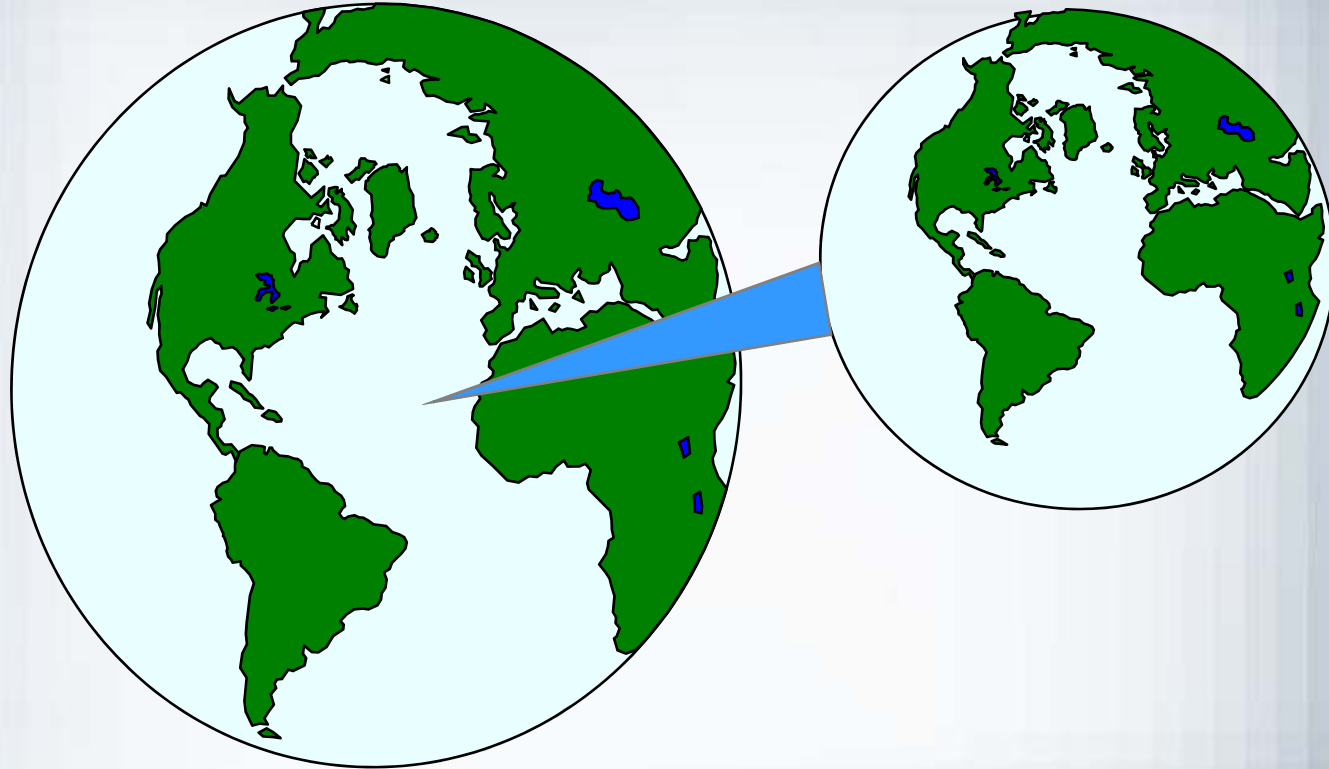


# **CONCEPTS IN INTEGRATED WATER RESOURCES MANAGEMENT (IWRM)**

**Dr. Ziad Mimi**  
**Birzeit University**

# The Global Water Budget

<u>Global Water</u>		<u>Global Freshwater</u>	
97%	Seawater	87% Not Accessible 13% Accessible (0.4% of global)	
3%	Freshwater		



# MDGs ... a starting point

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- ➡ Goal 1. Eradicate extreme poverty and hunger
- ➡ Goal 2. Achieve universal primary education
- ➡ Goal 3. Promote gender equality and empower women
- ➡ Goal 4. Reduce child mortality
- ➡ Goal 5. Improve maternal health
- ➡ Goal 6. Combat HIV/AIDS, malaria and other diseases
- ➡ Goal 7. Ensure environmental sustainability
- ➡ Goal 8. Develop a Global Partnership for Development

# The Water Balancing Act

## Supply

- Quantity (Natural Scarcity, Groundwater Depletion)
- Quality Degradation
- Cost of Options

## Demand

- Increasing in all sectors
- Inefficient use

IWRM

## IWRM concepts: **definition of IWRM**

A process that 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** (GWP, 2000).

