized through Web sites, publications, exhibitions, events (such as the World Wetland Day 2002 celebration) and other appropriate means. A most effective medium could be the reconnection of existing traditional festivals to wetlands and efforts to re-establish those that have been abandoned. A typical example would be the El Rocio procession through the Doñana National Park (Ramsar site) in Andalusia, Spain. These festivals attract large segments of the local populations (as well as visitors) and encourage an active participation of those attending, in contrast to other, more passive means of communication. A global inventory of such traditional festivals related to wetlands and water should be carried out on a priority basis.

Specific initiatives

39. A **traveling exhibition** on culture and wetlands prepared by the Ramsar Bureau and other interested organizations and circulating globally (physically and through the Web) may be a cost-effective means for increasing public awareness and sup-

port. Already the European Archaeological Council has proposed to participate in such an endeavour.

40. A **manual** on the conservation and enhancement of cultural values related to wetlands and water is a necessary tool at an early stage. Although there is little practical experience available in the management of many types of wetland-related cultural resources and the enhancement of their values, sufficient material has been gathered to provide an initial basis for such a manual. It would certainly not be either complete or exhaustive, but it would act as a powerful tool for the sensitization of those responsible for wetlands and for bringing them into contact with culture-oriented institutions and individuals.
41. An intense effort should be made to **include social and cultural values in all on-going wetland management projects** and to incorporate them in all new project proposals. Already this has started in certain cases:
 - a) in MedWetCoast, a GEF/FFEM, USD 15.5 million, 5-year project, concerning 15 sites in 6 countries, an inventory of cultural elements has been included as part of the diagnosis of each site. In addition, two case studies for managing cultural heritage are being carried out in greater detail in two sites, in Egypt and Tunisia;
 - b) the Initiative for the Pantanal and the Everglades is considering incorporating cultural values in its programme, with the help of the Ramsar Bureau;
 - c) in the GEF project under development for the Prespa Park, a transboundary wetland site shared by Albania, Greece and the FYR of Macedonia, cultural values have been included in the project brief, with the intention of incorporating the management of the rich cultural interest of the area in the project activities.
42. Particular attention should be given to launching integrated management **projects for sites** that are **included both under Ramsar and the Convention on World Heritage** and/or are **Biosphere Reserves under the Man and the Biosphere Programme (MAB)** that are found to have important cultural components.

-
1. Prepared by Thymio Papayannis , Special Advisor to the Secretary General.
 2. An interesting report on such a settlement in NW Greece is found in Hourmouziades G.H. (1996), *The Prehistoric Lakeside Settlement of Dispilio (Kastoria)*, Codex, Thessaloniki , Greece , 64 pp.
 3. For the impact of malaria on the Mediterranean people, see Braudel F. (1990), *La Méditerranée*, 9th edition, Armand Colin, Paris , France , pp. 56-59.
 4. According to a research project carried out in the summer of 2000 by David Pritchard, BirdLife International, on some 600 Ramsar Information Sheets.
 5. As reported by Pasumai Thaayagam (Green Motherland).
 6. Based on the paper: Ruf T. (2000), "Water disputes in the Ecuadorian context up to the third millennium: The transition of Santa Rosa ", presented at the IASCP 8th Conference, Bloomington (USA), 30 May to 5 June 2000 .
 7. Qur'an: Surat al-Anbiya' (21), ayah 30.
 8. As reported in the World Water Forum Newsletter No 44, September 2001, on the occasion of the Fourth Inter-American Dialogue on Water Management, held in Iguacu , Brazil .
 9. Its Environmental Assessment Sourcebook Update (September 1994) provides a useful basis.
 10. The EAC has taken a lead in the joint cultural and natural approach to wetlands.
 11. CDB's Article 8(j) establishes that "Subject to national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the suitable sharing of the benefits arising from the utilization of such knowledge innovations and practices."

NATIONAL POLICY FOR HYDRO POWER DEVELOPMENT

Need For a Hydel Policy

Hydro power is a renewable economic, non polluting and environmentally benign source of energy. Hydro power stations have inherent ability for instantaneous starting, stopping, load variations etc. and help in improving reliability of power system. Hydro stations are the best choice for meeting the peak demand. The generation cost is not only inflation free but reduces with time. Hydroelectric projects have long useful life extending over 50 years and help in conserving scarce fossil fuels. They also help in opening of avenues for development of remote and backward areas.

Our country is endowed with enormous economically exploitable and viable hydro potential assessed to be about 84,000 MW at 60% load factor (1,48,700 MW installed capacity). In addition, 6781.81 MW in terms of installed capacity from small, mini and micro hydel schemes have been assessed. Also, 56 sites for pumped storage schemes with an aggregate installed capacity of 94,000 MW have been identified. However, only 15% of the hydroelectric potential has been harnessed so far and 7% is under various stages of development. Thus, 78% of the potential remains without any plan for exploitation.

Despite hydroelectric projects being recognised as the most economic and preferred source of electricity, share of hydro power has been declining steadily since 1963. The share of hydro power has been continuously declining during the last three decades. The hydro share has declined from 44 per cent in 1970 to 25 per cent in 1998. The ideal hydro thermal mix should be in the ratio of 40:60. Because of an imbalance in the hydel thermal mix especially in the Eastern and Western regions, many thermal power stations are required to back down during off peak hours. The capacity of the thermal plants cannot be fully utilised resulting in a loss of about 4 to 5 per cent in the plant load factor. Even if the share of hydro power is to be maintained at the existing level of 25 per cent, the capacity addition during the 9th and 10th Plan would work out to 23,000 MW. If the share were to be enhanced to 30 per cent, it would require a further addition of 10, 000 MW of hydro capacity.

The constraints which have affected hydro development are technical (difficult investigation, inadequacies in tunnelling methods), financial (deficiencies in providing long term financing), tariff related issues and managerial weaknesses (poor contract management). The hydro projects are also affected by geological surprises (especially in the Himalayan region where underground tunnelling is required), inaccessibility of the area, problems due to delay in land acquisition, and resettlement of project affected families, law & order problem in militant infested areas.

