INDIA REPORT ON ACTIVITIES TO INTERNATIONAL CORAL REEF INITIATIVE

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A. Summary of Activities:

1. National environmental policy, 2006.

The National Environmental Policy (NEP) 2006 seeks to extend the coverage and fill in gaps that still exist in light of present knowledge and accumulated experience. The NEP does not displace, but builds on the earlier policies such as National Forest Policy, 1988, The national Conservation strategy and Policy Statement on Environment Development 1992 and the Policy Statement on Abatement of Pollution, 1992 including National Agriculture Policy 2000, National Population Policy, 2000 and National Water Policy, 2002. Sustainable development concerns in the sense of enhancement of human wellbeing, broadly conceived, are a recurring theme in India's development philosophy. The NEP is intended to mainstream environmental concerns in all development activities.

Coastal regulation Zone (CRZ) notifications is to be modified 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 Ministry of Environment and Forests expects the integrated Coastal Zone Management (ICZM) plans to be more comprehensive and prepared on strong scientific basis by experts with the participation of the local communities both in formulation and implementation. The ICZM plans are to be evaluated by the experts at pre-determined intervals to take account of changes in geomorphology, economic activities, settlement patterns and coastal and marine environmental conditions. Also the Ministry of Environment is envisaging decentralization to the extent feasible, in according the clearance to specific projects at the level of State environmental authorities, exempting activities which do not cause significant environmental impacts and are consistent with approved ICZM plans.

2. Assessment of Damages to Coastal Ecosystems due to Recent Tsunami.

Tsunami struck the Andaman and Nicobar Islands and the mainland coast on December 26, 2004. The tsunami "run up" have significantly affected the coastal ecosystems on the Andaman and Nicobar Islands. Its effect on the mainland coast was less pronounced. The Ministry of Environment and Forests, Government of India requested many institutions along with the Space Application Centre (ISRO) as a nodal agency to carry out a rapid assessment on the damages to coastal ecosystems due to the recent tsunami. Based on the assessment, it was decided to prepare a consolidated report outlining major finding of the study and propose a future course of action.

3. Meeting of the working Group on Coral Reefs of India

The 1st meeting of the Working Group on Coral Reefs *of* India was held under the Chairpersonship of **Mrs. Veena Upadhyaya**, Joint Secretary, (Cons.I&NAEB) Ministry of Environment and Forests, New Delhi on 13.10.2005. The objective of the Working Group is to come up with the following outputs: 1. Formulation of Guidelines for the Scheme on Conservation and Management of Coral Reefs; it was noted that no such guidelines had been formulated so far all these years. 2. Effect improvements in the outline of the Scheme. and 3. Expand the identified areas from the existing four locations of the Corals.

There has been a repeated recognition of the need for an approach of multi-sectorality for remedying the present situation of coral reefs in India but there had been a deficiency in inter-weaving these concerns in the area of Po1icy and its implementation.

4. Brain storming session Initiative

Brain Storming Session on Strategy for Safeguarding the Bio-diversity in a Scientific Manner through Taxonomic Expertise held on 2nd August, 2005 under the Chairmanship of Secretary (E&F). It brought out the need of augmenting the highly deficient areas in terms of available national expertise on Taxonomy of hard, soft corals and sponges as well as exploration of several pristine patchy coral areas in different coastal States, especially Gujarat, Maharashtra and Karnataka. The need for linking job opportunities for taxonomists at various marine protected areas in the country was also recognized.

5. Strengthening of Conservation sector through schematic interventions through XI five year plan

The X Five Year Plan shall end on 31.3.2007. For the XI Five Year Plan, the Planning Commission, Government of India has initiated a detailed multi-stakeholder consultation exercise with a view to evolving a Plan document. The Conservation sector will be strengthened through schematic interventions during XI Five Year Plan.

6. National Committee Meeting on coral reefs & mangroves

The Ministry of Environment organized the National Committee Meeting on Coral Reefs and Mangroves on 5.10.2006 at Nagapattinam, Tamil Nadu to discuss and review the management action plans, take overview of outcome of completed & ongoing research projects, encourage Synergy & linkages with different Players in the field of Mangroves & Coral Reefs (Coast Guards; NIO, Goa; Fisheries Survey of India; Department of Ocean Development; Space Applications Centre Ahmedabad etc.); undertake review of work done under the Mangrove Genetic Resources Centre, Orissa; also review the status of Regulatory regime(s) for protection of mangroves & corals in various States/UTs; focus on Supplementary livelihood supports to local people in the villages surrounding ecologically fragile Mangrove & Coral reef areas; promote the role of Education & Awareness in Conservation & Management of Mangroves & Coral Reefs; gauge Enabling activities & Training requirements of the State/UT Governments for Conservation & Management of Mangroves & Coral Reefs and Model Cost-Effective Practices for achieving sustainable development of mangrove & coral reef areas. The Minutes embodying recommendations of the National Committee are under process for obtaining Chairman's approval.