# Implementation of IWRM: guiding principles

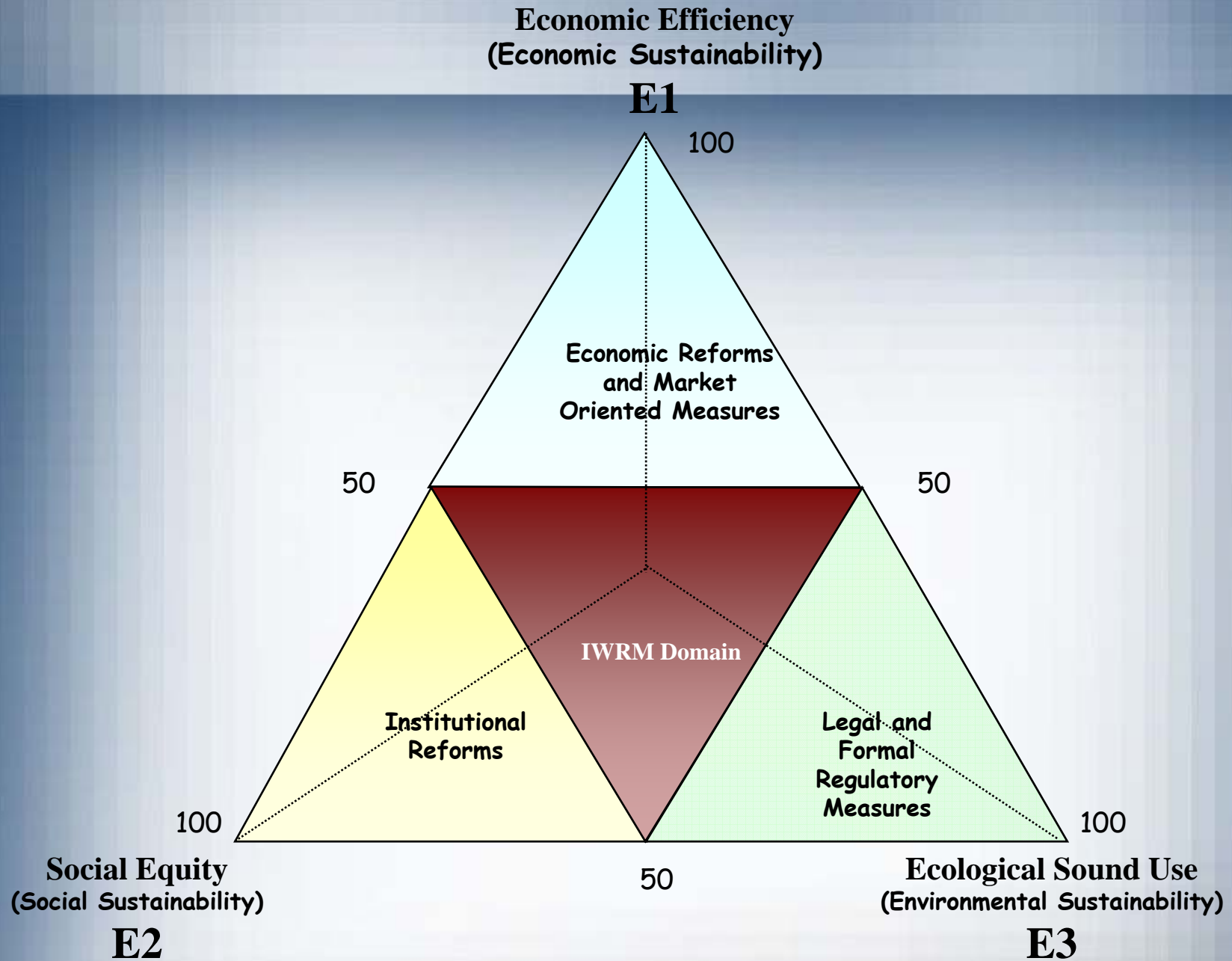
## Dublin principles

- 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 the provision, management, and safeguarding of water.
- Water has an **economic value** in all its competing uses and should be recognized as an economic good.