Objectives

The programmed capacity addition from hydel projects during the 9th Plan is 9815 MW, of which Central Sector and State Sector will contribute 3455 MW and 5810 MW respectively and the balance 550 MW will be contributed by the Private Sector. Sanctioned and ongoing schemes under implementation will enable a capacity addition of 6537 MW during the 10th Plan, of which 990 MW, 4498 MW and 1050 MW will be the contribution of Central, State and Private Sectors respectively. In addition, 12 projects (5615 MW) have been identified for advance action in the 9th Plan for benefits in the 10th Plan.

The Government of India has set the following objectives for accelerating the pace of hydro power development:-

(i) Ensuring targeted capacity addition during 9th Plan :

The 9th Plan programme envisages capacity addition of 9815 MW from hydel projects in the total capacity addition of 40245 MW. The Central Sector hydel projects would contribute 3455 MW, State Sector would add 5810 MW and Private Sector 550 MW.

Keeping in view that the achievement in 8th Plan had been dismal, the Government is determined to ensure that no slippage is allowed to occur and the targeted capacity addition in the 9th Plan is achieved in full.

(ii) Exploitation of vast hydroelectric potential at a faster pace:

The Government would initiate advance action for taking up new hydro projects since the ongoing projects will contribute a very small percentage of the desired capacity addition envisioned for 10th Plan and beyond. Towards this end, Government would take up for execution all the CEA cleared projects, and take steps to update and obtain clearances for pending DPRs. Measures for vigorously starting survey and investigations for new green field sites would also be implemented shortly. In addition, Government is keen to restart and activate the hydro projects which are either languishing for want of funds or are remaining dormant due to unresolved inter-State issues.

(iii) Promoting small and mini hydel projects

Small and mini hydel potential can provide a solution for the energy problems in remote and hilly areas where extension of grid system is comparatively uneconomical and also along the canal systems having sufficient drops. The small hydro potential could be developed economically by simple design of turbines, generators and the civil works. Small and mini hydel capacity aggregating to about 340 MW is in operation, and Government is determined to provide thrust for developing the assessed small hydel potential at a faster pace henceforth.

(iv) Strengthening the role of PSUs/SEBs for taking up new hydel projects:

In view of the poor response of the private sector so far in hydro development which may persist for some more years, the involvement of public sector in hydel projects would not only have to continue but will also have to be enlarged. There are categories of projects such as multi-purpose, projects involving inter-State issues, projects for peaking power and those involving rehabilitation and resettlement which may be taken up and implemented more easily in public sector. Similarly, mega hydro projects in the North and North Eastern region would also have to be executed by CPSUs in case the State or the private sector is not in position to implement these projects.

(v) Increasing private investment:

Even though public sector organisations would play a greater role in the development of new schemes, this alone would not be adequate to develop the vast remaining hydro potential since it will require huge investments which are difficult to be supported from the budget/plan assistance in view of competing demands from the various sectors. A greater private investment through IPPs and joint ventures would be encouraged in the coming years and required atmosphere, incentives and reliefs would be provided to stimulate and maintain a trend in this direction.

Policy Instruments

To achieve the above stated objectives for faster development of hydro potential, the Government proposes to take the following steps and measures: -

3.1 Funding

All the ongoing Central Sector hydroelectric projects namely Nathpa Jhakri (1500 MW), Tehri Stage I (1000 MW), Ranganadi Stage I (405 MW), Dulhasti (390 MW), Dhauliganga (280 MW), Doyang (75 MW) and Rangit (60 MW) would be provided with full budgetary support till completion. Government of India will also provide budgetary support for the new projects to be taken up by the CPSUs during the 9th Plan. The actual utilisation of the funds on the ongoing Central Sector hydel projects has been Rs.1616.87 crores in 1997-98 and the budget provision for 1998-99 has been increased to Rs.2070 crores. Therefore the remaining three years of the 9th Plan would require about Rs.5896 crores on the ongoing Central Sector projects (excluding NEC projects). Having regard to the large capacity addition envisaged in the State Sector (5810 MW) it is necessary to (a) provide a mechanism for funding hydro projects by earmarking funds in the plan allocation of the State Governments by the Planning Commission; and (b)

organising supplementary funding of hydel projects where more than 50 per cent of the expenditure has already been incurred.

The monitoring of all the ongoing projects will be intensified and a task force would be constituted for this purpose. The progress of important projects in the State and Central Sector would be reviewed at the level of Minister/Secretary(Power) and all measures will be taken so that there is no slippage in the schedule for completion of the ongoing projects.

3.2 Power Development Fund

The survey and investigation of hydro projects have been discontinued since long in the States due to paucity of funds. As a result, there are not enough projects right now that could be taken up in the next 2 to 3 years and get completed in the 10th Plan or early 11th Plan. It is necessary to carry out survey and investigations continuously and prepare a shelf of projects for execution over a decade and more.

In case fully investigated projects with Detailed Project Reports are offered to private developers, their response could be more favourable. If pre-construction activities and enabling works could be completed and these sites offered to IPPs the chances of IPPs opting to invest in these projects would further improve. Further this would reduce the gestation period which would make investment in hydro projects more attractive.

The above approach is possible and successful only if a dedicated fund is available for this purpose.

It is proposed to levy a Power Development Cess at 10 paise per kwh of electricity consumed in the country. The levy of cess was recommended by the Sub Committee of the NDC Committee on Power which gave its report in January, 1994. The cess would be levied on the electricity billed by SEBs/Electricity Departments/Bulk licensees/Distribution licensees. The State/UT Governments would be responsible for the collection of the cess. The amount would thereafter be credited to a "National Power Development Fund". It is expected that about Rs.3000 crores per annum can be realised by levying a cess of 10 paise per kwh.