7. Development of guidelines for National Coral Reef Conservation & Management.

The extant guidelines were revised through a multi-stakeholder consultative process. The earlier guidelines were rather sketchy. In the absence of structured guidelines, the coastal State/UT Governments were unable to furnish proper Management Action Plans and monitorable targets. The revised guidelines are fairly detailed and the Central Ministry of Environment & Forests provides financial assistance on 100% grant basis to the State/UT Forest and/or S & T Departments of all the four identified coral reef areas in the country for the following components:

(a) Survey, Assessment and Mapping
(b) Capacity Building: Staff Training and skills
(c) Protection & Monitoring
(d) Biodiversity Conservation
(e) Sustainable Resource Development
(f) Restoration Measures
(g) Community Participation in Conservation
(h) Alternate/Supplementary Livelihoods and Eco-development Activities
(i) Environmental Education and Awareness
(j) Impact Assessment through concurrent & Terminal Evaluation.

8. Coral Restoration through Transplantation in Gulf of Mannar

Coral reef restoration programmes using low-tech transplantation methods have been initiated in Gulf of Mannar since 2002 on a pilot scale by SDMRI, Tuticorin to study the feasibility of increasing biodiversity, biomass and livelihood in the

degraded areas. The effort was highly successful with good survival (85-90%) and growth rates. Several coral species (*Acropora nobilis*, *A. intermedia*, *A. formosa*, *A. cytherea*, *Montipora foliosa*, *M. hispida, M. divaricata, favia palida, porites lutea, Turbinaria mesentarina* and *T. peltata*) were experimented with successful result. The degraded area of about 1 sq.km has successfully been restored in the mainland in Tuticorin coast using various coral species and substrates such as concrete frames and fish houses.

9. New R&D initiatives on Corals

Following research projects have been sanctioned by the Ministry:

Genome analysis of corals for their systematic and conservation	Dr. Usha Goswami, National Institute of Oceanography, Goa
Studies on the reproductive biology or corals to Assess coral regeneration and larval recruitment Pattern	Dr. J.K. Patterson Edward, Director, SDMRI, Tuticorin-628 002
Assessment of marine microbial, floral and faunal diversity of the coral reef environs of the Little Andaman Island	Prof. L. Kannan Annamalai University, Annamali Nagar-608002 Tamil Nadu
Taxonomy and biodiversity of soft Corals (Octocoallia: Alcyonacea) in India	Dr. K. Padmakumar, Department of Aquatic Biology and Fisheries, University of Kerala, Thiruvananthapuram
Recruitment and growth study of coral reefs in the Gulf of Kachchh	Dr. C.N. Pandey, Director, GEER Foundation, Gandhinagar.
Biodiversity of Malacofauna in Mangroves of East Coast of India	Dr. A. Shanmugam, CAS in Marine Biology, Annamalai University, Parangipettai
Diversity and Distribution of Corals and their Associated Fauna of Rani Jhansi Marine National Park, Andaman	Dr. R. Jeyabaskaran, Zoological Survey of India, A&N Regional Station, Port Blair-744 102
GIS Based Mapping and Analysis of Ecological Variables of Reefs Around the Little Andaman Island	Dr. Rajkumar R., ZSI, A & N Regional Station, Port Blair
Research Project Investigation in Marine fish biodiversity in the Indian EEZ	Dr. V.S. Somvanshi Director General
Research Project *On Assessment t of Coral Reefs*	Dr. Alok Saxena Jt. Director (FSI) Dehra Dun
Professional and Analytical Support on Conservation of Coastal and Marine Biodiversity pursuant to the Convention on Biological Diversity and an in-depth study of the Synergies and linkages of the subject with regard to other Multilateral Environmental Agreements / Treaties	Dr. Sejal Worah, Mr. Rajesh Sehgal and Dr. Swayamprabha Das, World Wide Fund (WWF) for Nature-India, New Delhi

10. Inter-sectoral Coordination among different Govt. Departments

Letters have been written to different coastal States/UTs to involve various concerned departments in the State-level Steering Committees to address issues such as point and non-point sources of pollution in coral reef areas, alternate/supplementary livelihood options for local population etc.