# IWRM concepts: what does a decision on IWRM involve?

A balance between conditions for sustainable development (**national interest**) and desirable socio-economic development (**public interest**) with ecological considerations (**environmental integrity**)

# Best Possible Use of Water (BPUW)





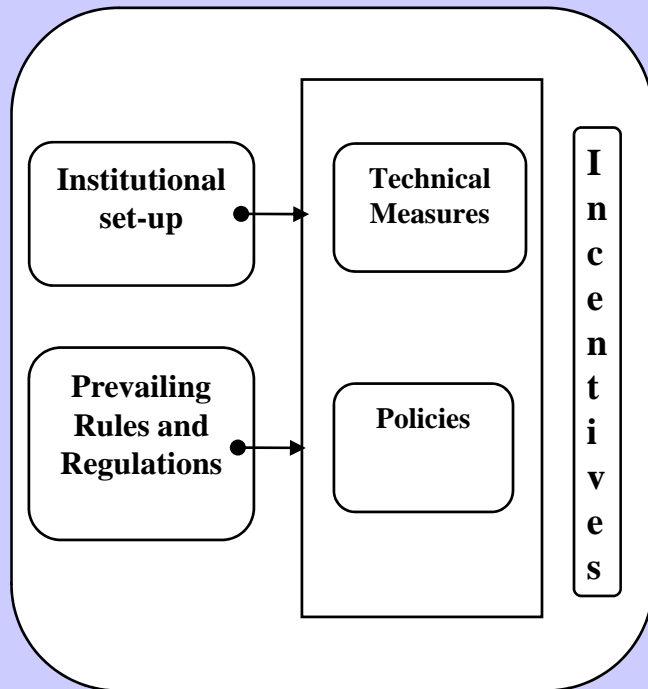
# IWRM concepts: how to achieve balance between NI,PI, & EI?

## Three interrelated sets of objectives (the 3 ‘E Pillars’ of IWRM)

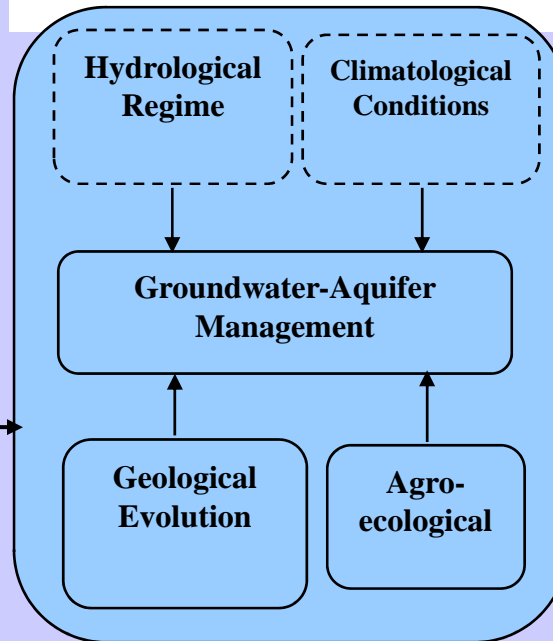
- Economic **Efficiency** (E1): water must be used with maximum possible efficiency.
- Social **Equity** (E2): secure basic right for all people to have access to water of adequate quantity and quality for the sustenance of human well-being.
- Sustainable **Environment** (E3): present water resources 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.

# Main Elements of IWRM

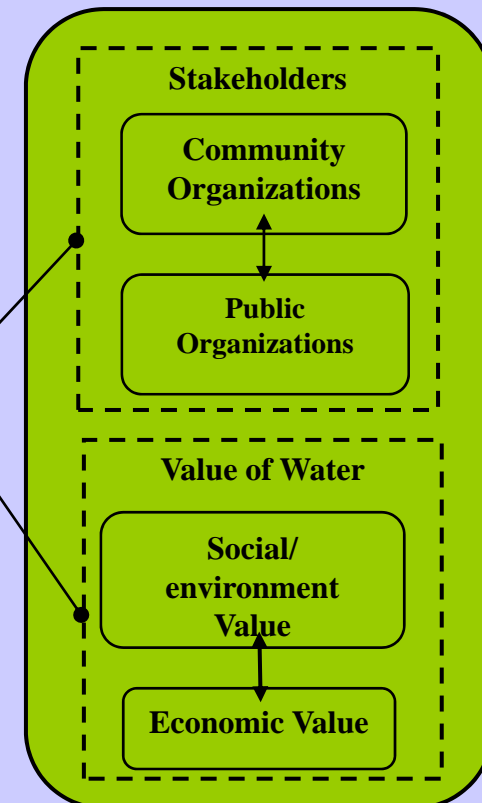
## *Institutional and Legislation System (ILS)*



