Difficulties in Adopting the IWRM and Integrated Basin Planning Concepts in India.

By
A. D. Mohile

Shri A. D. Mohile is a Consultant in Water Resources. Previously, he was a Chairman of the Central Water Commission, and ex-officio Secretary to Government of India. He can be contacted at

Scope of the Presentation

- Unity and Integrity of Water Resources
- The Concept of ‘Basin as a Unit’, and its limitations.
- The concept of ‘Integrated Water Resources Management.
- The Indian Water Scenario
- Efforts, Successes, and Difficulties in integrated Basin Authorities in India.
- Climate Change Related Issues
- Conceptual, Legal, Political and limitations

Unity and Integrity of the Earths Waters

- The Worlds Ocean Systems are totally integrated.
- The Atmospheric Water is roughly divided into Northern and Southern Hemisphere Circulation
- Only the land phase, from precipitation to flow into the Ocean Systems, the Water Cycle is desegregated, basinwise.

Basin as A Unit

- A basin is the area which drains out through a “Common Terminus”. This, usually, is its opening in the sea, but need not always be so.
- Water related action, anywhere in a basin, directly affects, indirectly affects, or limits the situation or possible actions, elsewhere.
- Actions outside the basin, normally, do not affect the basin.

Basin as A Unit (Contd)

- However, basins may cover multiple nations or political units. The need for equity, in water related issues, within the political unit, may go against the concept of ‘Basin as a unit’ for water planning
- Sometimes, basin boundaries may be unclear, and actions or situations outside may affect the basin
- Sometimes, due to changing and new concerns, the concept of the “Common Terminus” and hence, the definition of the basin, may become questionable.

Integrated Water Resource Management

- Basin as a normal unit of planning and Operation
- Importance of local actions within the overall framework
- Integrating concerns and problems within
  - Types of uses
  - Stakeholders within the same use
  - Use and non-use

THE WATER BALANCE OF INDIA

Item	Natural condition	1997
INPUT		
Rainfall	4000	4000
Trans-boundary Flow (Assumed)	300	300
Returns	0	186
Total Input	4300	4486
OUTPUT		
Evapotranspiration (Natural)	2347	2347
Withdrawal (Anthropogenic)	0	629
Flows to sea and Trans-boundary flows	1953	1510
Total Output	4300	4486
Anthropogenic Evapotranspiration out of the withdrawals	0	433

The Indian Water Scenario

- Large, but insufficient, storage development
- Large ground water development, particularly after 1970s
- One of the largest irrigation area amongst nations.
- Hydro-electric, and particularly, storage based hydroelectric, lagging much behind grid requirements.
- Good progress about urban water supply
- Sanitation, and sewage treatment/effluent treatment, neglected

The Indian Water Scenario- Some Myths

In-efficient irrigation wastes water	Leaked water comes out. Onlynon-useful evaporation from swamps, and leakage to unusable sinks (Brackish GW or coastal areas) is a waste
Local rainwater use is the best	Not always. In closed basins, it leads to distress elsewhere.
Small dams are better than large dams	There are good and bad points in both. Anyway, we require both.
Inter-state issues cannot be solved	Hundreds have been solved without going to adjudication
Inter-basin transfers are both unnecessary and impossible	Some have already been implemented; others are being negotiated. However, legal support would help.

The Indian Water Scenario- Some Myths

Irrigation is totally in Government Sector	More than half is through individually owned private GW structures
Large surface irrigation has failed	Apart from large areas directly irrigated by public canals, these replenish and support much GW irrigation
Low water prices and high subsidies is reason for misuse of water	Domestic water prices would require around ten fold increase, and this may not be affordable to poor. Surface gravity irrigation may require 100 times increase, and this is impracticable. GW will also require large increases. Small increases are unlikely to reduce demands.
Our rivers have become sewers	Yes, but only downstream of large cities.

A few Examples of Basin Authorities in India

Name	How Set Up	Main Purpose	Remarks
Tungabhadra Board	Legislative Support	Ensuring Water Distribution, as prescribed	No serious problems
Bhakra Beas Management Board	Legislative Support	Ensuring Water Distribution, as prescribed	Some high level problems, but smooth working
Bramhaputra Board	Separate Legislation	Multipurpose and flood control planning	No serious problems, except that hydropower players are not serious
Betwa Board	Separate Legislation	Project Construction	No serious problems
Upper Yamuna River Board	Agreement amongst States	Ensuring Water Distribution, as prescribed	No serious problems, because of judicial interventions
Narmada Control Authority	Part of adjudicated Award	Ensuring Water Distribution, as	No serious problems

