



Water and  
Environment Centre

# Integrated Watershed Management

*“ Planning and Management Approach ”*





## Mar del Plata conference (1977) recommendations for water management policy (action plans)

1. Formulate and keep review a general statement of policy relating to the use, management, and conservation of water as a frame work for planning and implementation
2. Institutional arrangements adopted should ensure that the development and management of water resources takes place within the context of the national planning
3. Examine and keep under review existing legislative and administrative structures concerning water management and should enact comprehensive legislation for a coordinated approach to water planning
4. Make necessary efforts to adopt measures for obtaining effective participation in the planning and decision making process involving users and public authorities



## After 30 years

The following difficulties continuing to exist:

- Domination of unregulated water uses
- Inadequate and ineffective water resources management
- High degree of inefficiency in many water related public utilities
- A failure to retain trained staff of all types (IWRM)
- Over-recentralization and bureaucratization of decision making authority
- Inappropriate and inadequate water legislation





## So Water experts call for

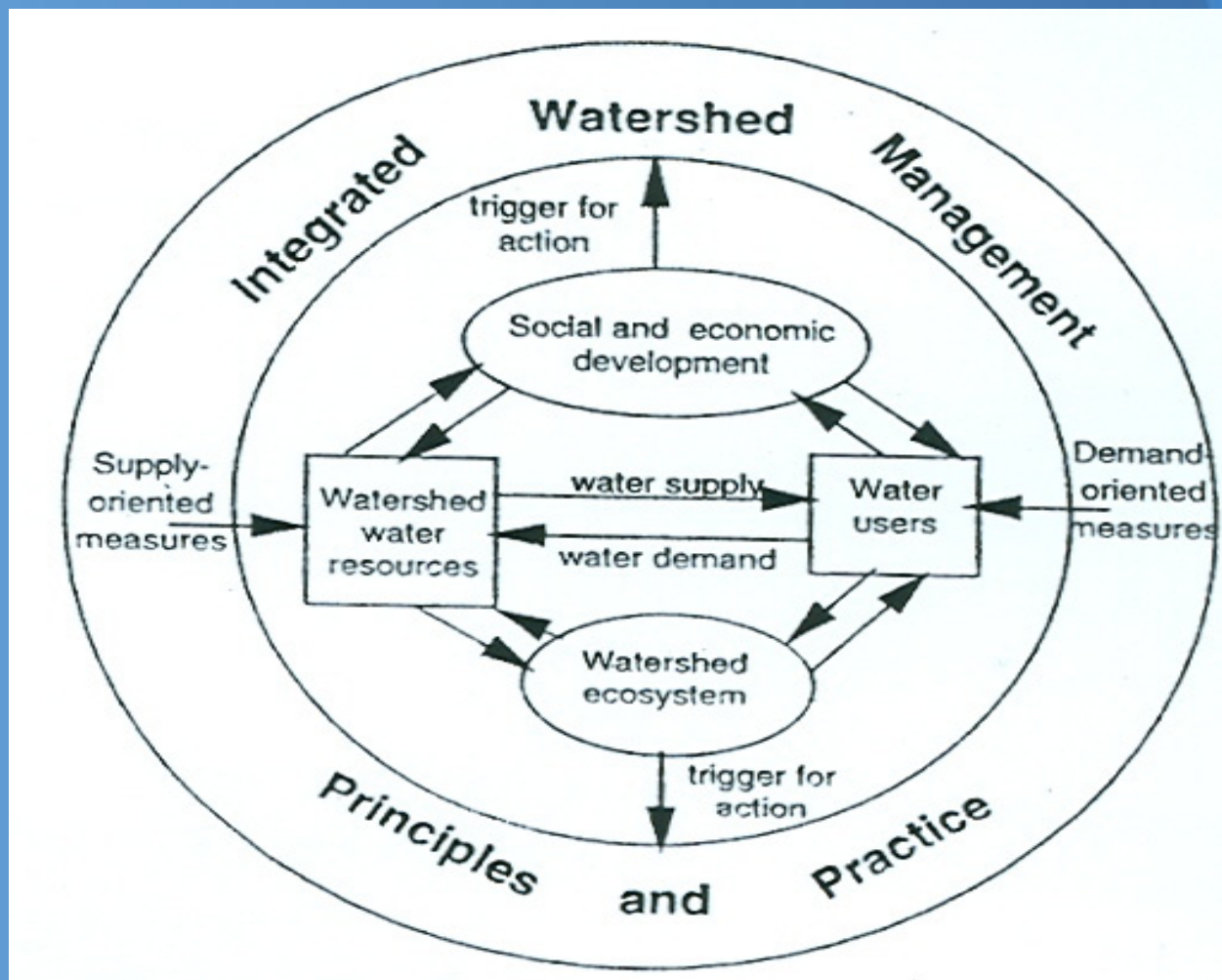
- “focusing on public attention on water and to develop a single centralized approach to water management”
  - problem identification by users
  - Willingness to take actions collectively
- “achieving rational, efficient use of water locally”
- “including water management institutions that are appropriate to local conditions and not centrally, inflexibly imposed “

