Institutional Coordination and Policy Development in Lake Basin Management: Lessons from the Chilika Lake, India

A.K. PATTNAIK, Ph.D.
Salient features of Chilika Lake

- **Length**: 64 kms (max)
- **Breadth**: 20 kms (max)
- **Avg. water spread area**: 1065 sq. km
- **Depth**: 0.38 to 4.2 m
- **Catchment area**: 4406 sq kms
- **No. of fishermen villages**: 192
- **Total fisher folk**: 0.2 million
Management issues:

- Complex ecosystem
- Multitude stakeholders (Open use of lake resources without any institutional regulatory mechanisms).
- Change in hydrological regime due to alteration of flow
- Shrinkage of water spread area of the Lake due to siltation and poor flushing.
- Loss of biodiversity and productivity.
- Degradation of the life support system in the lagoon and the drainage basin
- Included in the Montreux record in 1993 due to change in its ecological characters.
GOVERNING BODY OF CDA

CHAIRMAN (CHIEF MINISTER)

WORKING CHAIRMAN (MINISTER, ENV)

MEMBERS

LOCAL REPRESENTATIVES, SECRETARIES FROM KEY DEPARTMENTS, EXPERTS FROM PREMIER INSTITUTES, REPRESENTATIVE FROM FISHERMEN FEDERATION.
Restoration strategy

- Wide stakeholder consultation.
- Key targeted studies to understand the complex ecosystem and to trace out the root cause of degradation.
- Connect science to the social values, institutions and ethos of local community.
- Adaptive management planning based on science.
- Ecosystem approach to restore the ecological integrity and functionality of the lake through wide consultative process.
- Integration of the watershed in the management of the lake with micro watershed as a functional ecological unit with facilitation of community level institution to manage the resources.
- Strong institutional coordination and strategic partnership.
Successive adaptive planning

The first phase included the restoration of the lake by re-establishing the flow regime with the Bay of Bengal, pilot project for micro-watershed management with capacity building and empowerment of the resource users through facilitation of the grass root level institutions.

In next phase the pilot project up-scaled to some 13 more micro-watersheds in the drainage basin.

It is envisaged to expand the management to the River basin scale.
A Strategic Process Adopted for Restoration

**Progressive spiral of growth of the Project**

1. **Formal adoption and funding**
2. **Stake holder Consultation & planning**
3. **Lake & Coast**
4. **Dev. Institutional mechns. Issue identification and assessment**
5. **Implementation**

**Time**

**Watershed**

1. 2. 3. 4. 5.

**River Basin**

1. 2. 3. 4. 5.
Institutional Linkages of Chilika Development Authority

**INTERNATIONAL ORGANISATIONS**
- Ramsar Secretariat
- Wetlands international
- World bank
- JICA
- ILEC
- Danish Embassy
- DHI
- Ramsar Center Japan
- Tokyo University

**COMMUNITY LEVEL INSTITUTIONS**
- Fishermen Cooperative Societies
- Watershed Associations
- Self Help Groups

**RESEARCH INSTITUTIONS**
- Central Water & Power Research Station
- National Institute of Oceanography
- IIT Chennai
- Zoological Survey of India
- Botanical survey of India
- Wildlife Institute of India
- National Remote Sensing Agency
- Bombay natural history Society
- Central Institute for Brackish Water Fishery

**NATIONAL ORGANISATIONS**
- Ministry of Environment, Agriculture, Science and technology, Water Resources – Government of India
- National Bank for Agriculture Devt.
- Water Technology Development for Eastern region
- Central Inland Fishery development Center
- Indian Institute of Tourism and travel management

**LOCAL ORGANISATIONS**
- Fishery and Animal Resource Development Department
- Water resources Department
- Forest Department
- Revenue Department
- Science and Technology Department
- Agriculture Department
- Remote Sensing Application Center
- Watershed Mission
- Renewable Energy Development Center

**NONGOVERNMENTAL ORGANISATIONS**
- Campaign for Conservation of Chilika Lagoon (CCCL)
- 20 local NGOs and CBOs
**Improvement after hydrological intervention**

- **Eight fold** increase in annual fish and prawn landing
- Avg. increase of income of fishermen by **1000 US$ per annum** after opening of the new mouth.
- Increase in salinity flux by **40%**
- Increase in tidal flux by **45%**
- Improvement of sediment flushing
- Quick discharge of flood water
- Decrease of invasive species by **162 sq km**
Assessment revealed that land degradation in the drainage basin resulted in enhanced silt flow into the lagoon and triggered poverty, due to low productivity.