It would be necessary to establish a legal and organisational frame work for levy of a cess. Electricity being a Concurrent Subject, the Central Government is empowered to legislate on all aspects of electricity including the levy of cess, the proceeds of which is to be utilised for power development. In order to levy a Power Development Cess, it would be necessary for Parliament to enact a legislation on the subject. The cess will be imposed on the consumption of electricity throughout the country. The State Electricity Boards will be the responsible agencies for the collection of cess. The proceeds of the cess will be shared with the State/UT Governments and the Central Government. Two-thirds of the amount realised from the State/UT Government will be allocated to the respective government to be utilised for power development. This amount would be released from the National Power Development Fund for financing schemes/projects recommended by the State Government. The remaining one-third will be utilised by the Central Government for promoting hydel projects in the Central Sector and for investment in transmission lines for evacuation of power from mega hydel projects which will benefit more than one State.

3.3 Basin-wise Development of Hydro Potential

The assessment of hydro potential in 845 identified conventional hydro projects and 56 pumped storage projects is on the basis of desk studies using toposheets and discharge data. Further, detailed studies to firm up the parameters of the projects as identified by CEA would be taken up on the basis of development of hydro potential in a basin as a whole for maximising benefits and prioritising execution of projects. These studies will be done in close co-ordination with CWC and Planning Commission and in harmony with development for other uses of water like irrigation, drinking water etc. While CEA would carry out these studies, CPSUs/other Central Government Organisations and State

authorities would do the investigations and prepare the detailed project reports, by adopting an integrated approach towards planning and development of the various projects, evacuation arrangement and environmental impact assessment. This would enable an optimal harnessing of hydro potential in each river basin.

3.4 Advance Action for Capacity Addition in the 10th Plan and beyond

Government will take immediate steps to tie up funding, execution agencies and convey investment decision for schemes already accorded techno economic clearance of CEA. As far as Central Sector is concerned, NHPC would take up Chamera Stage II (300 MW), Parbati Stage-II (800 MW), and Kol Dam (800 MW) in HP; Teesta Stage V (510 MW) in Sikkim, Loktak Downstream (90 MW) in Manipur and NEEPCO will take up Tuivai (210 MW) in Mizoram, Lower Kopili (150 MW) in Assam, Kameng (600 MW) and Ranganadi Stage II (160 MW) in Arunachal Pradesh (after the consent of the State Govt. has been obtained). In addition THDC would take action to start activities on Tehri Stage II (1000 MW) and Koteshwar (400 MW) in UP. Similarly NJPC would also take up Rampur Project (535 MW) in HP. These projects would require budgetary support of about Rs.2000 crores in the 9th Plan.

3.5 Survey & Investigations

As a long term strategy efforts will be made to ensure that DPRs which are under various stages of processing for accord of TEC by CEA are finalised and cleared so that a start could be made on these projects in the next one or two years. Survey and investigation of the potential hydro sites on an advanced scientific basis would be essential requirement for the future. The progress on this front has been dismal given the funds constraint and outdated technology. The funding agencies like World Bank and ADB have shown their interest towards funding the survey and investigation activities for hydroelectric projects. Concerted efforts would be made towards availing the funds quickly. This would not only help in preparation of the bankable DPRs for large hydroelectric projects but would also bring in advanced technology by involving reputed international consultants. The Central organisations like CWC, Brahmaputra Board, NEEPCO and NHPC, besides SEBs would be provided with funding support from the proposed Power Development Fund for the purpose of carrying out survey and investigations and preparation of bankable DPRs.

Since the private sector has so far been hesitant and cautious to invest in hydro projects, it is proposed that new projects will initially be taken up by CPSUs/SEBs for investigations, updatation of DPRs, obtaining the necessary clearances and pre-construction activities. After these stages, the projects could be offered to the private sector for execution either on 'stand alone' basis or for joint venture participation with the CPSU/SEB. The expenditure incurred by CPSUs/SEBs on these activities would be adjusted in the project cost to be recovered from the executing agency to be decided at a later stage. The Government expects that more private investment would be possible with this approach. In case for a particular project no such private investment is forthcoming, it will be executed entirely by the concerned CPSU/SEB which initiated its development.

3.6 Inter-State Projects

A substantial hydel power potential has remained locked up and many mega hydel projects could not be taken up for implementation, even though these projects are well recognised as attractive and viable, because of unresolved Inter-State issues. Govt. of India recognises the need for evolving an approach to ensure that the available hydro-electric potential is fully utilised without prejudice to the rights of the riparian States as determined by the Awards of the Tribunals/Agreements arrived at among the party States for a given river basin with regard to water sharing. The selection and design of project would be based on integrated basin wise studies, so as to arrive at an optimal decision and care will be taken that such projects do not in any way prejudice the claims

of basin states or affect benefits from the existing projects. A consensus would be evolved amongst the basin states regarding the location of such project, basic parameters involved and mechanism through which each project would be constructed and operated. As far as possible, there would be preference to take up simple run-of-the-river schemes that do not involve any major storage or consumptive uses.

3.7 Renovation, Modernisation & Uprating

Renovation, Modernisation & Uprating of old hydro power plants is being accorded priority as it is a faster and cheaper way of capacity addition than installing new capacity. As per recommendations of National Committee set up in 1987 and based on the subsequent reviews, 55 hydro schemes with an aggregate capacity of 9653 MW were identified for RM&U. Out of these, 20 hydro schemes have been completed providing a benefit of 971.5 MW and work on 27 schemes is in progress. In order to provide a greater thrust for RM&U, Government would set up a Standing Committee, to identify the new schemes and for tying up technology, funding and executing agencies.

3.8 Promoting Small and Mini Hydel Projects

The Ministry of Non-Conventional Energy Sources (MNES) deals with all matters related to Small Hydel Projects (up to 3 MW capacity). These projects are being provided with the following incentives.

- (i) Incentives for detailed survey & investigation and preparation of DPR.
- (ii) Incentives during the execution of the project in the form of capital/ interest subsidy.
- (iii) Special incentives for execution of small hydro projects in the North Eastern Region by the Government departments/SEBs/State agencies.
- (iv) Financial support for renovation, modernisation and uprating of old small hydro power stations.