B. SUMMARY OF PERTINENT POINTS

- **National Environmental Policy, 2006.**
- **Assessment of Damages to Coastal Ecosystems due to Recent Tsunami.**
- **Meeting of the working Group on Coral Reefs of India**
- **Brain storming session initiative**
- **Strengthening of Conservation sector through schematic interventions through XI five year plan**
- **National Committee Meeting on coral reefs & mangroves**
- **Development of guidelines for National Coral Reef Conservation & Management.**
- **Coral Restoration through Transplantation in Gulf of Mannar**
- **New R&D initiatives on Corals**
- **Inter-sectoral Coordination among different Govt. Departments**

C. Identify forthcoming activities

In India, there are only a fraction of a percentage of the oceans is under protected status, while 'no-take zones', the equivalent of biosphere reserves, are ludicrously small. The Steering Committee on Coastal & Marine Biodiversity in its meeting held on February 1, 2005 observed the following gaps in the country's coastal & marine biodiversity research:

Conservation biology: In India, conservation biological studies have been carried out only on a few marine organisms viz. estuarine crocodiles, olive ridely, leather back and hawks bill turtles have been considered while seahorses and sea cucumbers have not been taken up in any worthwhile manner. Also the other important animals such as coral reefs, dugongs whale shark, mollusks and crustaceans have not been properly studied so far.

Insufficiently known species: Insufficiently known taxa are the taxa that are suspected but not definitely known to belong to any of the other categories (extinct, endangered, vulnerable or rare) because of lack of information. This is mainly because of the lack of expertise on specific groups, lack of funding to work on groups having only scientific importance, lack of coordination in exchanging data, lack of proper technology in culturing/growing the organisms etc.

Database creation and networking: Many institutions and individuals have now started developing databases on a variety of aspects of marine biodiversity; however, many of them are not upto the standard. This is mainly because of the improper planning, lack of infrastructure, and more importantly the lack of coordination between the experts in the respective fields to involve in such team work. Above all, inadequate funding to establish infrastructure, procure skilled manpower and utilize retired experts to develop such databases would be the main reason.

Training and Capacity Building: It is evident that the taxonomists are either aging or declining in number and there is lack of expertise in identification of several taxonomic groups mainly because of failure in transferring the capacity in taxonomic identification to the next generation.

Bio-prospecting: Bio-prospecting is the exploration of wild biodiversity in search of useful resources. India has a strong base of indigenous knowledge on various aspects of biodiversity including coastal and marine biodiversity. This traditional knowledge has to be scientifically validated through screening of biological diversity for commercially valuable products.

During the XI Five Year Plan, it is proposed to strengthen the above gap areas.

In addition to extending financial support for implementing the approved Management Action Plans in the four identified coral reef areas & other focused research programmes, the following activities will also be given priority in the coming years:

Long term reef monitoring and assessment sedimentation rate: This process will be initiated in all 4 major reef ecosystems through credible research institutions who involved in active reef research.

A programme on "Coral restoration through transplantation in the degraded island areas (about 32 sq.km)" gradually in a phased manner using native species: The post tsunami scenario made aware local community about the importance of corals. They have voluntarily stopped/reduced coral mining in Gulf of Mannar where they have practiced mining for the past 3-4 decades. So, the degraded reef areas around the 21 islands in Gulf of Mannar would require to be restored with native species using low-tech transplantation techniques in a gradual, phased manner.

A programme on Capacity building of Government stakeholders(especially the frontline forestry staff), Officials of Zoological Survey of India, Research students and Fisher community in SCUBA Diving and Reef Ecosystem Biodiversity Assessment and Monitoring: Capacity building of all stakeholders in the said aspects would make them aware the values of reef ecosystem and will increase their involvement in all reef ecosystem conservation, protection and management activities.

Strengthening of National Coral Reef Research Institute: The present institute at Port Blair would be strengthened with more manpower in order to engage all aspects of research on coral reefs & their associates.

Strengthening of universities & research institutions who are working on coral reefs: The strengthening of universities & research institutions who involved in active reef research is very important in the present scenario. These institutions are to be strengthened by providing necessary financial assistance to augment their capacity in reef research. This would enhance reef research activities in all 4 major reef ecosystems and would also help in getting regular reef status information and coordinate the conservation programmes more effectively.

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