The depletion of natural resources and loss of their productive capacity had imparted huge cost on the local communities.

The poor were the first and most directly and adversely impacted due to land degradation resulting in declining agricultural productivity.
Participatory management of watershed with a “sustainable rural livelihood” approach.

- The drainage basin of the lagoon that spreads over 4000 square kilometres was the logical starting point for management actions of the lagoon.

- The environmental flow assessment provided necessary clues regarding the significance of the freshwater flow from the drainage basin to maintain the ecological integrity of the lagoon.

- The large-scale silt flow from catchments (0.4 million cubic meters) was identified as the most detrimental for the lake ecosystem.
The drainage basin management programme is conceived as a long-term participatory process to achieve an **environmentally, economically and socially sustainable management of water resources**. The basic approach adopted has been to **facilitate and create an enabling environment**, through capacity building of the community, community based organisations and NGOs to develop strong and efficient grass root level institutions. **Community level institutions and equity issue were made central to the Integrated Watershed Management.**
Watershed Association (Watershed level institutions for sustainable management of resources)

- **Watershed Association** at each micro watershed are the key institutions to manage the natural resources and ensure equitable distribution of the benefits.
- All adults from the micro-watershed villages are members of the **watershed association**.
- The general body of the association constitute a drafting committee to draft the by-laws.
- The watershed association then constitutes the watershed committee with fair representation from the landless, socially weaker section and adequate women representatives.
- The watershed associations are also registered under Societies of Registration Act.
Micro planning (Village level resource management plan)

The micro-plan for each micro watershed formulated blended with local indigenous knowledge and appropriate experts’ input, for optimum utilization of the natural resources in a sustainable manner.

To ensure the involvement of the community and sustainability, the committee ensures that the community share a part of the cost of the treatment towards the watershed development fund which is utilised for maintenance and further improvement of the watershed assets created.

The watershed association and the user groups has been able to efficiently implement the micro-plan in consultation with the community.
Women Participation

The **Watershed Association** takes the lead in integrating women from all communities into the mainstream by way of empowerment through **Self Help Groups** and their active participation in the watershed management.

The women of the community benefited in a special way through the formation of the women self-help groups (SHG) and capacity building training for skill improvement.

Through a **micro-credit mechanism**, the members of the SHGs adopted income-generating activities to supplement their family’s income.

By working to earn for themselves, the women empowered themselves against the prevailing social taboo, now they are better placed to take the decision on financial matter.
Conflict resolution

- The WA could very effectively resolve the longstanding village level social conflicts and differences of opinions within the micro-watershed area.

- Even the chronic inter-village conflict plaguing these non-descript villages for the many years could be resolved amicably by the local level institutions.

- The micro-watershed institutions became the model in the context of social integration.
Good practices by watershed institution

- Participatory management of the watershed with **facilitation of strong grass root level institutions**; resulted in enhancement of productivity and poverty alleviation by efficient management and equitable sharing of natural resources.

- Participation of local communities **in planning and implementing management of natural resources and in sharing the responsibilities of decision-making has been key to the success**.

- The project is an **ecological success** in many respects, notably, there have been increased earnings from **land and non-land activities**, **reduced debt, conflict resolution** and social integration and **improved livelihood and food security leading** to further poverty alleviation, reduced environmental degradation and reduction in the silt load into the lagoon.

- The local community now lives in harmony, as is evident from a quote by villagers: **“we are now an extended watershed family and there is no question of discrimination.”**
Instilling stakeholders participation and facilitation of village level institutions, i.e., from the problem identification stage to the restoration and management of the natural resources through capacity development and empowerment by way of local level institutions.

Working within existing sectors and overcoming the barriers that exist across; through successful strategic partnership.

The capacity development and empowerment of the local community, community level institutions and the local NGOs created an enabling environment for sustainable restoration and management of the lake and watershed resources.

Creating participatory management institutions (including local people and NGOs) at the grass root level with a legal status, with a mandate, accountability to make decisions.