The Small Hydel Projects are site specific and depending on the hydrology, typically the plant load factor varies from 40 to 60%. The Small Hydel Projects upto 25 MW will also be transferred to MNES in order to provide greater thrust for its development. Government of India proposes to provide soft loans to these projects (up to 25 MW) through IREDA/PFC/REC and other financial institutions and Ministry of Non-conventional Energy Sources would announce a suitable package of financial incentives for the accelerated development of Small Hydel Projects upto 25 MW station capacity. The State Government and Central and State Hydro Corporations like NHPC/NEEPCO etc. would be encouraged to take up a cluster of small/mini hydel schemes on Build, Operate and Transfer basis, and other suitable arrangements.

3.9 Simplified Procedures for Transfer of Clearances

As stated in the foregoing, the CPSUs and the private sector would need to play a greater role in hydro development. The immediate requirement would be to transfer the clearances already accorded to non-starting hydro projects in the State Sector in favour of CPSU/IPP/Joint Venture of IPP and CPSU. Government would evolve a simple procedure so that the transfer of CEA's techno economic clearance would be facile as only updation of project estimate would be examined by CEA. In the case of Environment and Forest clearances these could be transferred to CPSU/IPP etc. within a prescribed time limit on acceptance of conditionalities stipulated in the MOEF clearances accorded for execution in the State Sector by the above executing agencies. Another inhibiting factor discouraging IPPs is the need for notification of the scheme as per Section 29 of ES Act in newspaper and Gazette afresh even if this was done earlier for execution by SEBs. Government intends to do away with this requirement. The simplified procedure as proposed would be an encouraging factor for IPP to evince greater interest in hydro development. Government would initiate action right away towards this end.

3.10 Rationalisation of Hydro Tariff

The tariff formulation and norms for hydro projects as per existing Government notification are viewed by CPSUs and IPPs as unfavourable compared to those for thermal projects and the IPPs tend to prefer thermal projects for investment. There is a need to reformulate the principles on the basis of which tariff is determined for hydel generation. The objective is to fix a rate which will be reasonable to the consumer, to ensure adequate internal resources to repay the loan and also to provide a reasonable rate of return on investment. Recognising the difficulties in execution of hydro projects, the Government has decided to rationalise the existing hydro tariff norms, improve the incentives for better operation and evolve a solution to the contentious issue of computing the completion cost in the face of geological uncertainties and surprises and natural incidents of rock slide etc.

In January 1995, the Government issued a notification providing for a two part tariff for hydel generation stations. The first part of the tariff, denominated as capacity charges covers (a) interest on loan capital; and (b) depreciation reckoned at an annual amount not exceeding 1/12 of the loan amount and limited to the actual loan liability of the year as per approved financial package. The second part of the tariff denominated as energy charges covers (a) return on equity calculated at 16% (b) O&M charges; (c) tax on income; and (d) any other variable charge.

Hydro projects provide valuable peak power and have inherent capability for instantaneous starting and stoppage based on variation of load. The peaking power stations generally operate at a very low load level. Recognising the value of peak power to the system and resultant improvement in operation of thermal stations, it is proposed to allow a premium on the sale rate for hydro generation during peak period. The formulation of peak tariff and the premium to be allowed would be decided by the Central Electricity Regulatory Commission and the State Electricity Regulatory Commissions. Under the present notification, the rate for incentive for secondary energy has to be fixed at a rate mutually agreed between the State Electricity Board and the generating company. However, the maximum payment on this account is restricted to an amount not exceeding 10% return on equity. In order to provide an additional incentive for attracting investment in hydel projects, it is proposed to allow the sale rate for secondary energy at the same rate which is applicable for a primary energy.

Recognising the problems in operation of hydro power stations in the initial years especially in project with silt laden water, the normative availability factor is proposed to be reduced from 90% to 85%.

3.11 Estimates on Completion Cost (Geological Risks)

During the implementation of hydro power projects specially underground power stations, there is a likelihood of coming across geological surprises which are not anticipated at the time of preparation of Detailed Project Report. This results in increase in capital cost. The developer would need to be compensated for this kind of eventualities.

In the existing tariff notification for hydro projects, there is no provision for increase in project cost arising due to geological risks. A realistic estimate of completion cost has to take into account the geological and hydrological risks, cost escalation and natural occurrences of land slides, rock falls etc. In such cases, the developer will be allowed to submit his proposal for the enhanced cost to the Government. Expert Committee would be constituted at the State and Central level who would evaluate and recommend the cost increases for acceptance by the Government. The expert committee at the State Government level would recommend the cost increase proposal upto certain percentage and beyond that the cost increase would be recommended by the expert committee at the Central Government level.

3.12 Promoting Hydel Projects with Joint Ventures

With a view to bring in additional private investment in the hydel sector there would be a greater emphasis to take up schemes through the joint ventures between the

PSUs/SEBs and the domestic and foreign private enterprises. The joint venture company will be an independent legal entity to be registered under the Companies Act and would act as an independent developer. The joint venture agreement between the two partners will bring clearly the extent of participation by each partner and sharing of risks relating to implementation and operation of the project. It will also provide for arrangement in such cases where the joint venture partner would not be associated with the operation and maintenance of the project. While the selection of a joint venture partner would be in accordance with the policy of the Government, there would be an option for the PSU to either select the joint venture partner together with their financial and equipment package or to select a joint venture partner wherein the EPC contract is decided by both the partners after they have formed the joint venture company. The associated transmission line connected with the scheme will be constructed by the Powergrid Corporation of India. The power from joint venture hydel projects will be purchased by the Power Trading Corporation (PTC) proposed to be formed with equity participation from Government/CPSUs/Financial Institutions. The security for payment of power purchased from the joint venture projects would be through a LC to be provided by the SEBS and recourse to the State's share of Central Plan Allocation and other devolution. This security package would enable to raise finances for these projects. As far as the new schemes to be developed under the joint venture route are concerned, the power sharing formula as applicable to the Central Sector Projects shall not apply and joint venture company would be totally guided by the commercial interest. The State Government (home State/States) will be compensated by way of 12% free power as per the present policy applicable for Central Sector hydel projects.