*“This clearly supports the notion of management on a watershed “*





## Forces affecting integrated watershed management





## Current water issues in Water Management

- *water availability, requirements and use*
  - Protection of aquatic and wetland habitat
  - Management of extreme events (floods, droughts, etc..)
  - Excessive extraction from surface and ground waters
  - Global climatic change
  - Safe drinking water supply
  - Waterborne commerce
- *Water quality*
  - *Costal and ocean water quality*
  - *Lake and reservoir protection and restoration*
  - *Water quality protection, including effective enforcement of legislation*
  - *Management of point and non-point source pollution*
  - *Impact on land/water/air relationship*
  - *Health risks*



- *Water management and institutions*
  - Coordination and consistency
  - Capturing a regional perspective
  - The respective rules of districts and state agencies
  - The respective roles of projects and programs
  - The economic development philosophy that guide planning
  - Financing and cost sharing
  - Information and education
  - Appropriate regulation and deregulation
  - Water rights and permits
  - Infrastructure
  - Population growth





- Water sources planning which includes:
  - » Consideration of the watershed as an integrated system
  - » Planning as a foundation for, not reaction to, decision making
  - » Establishment of dynamic planning process incorporating periodic review and redirection
  - » Sustainability of projects beyond construction and early operation
  - » A more interactive interface between planners and the public
  - » Identification of sources of conflicts as an integral part of planning
  - » Fairness, equity, and reciprocity between affected parties







## Recent trends and shifts are marked such as

1. A move from end-of-pipe (reactive) pollution control to pollution prevention
2. Increasing concern about chronic effects and invisible threats as compared with acute effects and visible threats
3. Growing mistrust of technology and increased reliance on education, awareness, and extension activities to change consumer behavior
4. Increasing consensus that the users of the resources should pay for any damage done and
5. There should be a fee charged for water and sewage use





## Characteristics of Effective Watershed Management

Effectiveness is considered when it:

- Allows and adequate supply of water that is sustainable over many years
- Maintains water quality at levels that meet government standards and other societal water quality objectives
- Allows sustainable economic development over the short and long term





## Characteristics of Effective Watershed Management

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### 2. Sustainability means:

- Closer cooperation between water users than typically experienced in the past
- Considers the needs of the community and not the individual
- Proper planning which could be:
  - Single purpose to serve specific need; water supply
  - Multipurpose multi project plan
  - National plan
  - Regional plan



## Characteristics of Effective Watershed Management

### 3. Success of planning depend on:

- Characteristic of the planning area
- The water management issues
- The interests of the communities
- The needs of the communities of water users

*“public participation is required in almost every planning stage”*





## Characteristics of Effective Watershed Management

### 4. General guidelines for successful of planning :

- The institutional framework must allow consideration of a wide range of alternative solutions
- The planning bodies must have the needed expertise
- The institutional framework must facilitate adaptation of the plan to meet changing priorities
- The institutional framework must seek representation of all parties affected by the specific development plans and management
- The institutional framework must provide initiative and innovation
- The technical team must be full time
- The institutions must have the capacity for learning and improving over time
- The institutional framework must have sufficient authority for enforce conformity of execution with construction and operating plans
- The institutional framework must be capable of guaranteeing acceptable level of professionalism by the technical team
- The plan implementation stage must ensure continued operation, repair and maintenance of the facilities and the services provided



## Recommended planning and Management approach

1. Develop an understanding of watershed components and processes, water uses, water users and their needs
2. Identify and rank problems to be solved
3. Set clear and specific goals
4. Develop a set of planning constraints and decision criteria
5. Identify appropriate method of comparing management alternatives
6. Develop a list of management options
7. Eliminate options that are not feasible because of time, cost, space or other constraints
8. Test effectiveness of the remaining options using items 4 & 5
9. Determine the economic impacts and legal implications of the management options
10. Develop several management strategies each encompassing one or more options for the considerations of decision makers
11. Develop clear and comprehensive implementation procedures for the selected plan