Basic Principles Of Integrated Water Resources Management (IWRM)

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May, 2007

INTRODUCTION

- People from different backgrounds seldom have the same idea about what water resources management implies.

- To those living in an **arid country**, it means drought relief, food, jobs, law and politics. Generally there is an emphasis on groundwater. Rivers are normally dry, or experience flash floods after torrential rains (*wadis or ephemeral streams*).

- To those living in **humid areas** the emphasis is more on surface water. It brings to mind water works, flood protection, navigation, hydropower, treatment plants etc.

- In addition, people from different professional backgrounds tend to view water resources management differently.

- To **ecologist**, water resources development is often connected with the deterioration of ecosystem, the land degradation, pollution and destruction of wetlands.
- To the **water engineers**, water resources development is related to dams, reservoirs, flood protection, diversions, river training, water treatment and reclamation.
- To the **lawyer**, the main issues in water resources management are the ownership of water (is it common or private resource), the system of water rights (ownership or licence to use), the priority of use, the water legislation, and international water law.
- To the **economist**, water resources development is connected with economic efficiency, cost recovery and the attainment of national objectives such as: stimulation of economic growth, poverty alleviation, employment generation and food security.

- In fact, water resources management includes all these points of view. It is **physical, economic, political, sociological, environmental and technical**. The relative ease, with which one of these aspects might be quantifiable, as compared to another, does not in any way reflect a correspondingly great importance. Hence the Water Resources Management, in all its components, is **muti-disciplinary**.

- Three activities are distinguished: Water Resources Development (WRD), Water Resources Planning (WRP), and Water Resources Management (WRM).

- **Water Resources Development**: actions, mostly physical, that lead to the beneficial use of water resources for single or multiple purposes.

- **Water Resources Planning**: planning of the development, conservation and allocation of a scare resource (sectoral and intersectoral), matching water availability and demand, taking into account the full set of national objectives and constraints and the interests of stakeholders. Hence WRP is muti-disciplinary, multi-sectoral, multi-objective and multi-constrained.

- **Water Resources Management**: the whole set of technical, institutional, managerial, legal and operational activities required to plan, develop, operate and manage water resources for sustainable use.

DEFINITION OF IWRM

- Integrated water resources management is a systematic process for the sustainable development, allocation and monitoring of water resource use in the context of social, economic and environmental objectives.

- Integrated Water Resources Management has been defined by the Global Water Partnership (GWP) Technical Advisory Committee as: a process which promotes the coordinated development and management of water, land and related resources, in order to maximize the resultant economic and social welfare in an equitable manner without compromising the sustainability of vital ecosystems.

CROSS CUTTING POLICY ISSUES AND OBJECTIVES

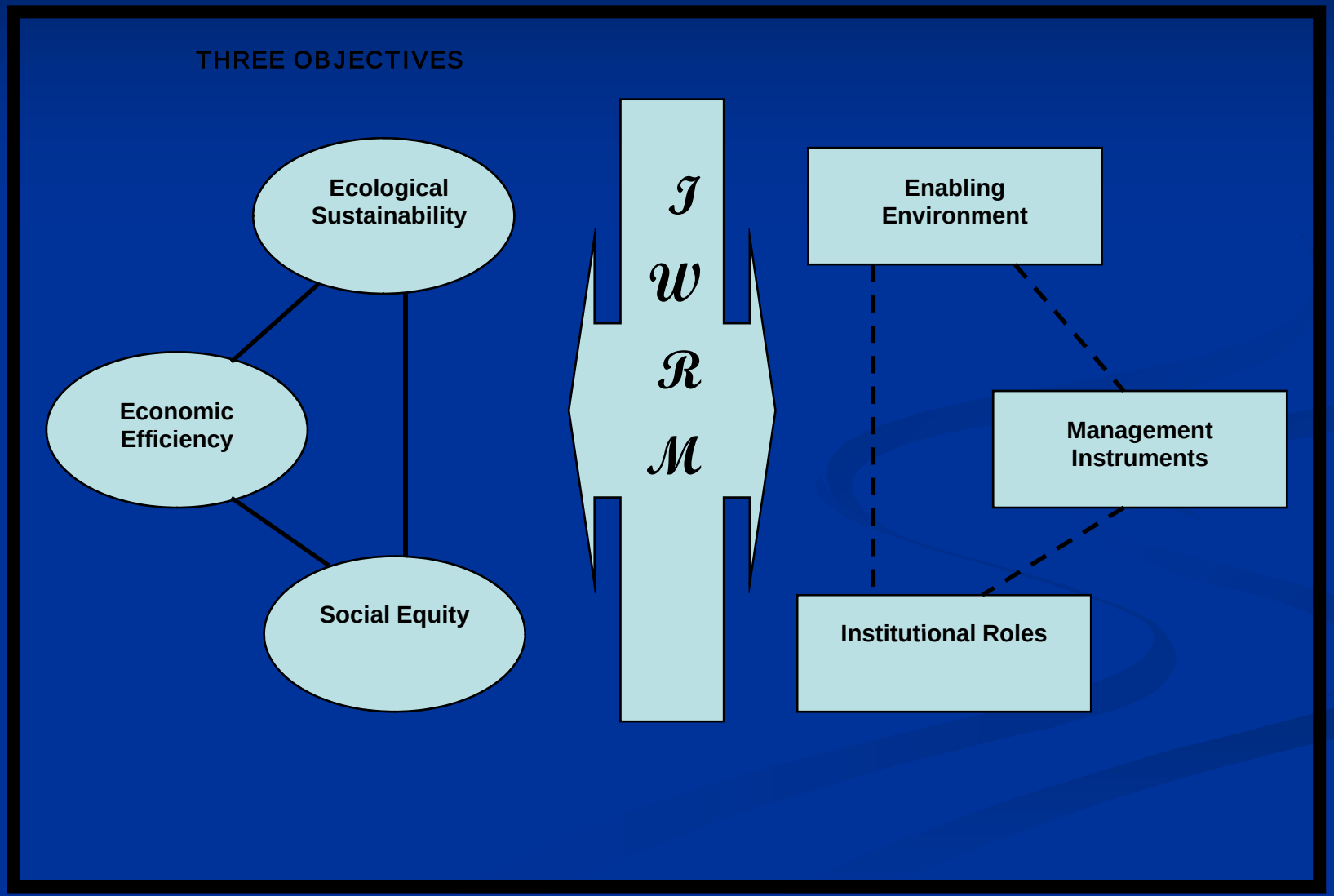
- Related to **sustainability**: the maintenance of **environmental quality** (including water quality), **financial sustainability** (cost recovery), the existence of democratic control mechanisms and the institutional capacity (**capacity building**, human resources, management instruments appropriate policy and legal framework).