3.13 Selection of Developer and Techno Economic Clearance of CEA

As per Government notification of September, 1996, all the schemes estimated to involve a capital expenditure above Rs.100 crores are to be submitted to CEA for techno economic clearance and in respect of schemes prepared by a generating company and selected through a process of competitive bidding by the competent Government or Governments, the exemption from CEA's techno-economic clearance is applicable if the capital cost is Rs.1000 crores or less.

Considering the capital intensive nature of hydel projects especially those of medium size being executed in the State Sector, it is proposed to increase the limit for exemption of CEA clearance from the present Rs.100 crores to Rs.250 crores if the projects are taken in the MOU route. In case of projects through competitive bidding the existing limit of Rs.1000 crores for CEA techno economic clearance will continue. However, irrespective of the capital cost or capacity, all hydel projects having inter-State aspect will require a mandatory clearance from the CEA. Keeping in view the need for transparency and cost assessment by an accepted mechanism as well as the uncertainties that are inevitable in the development and execution of hydel projects, the Government proposes to allow the selection of developer through MOU route for the hydel projects upto 100 MW instead of the existing limit of Rs.100 crores. However, these projects would require CEA techno economic clearance if their capital cost exceeds Rs.250 crores. This would enable more developers to evince interest in medium size hydro projects due to ease of execution and resource raising and due to exemption in obtaining clearances.

3.13 Govt. Support for Land Acquisition, Resettlement & Rehabilitation, Catchment Area Development

The acquisition of requisite Government, forest and private land involves cumbersome procedure and difficult negotiations with land owners to part with the land. Demands for employment in lieu of the land cost, land for land at places of land owners choice etc. has resulted in contractual problems for several projects. There is, therefore, a need that project authorities are insulated from the problems arising out of land acquisition and R&R. It will be the responsibility of the State Govt. to acquire the land

(Government/Private/Forest) for the project and also negotiate at its own terms with land owners as per the policy adopted by respective State Governments. Similarly, all the issues of resettlement and rehabilitation associated with projects have to be addressed by the State Govt. The State Governments. may consider to form Authorities to address the problems of land acquisition and R&R for all infrastructure projects. In case of mega projects the project specific Authorities may be created not only for land acquisition and RR but for comprehensive development of the area including catchment area. The project developer may not be involved in execution and implementation of works by these Authorities, but will be required to contribute for funding their plans. All such costs incurred by the developer shall be considered as cost to the project and allowed to be passed through tariff.



Government of India
Ministry of Water Resources

NATIONAL WATER POLICY

New Delhi
April, 2002

NATIONAL WATER POLICY 2002

Need for a National Water Policy

1.1 Water is a prime natural resource, a basic human need and a precious national asset. Planning, development and management of water resources need to be governed by national perspectives.

1.2 As per the latest assessment (1993), out of the total precipitation, including snowfall, of around 4000 billion cubic metre in the country, the availability from surface water and replenishable ground water is put at 1869 billion cubic metre. Because of topographical and other constraints, about 60% of this i.e. 690 billion cubic metre from surface water and 432 billion cubic metre from ground water, can be put to beneficial use. Availability of water is highly uneven in both space and time. Precipitation is confined to only about three or four months in a year and varies from 100 mm in the western parts of Rajasthan to over 10000 mm at Cherrapunji in Meghalaya. Rivers and under ground aquifers often cut across state boundaries. Water, as a resource is one and indivisible: rainfall, river waters, surface ponds and lakes and ground water are all part of one system.

1.3 Water is part of a larger ecological system. Realising the importance and scarcity attached to the fresh water, it has to be treated as an essential environment for sustaining all life forms.

1.4 Water is a scarce and precious national resource to be planned, developed, conserved and managed as such, and on an integrated and environmentally sound basis, keeping in view the socio-economic aspects and needs of the States. It is one of the most crucial elements in developmental planning. As the country has entered the 21st century, efforts to develop, conserve, utilise and manage this important resource in a sustainable manner, have to be guided by the national perspective.

1.5 Floods and droughts affect vast areas of the country, transcending state boundaries. One-sixth area of the country is drought-prone. Out of 40 million hectare of the flood prone area in the country, on an average, floods affect an area of around 7.5 million hectare per year. Approach to management of droughts and floods has to be co-ordinated and guided at the national level.

1.6 Planning and implementation of water resources projects involve a number of socio-economic aspects and issues such as environmental sustainability, appropriate resettlement and rehabilitation of project-affected people and livestock, public health concerns of water impoundment, dam safety etc. Common approaches and guidelines are necessary on these matters. Moreover, certain problems and weaknesses have affected a large number of water resources projects all over the country. There have been substantial time and cost overruns on projects. Problems of water logging and soil salinity have emerged in some irrigation commands, leading to the degradation of agricultural land. Complex issues of equity and social justice in regard to water distribution are required to be addressed. The development, and over-exploitation of groundwater resources in certain parts of the country have raised the concern and need for judicious and scientific resource management and conservation. All these concerns need to be addressed on the basis of common policies and strategies.

1.7 Growth process and the expansion of economic activities inevitably lead to increasing demands for water for diverse purposes: domestic, industrial, agricultural, hydro-power, thermal-power, navigation, recreation, etc. So far, the major consumptive use of water has been for irrigation. While the gross irrigation potential is estimated to have increased from 19.5 million hectare at the time of independence to about 95 million hectare by the end of the Year 1999-2000, further development of a substantial order is necessary if the food and fiber needs of our growing population are to be met with. The country's population which is over 1027 million (2001 AD) at present is expected to reach a level of around 1390 million by 2025 AD.