Deficiencies of Indian Basin Authorities

- . Basin Authorities need to involve all stakeholders, and not just Governments. All stakeholders need to participate in decisionmaking.
- RBAs need to cover the whole basin (or at least the part in India) Contrast: BBMB, TB, UYRB, Betwa Bd)
- RBAs need to oversee both planning and operations. (Only Bramhaputra Bd can do this)
- RBAs need legislative support towards devolution of State Powers. (NCIWRD recommendations not accepted)

Conceptual Changes needed in the mindset of all Stakeholders

1. Understand the extreme mobility of water in its cycle. Water does not ‘belong’ to a place
2. Water rights need to be, ideally, ‘’n a ‘negative Community’; or trusteeship
3. No property rights can exist. There is no “our waters”
4. The State has to devolve the rights to users in a regulated way.

Conceptual Changes needed in the mindset of all Stakeholders

5. Water is for everyone; all users; all uses; all non-uses. Allotments will necessarily involve both prioritization and tradeoffs.
6. Both the extreme views" water going to the sea is a waste" and "all water uses affect ecologic sustainability" are untenable.

Adjusting to Climate Change

- **General approach:**
  - **Internalize CC concerns in existing Institutes**
  - **Undertake massive retraining and attitudinal changes**
  - **In annual reports of water Institutes, add chapter regarding changes in programmes, procedures and research being made to adjust to CC**
  - **Setup inter-ministerial/ inter-departmental committees at Center and States to review the adjustment process in water sector towards CC**
  - **No need for a separate Office of CC**

DATA,PRGRAMMES AND R&D for Climate Change

- **Data Collection and Analysis Programme**
  - **Data collection in estuarine region**
  - **Data collection in areas sensitive to climate change**
  - **Better network for evaporation data**
  - **Better network for river hydraulics**
  - **Preparation of maps of flooded and flood prone areas**
- **Programmes for Improving Modeling and Analytic Capacities**
- **Programmes for Eventual Implementation**
- **Researchable Issues in Water Sector relating to Climate Change**

Additional Data to cope with Climate Change

- **Strategies for Coastal and Estuarine Management**
  - **Dearth of hydraulic information**
  - **Tidal embankments**
  - **Management of mangroves**
  - **Commercial brackish water fisheries**
  - **Using deltaic channels for seasonal storage**
- **Flood Management Strategies under Climate Change**
  - **Safety against floods**
  - **Floods to be used for deciding the spillway capacities of the dams**
  - **Floods to be used for planning flood control structures**

Changing Strategies towards Climate Change

- **Strategies about Multipurpose Water Projects**
- **Strategies about Erosion Control and River Management**
- **Strategies for Water Quality Management**
- **Disaster Management Strategies**
  - **Dam-break analysis – as a routine**
  - **Empowered Dam Safety Services**
- **Conflict Management Strategies**
  - **Managing conflicts within India, and, within a basin**
  - **Conflicts, within India, in regard to Inter-basin**

Legislative Changes Necessary

- **Legislative Empowerment under Entry 56 of the Union List, to provide for:**
  - **Approving proposals of the States in interstate basins**
  - **Collecting information about water and its uses**
  - **Monitor management of waters of an interstate basin**
  - **Setting up basin authorities**

Legislative Changes Necessary

- **Approving interstate agreements**
- **Independent Dam safety Authorities**
- **Deciding the availability of surplus water for inter-basin transfers, as a quasi judicial responsibility**

Legislative Changes Necessary

- **Inter-state Water Disputes**
  - **Consider Standing Water Disputes Tribunal**
  - **This will allow institutional specialization in water law.**
  - **Promote Arbitration or Mediation as Alternate Conflict Resolution Mechanism.**
  - **Even where these alternates fail, facts and issues may get crystallized in the process.**
  - **Minor Discords can be settled in the River Basin Authorities**

Institutional Adjustments

- **Reducing role of Government in water sector:**
  - **RBAs, although empowered by Union legislation, are for redistributing Governmental powers and functions to stack holders and civil society**
  - **Setup “single use” stake holder committees for irrigation management, domestic supplies, industrial water etc. involve people, stack holders, NGOs etc. in management and decision making**
  - **Eventual turn-over of tertiary management to stack holders**

Institutional Adjustments

- **Eventual turn-over of system management to upper tiers of stack holders committees**
- **Eventual financial self sufficiency and autonomy to RBAs**
- **Larger use of market forces in evolving competitive solutions, by taking issues out of the realm of public policy and strategy**
- **Setting up of largely autonomous Water Regulators**
- **Preparing for possible Hydrologic impacts of Climate Change**

THANKS