- **Sustainable development** is the ability of the present generation to utilize its natural resources without putting at risk the ability of future generations to do likewise.
- **Capacity building** in water resources management is required to guarantee institutional sustainability; it is defined as: activities involving the development of institutions needed for sustainable water resources utilization, (including the establishment of sound management systems and incentive structures, and human resources development), as well as favorable policy environments with respect to all actors involved.

- The following aspects of sustainability are distinguished:
  - Technical sustainability (balanced demand and supply, no mining),
  - Financial sustainability (cost recovery),
  - Social sustainability (stability of population, stability of demand, willingness to pay),
  - Economic sustainability (sustaining economic development or welfare and production),
  - Institutional sustainability (capacity to plan, manage and operate the system),
  - Environment sustainability (no long-term negative or irreversible effects),

- Related to the **public interest**:
  - **equity** (the basic right of access of people to water resources),
  - **poverty alleviation** (the responsibility of society to nature the interests of the least advantaged),
  - **gender** (the central role of women in managing water at local level),
  - **security** (protection against floods, drought and hazards),
  - **food security**, health, employment, and merit values (beauty, culture).
- In IWRM, the art is to manage the water resources in these three dimensions while taking proper account of these overriding issues and objectives.

FRAMEWORK OF IWRM



IWRM PRINCIPLES

- Fresh water is a finite and vulnerable resource, essential to sustain life, development, and the environment.
- Water development and management should be based on a participatory approach, involving users, planners, and policy makers at all levels.
- Women play a central part in provision, management, and safeguarding of water.
- Water has an economic value in all its competing uses and should be recognized as an economical good.

FUNDEMENTAL ELEMENTS OF IWRM

- **The Enabling Environment**: the general framework of national policies, legislation and regulations and information for water resources management stakeholders.

- **The Institutional Roles** and functions of the various administrative levels and stakeholders.

- **The Management Instruments** including operational instruments for effective regulation, monitoring and enforcement that enable the decision-makers to make informed choices between alternative actions. These choices need to be based on agreed policies, available resources, environmental impacts and the social and economic consequences.

THE 3 E- PILLARS OF IWRM

- **Social Equity (Social Sustainability)**

The basic right for all people to have access to water of adequate quantity and quality for the sustenance of human well-being. The social perspective involves the need to meet fundamental human needs in terms of safe household water, water-dependent food production, and –in view of present techniques deficiencies- water-polluting income generation activities. Securing societal acceptance of necessary tradeoffs is essential by effective ways of stakeholder participation in planning and decision-making.