1.8 Production of food grains has increased from around 50 million tonnes in the fifties to about 208 million tonnes in the Year 1999-2000. This will have to be raised to around 350 million tonnes by the year 2025 AD. The drinking water needs of people and livestock have also to be met. Domestic and industrial water needs have largely been concentrated in or near major cities. However, the demand in rural areas is expected to increase sharply as the development programmes improve economic conditions of the rural masses. Demand for water for hydro and thermal power generation and for other industrial uses is also increasing substantially. As a result, water, which is already a scarce resource, will become even scarcer in future. This underscores the need for the utmost efficiency in water utilisation and a public awareness of the importance of its conservation.

1.9 Another important aspect is water quality. Improvements in existing strategies, innovation of new techniques resting on a strong science and technology base are needed to eliminate the pollution of surface and ground water resources, to improve water quality. Science and technology and training have to play important roles in water resources development and management in general.

1.10 National Water Policy was adopted in September, 1987. Since then, a number of issues and challenges have emerged in the development and management of the water resources. Therefore, the National Water Policy (1987) has been reviewed and updated.

Information System

2.1 A well developed information system, for water related data in its entirety, at the national / state level, is a prime requisite for resource planning. A standardised national information system should be established with a network of data banks and data bases, integrating and strengthening the existing Central and State level agencies and improving the quality of data and the processing capabilities.

2.2 Standards for coding, classification, processing of data and methods / procedures for its collection should be adopted. Advances in information technology must be introduced to create a modern information system promoting free exchange of data among various agencies. Special efforts should be made to develop and continuously upgrade technological capability to collect, process and disseminate reliable data in the desired time frame.

2.3 Apart from the data regarding water availability and actual water use, the system should also include comprehensive and reliable projections of future demands of water for diverse purposes.

Water Resources Planning

3.1 Water resources available to the country should be brought within the category of utilisable resources to the maximum possible extent.

3.2 Non-conventional methods for utilisation of water such as through inter-basin transfers, artificial recharge of ground water and desalination of brackish or sea water as well as traditional water conservation practices like rainwater harvesting, including roof-top rainwater harvesting, need to be practiced to further increase the utilisable water resources. Promotion of frontier research and development, in a focused manner, for these techniques is necessary.

3.3 Water resources development and management will have to be planned for a hydrological unit such as drainage basin as a whole or for a sub-basin, multi-sectorally, taking into account surface and ground water for sustainable use incorporating quantity and quality aspects as well as environmental considerations. All individual developmental projects and proposals should be formulated and considered within the framework of such an overall plan keeping in view the existing agreements / awards for a basin or a sub-basin so that the best possible combination of options can be selected and sustained.

3.4 Watershed management through extensive soil conservation, catchment-area treatment, preservation of forests and increasing the forest cover and the construction of check-dams should be promoted. Efforts shall be to conserve the water in the catchment.

3.5 Water should be made available to water short areas by transfer from other areas including transfers from one river basin to another, based on a national perspective, after taking into account the requirements of the areas / basins.

Institutional Mechanism

4.1 With a view to give effect to the planning, development and management of the water resources on a hydrological unit basis, along with a multi-sectoral, multi-disciplinary and participatory approach as well as integrating quality, quantity and the environmental aspects, the existing institutions at various levels under the water resources sector will have to be appropriately reoriented / reorganised and even created, wherever necessary. As maintenance of water resource schemes is under non-plan budget, it is generally being neglected. The institutional arrangements should be such that this vital aspect is given importance equal or even more than that of new constructions.

4.2 Appropriate river basin organisations should be established for the planned development and management of a river basin as a whole or sub-basins, wherever necessary. Special multi-disciplinary units should be set up to prepare comprehensive plans taking into account not only the needs of irrigation but also harmonising various other water uses, so that the available water resources are determined and put to optimum use having regard to existing agreements or awards of Tribunals under the relevant laws. The scope and powers of the river basin organisations shall be decided by the basin states themselves.

Water Allocation Priorities

5. In the planning and operation of systems, water allocation priorities should be broadly as follows:

- Drinking water
- Irrigation
- Hydro-power
- Ecology
- Agro-industries and non-agricultural industries
- Navigation and other uses.

However, the priorities could be modified or added if warranted by the area / region specific considerations.

Project Planning

6.1 Water resource development projects should as far as possible be planned and developed as multipurpose projects. Provision for drinking water should be a primary consideration.

6.2 The study of the likely impact of a project during construction and later on human lives, settlements, occupations, socio-economic, environment and other aspects shall form an essential component of project planning.

6.3 In the planning, implementation and operation of a project, the preservation of the quality of environment and the ecological balance should be a primary consideration. The adverse impact on the environment, if any, should be minimised and should be offset by adequate compensatory measures. The project should, nevertheless, be sustainable.

6.4 There should be an integrated and multi-disciplinary approach to the planning, formulation, clearance and implementation of projects, including catchment area treatment and management, environmental and ecological aspects, the rehabilitation of affected people and command area development. The planning of projects in hilly areas should take into account the need to provide assured drinking water, possibilities of hydro-power development and the proper approach to irrigation in such areas, in the context of physical features and constraints of the basin such as steep slopes, rapid run-off and the incidence of soil erosion. The economic evaluation of projects in such areas should also take these factors into account.

6.5 Special efforts should be made to investigate and formulate projects either in, or for the benefit of, areas inhabited by tribal or other specially disadvantaged groups such as socially weak, scheduled castes and scheduled tribes. In other areas also, project planning should pay special attention to the needs of scheduled castes and scheduled tribes and other weaker sections of the society. The economic evaluation of projects benefiting such disadvantaged sections should also take these factors into account.

6.6 The drainage system should form an integral part of any irrigation project right from the planning stage.

6.7 Time and cost overruns and deficient realisation of benefits characterising most water related projects should be overcome by upgrading the quality of project preparation and management. The inadequate funding of projects should be obviated by an optimal allocation of resources on the basis of prioritisation, having regard to the early completion of on-going projects as well as the need to reduce regional imbalances.

