Title: The Restoration of the Chilika Lagoon, a coastal wetland in India: The Achievement of Combined Integrated Water Resources Management and Enhanced Community Participation

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Proposed Statement
Wetlands are among the most productive ecosystems in the world. They are a source of substantial biodiversity providing support to a variety of species ranging from the tiniest microbes to assorted mammals. The wetlands are highly valued not only because they serve as a repository of biodiversity but also because they sustain a plentitude of agricultural activities and fisheries. Most importantly, wetlands maintain the livelihood of millions living in local communities in and around the wetland itself.

Summary of Context:
- The Chilika Lagoon is the largest brackish water lagoon in India and a Ramsar site (Map-1). The lagoon was subject to widespread degradation and therefore included in the Montreux Record of the Ramsar Bureau, the principal instrument for highlighting sites where an adverse change in ecological character has occurred, is occurring, or is likely to occur, and which are therefore in need of priority conservation attention.
- The watershed and coastal process are integral factors determining the ecological integrity of the coastal wetland lagoon. The Chilika Lagoon is known for its rich biodiversity and its integral part in sustaining the livelihood of 0.2 million fishermen and 0.8 million in the watershed agricultural community.

Location Map of Chilika
• The integral feature of the restoration model is the integration of watershed and the coastal process. The Integrated Water Resources Management (IWRM) approach to restore the Chilika Lagoon through the integration of catchment and the coastal process resulted in enhanced lake productivity and overall restoration of the lake ecosystem. At the same time the application of participatory micro-watershed management lead to substantial enhancement of crop productivity and reduced the silt load into the lagoon. The enhanced agricultural productivity improved the livelihood of both the local community living in and around the lagoon and in the watershed.

Addressing the problem
In 1992, as a response to the steady degradation facing the once lively Chilika Lagoon, the Government of Orissa created the Chilika Development Authority (CDA). The Authority initiated a complex integrated management process to address the equally complex ecological and socio-economic issues of the Chilika lagoon. There was an assessment of the principle causes of degradation with the objective to implement appropriate and effective methods to restore the lagoon to its former healthy state. The strategy was based on the integration of drainage basin and coastal processes with the goal of an ecologically beneficial hydrologic regime that improves water quality, recovers lost habitats and enhances agro-ecological productivity in the wetland and watershed. The unique integrated monitoring program allowed the planning team to assess restoration postulations and progress towards targets. The plan was then easily adapted and adjusted to reflect the newly gained knowledge. The effectiveness of this strategy is only one of the factors contributing to the restoration of the lagoon; equal weight must be given to the community participation and stakeholder base.

Innovative Approaches
To ensure the participation of the community, the CDA adopted a participatory micro-watershed management concept with a “sustainable rural livelihood” approach. This strategy created an enabling environment to facilitate the community, community based-organizations and NGOs at the outset, to be empowered in decision-making, capacity building and teamwork approaches. A series of need-based training programmes were aimed to facilitate an integrated and holistic management of micro-watershed by the community with the goal of poverty alleviation and the improvement of livelihood for the landless, impoverished farmers and women. For the formulation of micro-watershed plans the CDA adopted a bottom up approach, supported with appropriate expert input and at the grass root level blended with indigenous knowledge to make optimum use of the natural resources and their linkages with agricultural production. The watershed community co-financed the treatment of the watershed development fund, which provided support for the maintenance and sustained improvement of the watershed assets created after the project was terminated. The watershed association and the user groups have been able to efficiently implement the micro-plan in consultation with the community.

The women of the community benefited in a unique way through the formation of the women self-help groups (SHG) and capacity building training. Through a micro-credit mechanism, the members of the SHGs adopted income-generating activities with agricultural approaches to supplement their family’s income. By working to earn their own salaries, the women empowered themselves against the prevailing social taboo.

The holistic management of the natural resources at the grass-roots level also facilitated conflict resolution. The longstanding village level conflicts and differences of opinion within the micro-watershed area were resolved as a result of the participatory initiative. By applying indigenous methods, the participatory planning of the micro-watershed facilitated and augmented the supply and effective use of rainwater harvested for agricultural productions. Additionally, it reduced the ecosystem’s vulnerability to drought, improved agricultural incomes for small farmers, increased wage-labor opportunities for the landless, provided an equitable distribution of benefits to the poorest, and reduced environmental degradation and drudgery. Notably, there have been increased earnings from land and non-land activities for the poor, reduced debt, and improved livelihood and food security leading to further poverty alleviation.
Unique characteristics of the adopted restoration strategy are the strong participation of local communities, the linkages with various national and international institutions, and the intensive monitoring and assessment of the system for agricultural and environmental sustainability. The success of the restoration model is due to the comprehensive networking, consultation, and coordination leading to enhanced partnership in the region. An outreach programme was implemented to increase the awareness of the high value and vital function of the lagoon and its catchments. The bold and strategic hydrological interventions for the restoration of the lagoon by CDA resulted in considerable improvement of fishery resources and water quality, reappearance of species and a decrease in invasive species. The increased productivity thereby significantly contributed to the rise in per capita income of the community.

It is worthwhile to mention here that the Chilika lagoon is located in a province of a developing country in a critical resource situation. The Chilika Development Authority, with active community participation, completed a difficult restoration task with the limited resource available indigenously without any overseas funding or loan from any financial institutions available. The outstanding financial management and strategic planning by CDA is demonstrated through the effective utilisation of the very limited available resources in the form of grants from the Government of India (equivalent to mere 11 million US $), for the entire restoration intervention of this vast wetland and its catchments.

**Significant Achievement**

Based on the assessment of the outcome of the restoration measures taken by the CDA, the Ramsar Advisory Mission recommended the removal of the lagoon from the Montreux record. This is a testament to the significant achievement of the Chilika restoration model. Chilika Lagoon was the first site from Asia to be removed from the Montreux Record, with effect from 11th November 2002. In 2002, the CDA was granted two awards: the prestigious Ramsar Wetland Conservation Award, for the outstanding achievements in restoring the Chilika Lagoon; and the Indira Gandhi Paryavaran Purashkar, the highest national award for outstanding contribution in the field of conservation of environment. The successful restoration through integrated management of the Chilika Lagoon serves as an ideal example of how a Ramsar site can move from the Montreux record to a restored ecosystem offering benefits to all living things in and around it.

**Main conclusions/lessons for the conference themes: (to be further developed)**

Theme 3, Enabling environment:
- The lake restoration was lead by the established Cilika Developing Authority, in close cooperation with local communities as well as with national and international institutions
- The restoration plan was developed involving coastal and watershed communities in the participatory process,
- Participatory micro-watershed management was based on an adopted micro watershed plan with joint planning of agricultural, livelihood, and ecosystem considerations
- An intensive capacity building and awareness raising programmes at community level facilitated the involvement and ownership of the local community.

Theme 1, Fostering implementation, know-how for action
- The restoration of the lake ecosystem was achieved by integrated management of catchment and coastal processes resulting in enhanced productivity of lake as well as watershed
- The application of participatory micro-watershed management lead to substantial enhancement of crop productivity and reduced the silt load into the lagoon.
- The enhanced productivity improved the livelihood and agricultural production of both the local community living in and around the lagoon and in the watershed.

**Background information: (to be completed)**

Also see www.chilika.com