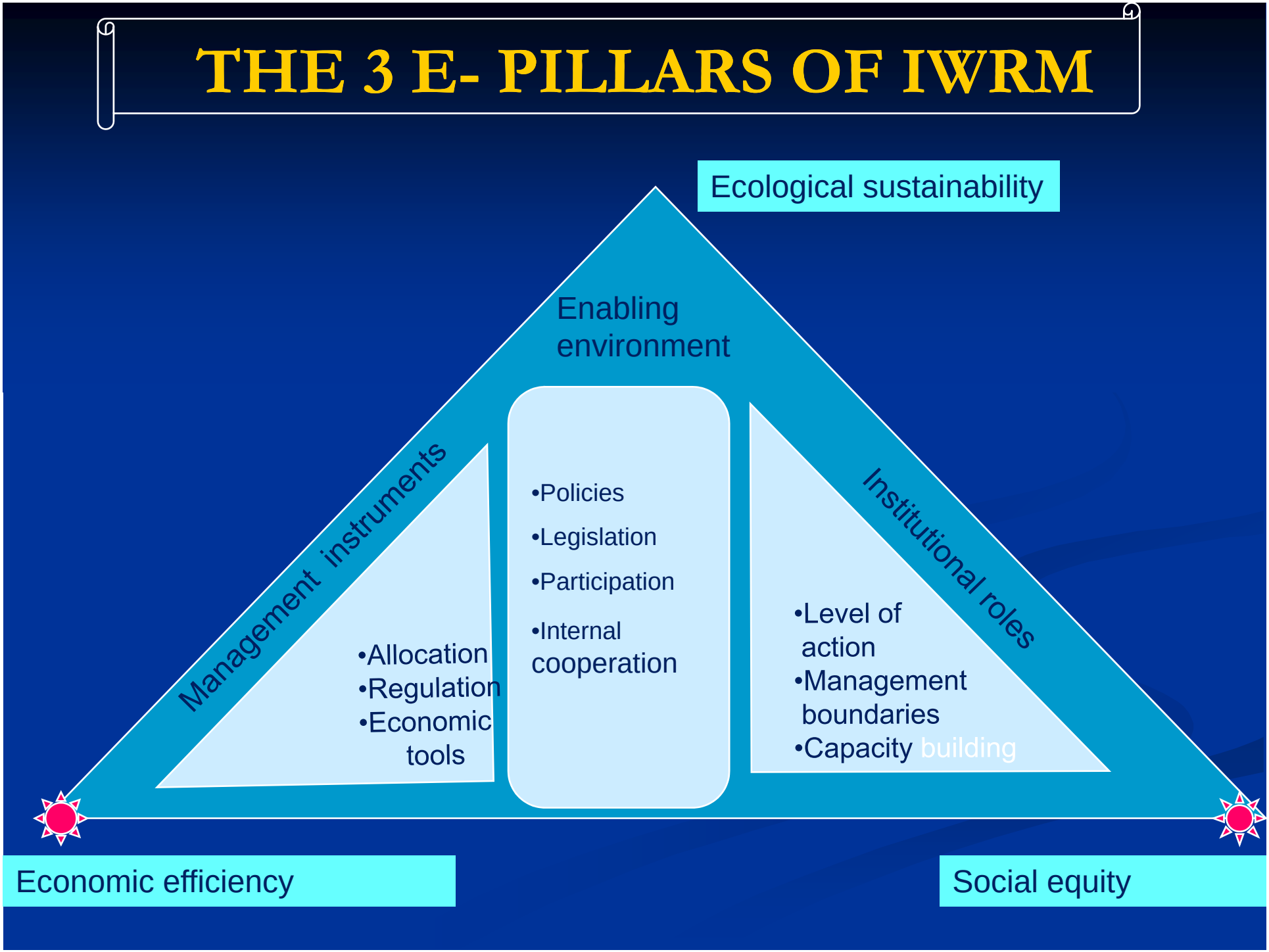
- **Environmental and Ecological Sustainability**

The present use of water resources should be managed in such a way that does not undermine the life support system, thereby compromising use of the same resource by future generations. The ecological perspective involves attention both to terrestrial ecosystems and their environment in local runoff generation and to aquatic ecosystems and their dependence on uncommitted environmental flows. Certain highly valued local ecosystems and their particular water determinants may have to be protected. The long-term resilience of the overall system has to be secured for the benefit of coming generations. Freshwater management and the management of environment dynamics have to be integrated. This is equivalent to finding ways and means to merge water management, land use management, and ecosystem management (terrestrial as well as aquatic) within a socio-ecohydrological catchment management- with full awareness of the different ethical and political dilemmas involved.

- **Economic Efficiency (Economic Sustainability) of Water Use**

  Because of the increasing scarcity of water and financial resources, the finite and vulnerable nature of water as a resource and the demands on it, water must be used with maximum possible efficiency. The economic perspective involves not only economic development in general but also attention to benefit-cost relations, financing challenges, cost coverage to secure operation and maintenance of water in infrastructures, incentives to encourage implementation, and guidance from the values of water in different functions.

THE 3 E- PILLARS OF IWRM



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