6.8 The involvement and participation of beneficiaries and other stakeholders should be encouraged right from the project planning stage itself.

Ground Water Development

7.1 There should be a periodical reassessment of the ground water potential on a scientific basis, taking into consideration the quality of the water available and economic viability of its extraction.

7.2 Exploitation of ground water resources should be so regulated as not to exceed the recharging possibilities, as also to ensure social equity. The detrimental environmental consequences of over-exploitation of ground water need to be effectively prevented by the Central and State Governments. Ground water recharge projects should be developed and implemented for improving both the quality and availability of ground water resource.

7.3 Integrated and coordinated development of surface water and ground water resources and their conjunctive use, should be envisaged right from the project planning stage and should form an integral part of the project implementation.

7.4 Over exploitation of ground water should be avoided especially near the coast to prevent ingress of seawater into sweet water aquifers.

Drinking Water

8. Adequate safe drinking water facilities should be provided to the entire population both in urban and in rural areas. Irrigation and multipurpose projects should invariably include a drinking water component, wherever there is no alternative source of drinking water. Drinking water needs of human beings and animals should be the first charge on any available water.

Irrigation

9.1 Irrigation planning either in an individual project or in a basin as a whole should take into account the irrigability of land, cost-effective irrigation options possible from all available sources of water and appropriate irrigation techniques for optimising water use efficiency. Irrigation intensity should be such as to extend the benefits of irrigation to as large a number of farm families as possible, keeping in view the need to maximise production.

9.2 There should be a close integration of water-use and land-use policies.

9.3 Water allocation in an irrigation system should be done with due regard to equity and social justice. Disparities in the availability of water between head-reach and tail-end farms and between large and small farms should be obviated by adoption of a rotational water distribution system and supply of water on a volumetric basis subject to certain ceilings and rational pricing.

9.4 Concerted efforts should be made to ensure that the irrigation potential created is fully utilised. For this purpose, the command area development approach should be adopted in all irrigation projects.

9.5 Irrigation being the largest consumer of fresh water, the aim should be to get optimal productivity per unit of water. Scientific water management, farm practices and sprinkler and drip system of irrigation should be adopted wherever feasible.

9.6 Reclamation of water logged / saline affected land by scientific and cost-effective methods should form a part of command area development programme.

Resettlement and Rehabilitation

10. Optimal use of water resources necessitates construction of storages and the consequent resettlement and rehabilitation of population. A skeletal national policy in this regard needs to be formulated so that the project affected persons share the benefits through proper rehabilitation. States should accordingly evolve their own detailed resettlement and rehabilitation policies for the sector, taking into account the local conditions. Careful planning is necessary to ensure that the construction and rehabilitation activities proceed simultaneously and smoothly.

Financial and Physical Sustainability

11. Besides creating additional water resources facilities for various uses, adequate emphasis needs to be given to the physical and financial sustainability of existing facilities. There is, therefore, a need to ensure that the water charges for various uses should be fixed in such a way that they cover at least the operation and maintenance charges of providing the service initially and a part of the capital costs subsequently. These rates should be linked directly to the quality of service provided. The subsidy on water rates to the disadvantaged and poorer sections of the society should be well targeted and transparent.

Participatory Approach to Water Resources Management

12. Management of the water resources for diverse uses should incorporate a participatory approach; by involving not only the various governmental agencies but also the users and other stakeholders, in an effective and decisive manner, in various aspects of planning, design, development and management of the water resources schemes. Necessary legal and institutional changes should be made at various levels for the purpose, duly ensuring appropriate role for women. Water Users' Associations and the local bodies such as municipalities and *gram panchayats* should particularly be involved in the operation, maintenance and management of water infrastructures / facilities at appropriate levels progressively, with a view to eventually transfer the management of such facilities to the user groups / local bodies.

Private Sector Participation

13. Private sector participation should be encouraged in planning, development and management of water resources projects for diverse uses, wherever feasible. Private sector participation may help in introducing innovative ideas, generating financial resources and introducing corporate management and improving service efficiency and accountability to users. Depending upon the specific situations, various combinations of private sector participation, in building, owning, operating, leasing and transferring of water resources facilities, may be considered.

Water Quality

14.1 Both surface water and ground water should be regularly monitored for quality. A phased programme should be undertaken for improvements in water quality.

14.2 Effluents should be treated to acceptable levels and standards before discharging them into natural streams.

14.3 Minimum flow should be ensured in the perennial streams for maintaining ecology and social considerations.

14.4 Principle of 'polluter pays' should be followed in management of polluted water.

14.5 Necessary legislation is to be made for preservation of existing water bodies by preventing encroachment and deterioration of water quality.

Water Zoning

15. Economic development and activities including agricultural, industrial and urban development, should be planned with due regard to the constraints imposed by the configuration of water availability. There should be a water zoning of the country and the economic activities should be guided and regulated in accordance with such zoning.

Conservation of Water

16.1 Efficiency of utilisation in all the diverse uses of water should be optimised and an awareness of water as a scarce resource should be fostered. Conservation consciousness should be promoted through education, regulation, incentives and disincentives.

16.2 The resources should be conserved and the availability augmented by maximising retention, eliminating pollution and minimising losses. For this, measures like selective linings in the conveyance system, modernisation and rehabilitation of existing systems including tanks, recycling and re-use of treated effluents and adoption of traditional techniques like mulching or pitcher irrigation and new techniques like drip and sprinkler may be promoted, wherever feasible.

Flood Control and Management

17.1 There should be a master plan for flood control and management for each flood prone basin.

17.2 Adequate flood-cushion should be provided in water storage projects, wherever feasible, to facilitate better flood management. In highly flood prone areas, flood control should be given overriding consideration in reservoir regulation policy even at the cost of sacrificing some irrigation or power benefits.

17.3 While physical flood protection works like embankments and dykes will continue to be necessary, increased emphasis should be laid on non-structural measures such as flood forecasting and warning, flood plain zoning and flood proofing for the minimisation of losses and to reduce the recurring expenditure on flood relief.

17.4 There should be strict regulation of settlements and economic activity in the flood plain zones along with flood proofing, to minimise the loss of life and property on account of floods.

17.5 The flood forecasting activities should be modernised, value added and extended to other uncovered areas. Inflow forecasting to reservoirs should be instituted for their effective regulation.

Land Erosion by Sea or River

18.1 The erosion of land, whether by the sea in coastal areas or by river waters inland, should be minimised by suitable cost-effective measures. The States and Union Territories should also undertake all requisite steps to ensure that indiscriminate occupation and exploitation of coastal strips of land are discouraged and that the location of economic activities in areas adjacent to the sea is regulated.

18.2 Each coastal State should prepare a comprehensive coastal land management plan, keeping in view the environmental and ecological impacts, and regulate the developmental activities accordingly.

Drought-prone Area Development

19.1 Drought-prone areas should be made less vulnerable to drought-associated problems through soil-moisture conservation measures, water harvesting practices, minimisation of evaporation losses, development of the ground water potential including recharging and the transfer of surface water from surplus areas where feasible and appropriate. Pastures, forestry or other modes of development which are relatively less water demanding should be encouraged. In planning water resource development projects, the needs of drought-prone areas should be given priority.

19.2 Relief works undertaken for providing employment to drought-stricken population should preferably be for drought proofing.

Monitoring of Projects

20.1 A close monitoring of projects to identify bottlenecks and to adopt timely measures to obviate time and cost overrun should form part of project planning and execution.

20.2 There should be a system to monitor and evaluate the performance and socio-economic impact of the project.

Water Sharing / Distribution amongst the States

21.1 The water sharing / distribution amongst the states should be guided by a national perspective with due regard to water resources availability and needs within the river basin. Necessary guidelines, including for water short states even outside the basin, need to be evolved for facilitating future agreements amongst the basin states.

21.2 The Inter-State Water Disputes Act of 1956 may be suitably reviewed and amended for timely adjudication of water disputes referred to the Tribunal.

Performance Improvement

22. There is an urgent need of paradigm shift in the emphasis in the management of water resources sector. From the present emphasis on the creation and expansion of water resources infrastructures for diverse uses, there is now a need to give greater emphasis on the improvement of the performance of the existing water resources facilities. Therefore, allocation of funds under the water resources sector should be re-prioritised to ensure that the needs for development as well as operation and maintenance of the facilities are met.

Maintenance and Modernisation

23.1 Structures and systems created through massive investments should be properly maintained in good health. Appropriate annual provisions should be made for this purpose in the budgets.

23.2 There should be a regular monitoring of structures and systems and necessary rehabilitation and modernisation programmes should be undertaken.

23.3 Formation of Water Users' Association with authority and responsibility should be encouraged to facilitate the management including maintenance of irrigation system in a time bound manner.

Safety of Structures

24. There should be proper organisational arrangements at the national and state levels for ensuring the safety of storage dams and other water-related structures consisting of specialists in investigation, design, construction, hydrology, geology, etc. A dam safety legislation may be enacted to ensure proper inspection, maintenance and surveillance of existing dams and also to ensure proper planning, investigation, design and construction for safety of new dams. The Guidelines on the subject should be periodically updated and reformulated. There should be a system of continuous surveillance and regular visits by experts.

Science and Technology

25. For effective and economical management of our water resources, the frontiers of knowledge need to be pushed forward in several directions by intensifying research efforts in various areas, including the following:

- hydrometeorology;
- snow and lake hydrology;
- surface and ground water hydrology;
- river morphology and hydraulics;
- assessment of water resources;
- water harvesting and ground water recharge;
- water quality;
- water conservation;
- evaporation and seepage losses;
- recycling and re-use;
- better water management practices and improvements in operational technology;
- crops and cropping systems;
- soils and material research;

- new construction materials and technology (with particular reference to roller compacted concrete, fiber reinforced concrete, new methodologies in tunneling technologies, instrumentation, advanced numerical analysis in structures and back analysis);
- seismology and seismic design of structures;
- the safety and longevity of water-related structures;
- economical designs for water resource projects;
- risk analysis and disaster management;
- use of remote sensing techniques in development and management;
- use of static ground water resource as a crisis management measure;
- sedimentation of reservoirs;
- use of sea water resources;
- prevention of salinity ingress;
- prevention of water logging and soil salinity;
- reclamation of water logged and saline lands;
- environmental impact;
- regional equity.

Training

26. A perspective plan for standardised training should be an integral part of water resource development. It should cover training in information systems, sectoral planning, project planning and formulation, project management, operation of projects and their physical structures and systems and the management of the water distribution systems. The training should extend to all the categories of personnel involved in these activities as also the farmers.

Conclusion

27. In view of the vital importance of water for human and animal life, for maintaining ecological balance and for economic and developmental activities of all kinds, and considering its increasing scarcity, the planning and management of this resource and its optimal, economical and equitable use has become a matter of the utmost urgency. Concerns of the community needs to be taken into account for water resources development and management. The success of the National Water Policy will depend entirely on evolving and maintaining a national consensus and commitment to its underlying principles and objectives. To achieve the desired objectives, State Water Policy backed with an operational action plan shall be formulated in a time bound manner say in two years. National Water Policy may be revised periodically as and when need arises.



Energy and Wetlands Research Group

Centre for Ecological Sciences

Indian Institute of Science

Bangalore - 560 012

Phone: 91-80-22933099/23600985/22932506

Fax: 91-80-23601428/23600085/23600683[CES-TV R]

Email: cestvr@ces.iisc.ernet.in,

energy@ces.iisc.ernet.in

Web: <http://ces.iisc.ernet.in/energy>

<http://ces.iisc.ernet.in/biodiversity>

Open Source GIS: <http://ces.iisc.ernet.in/grass>