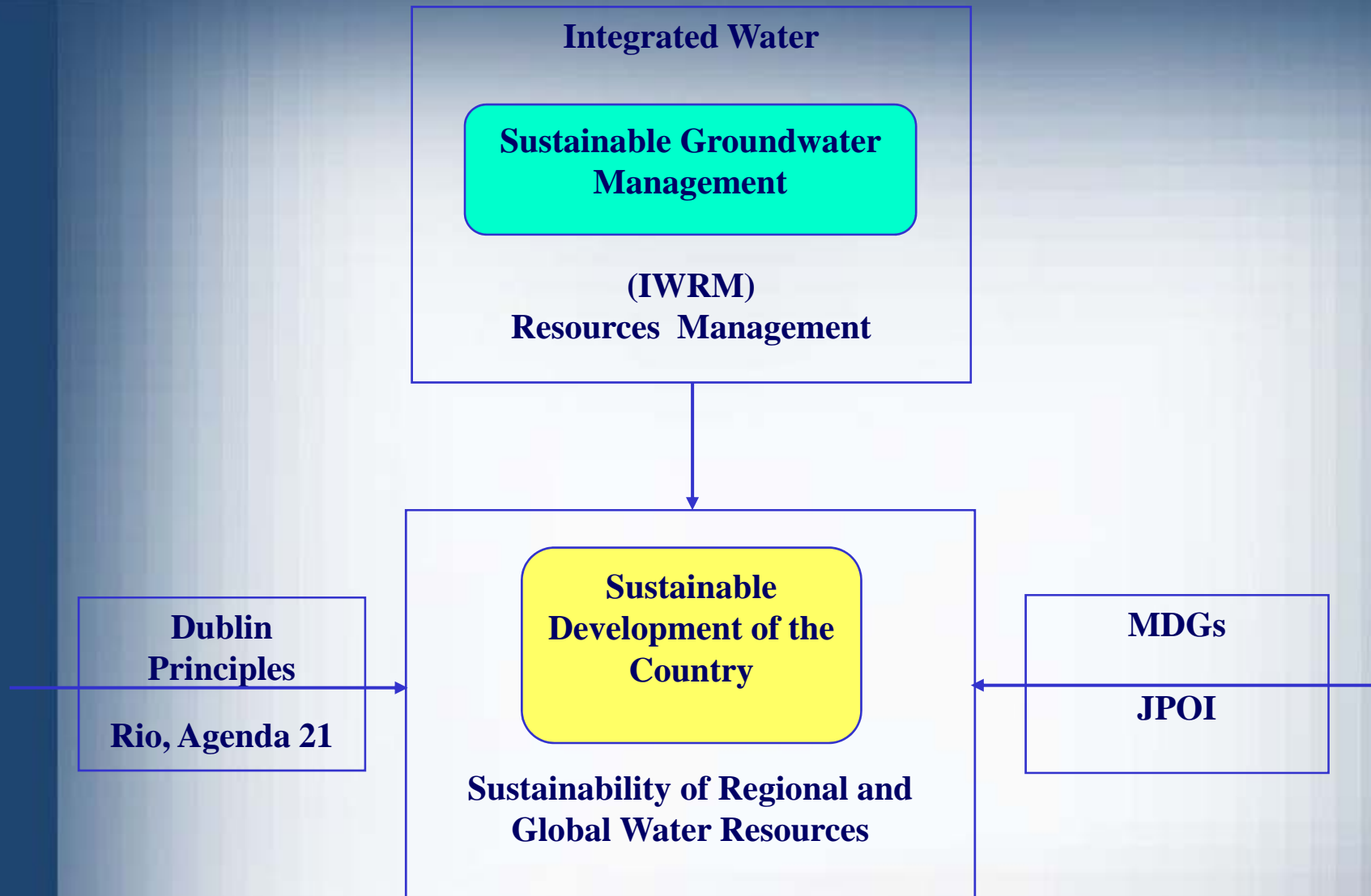
## *Natural Resources System (NRS)*



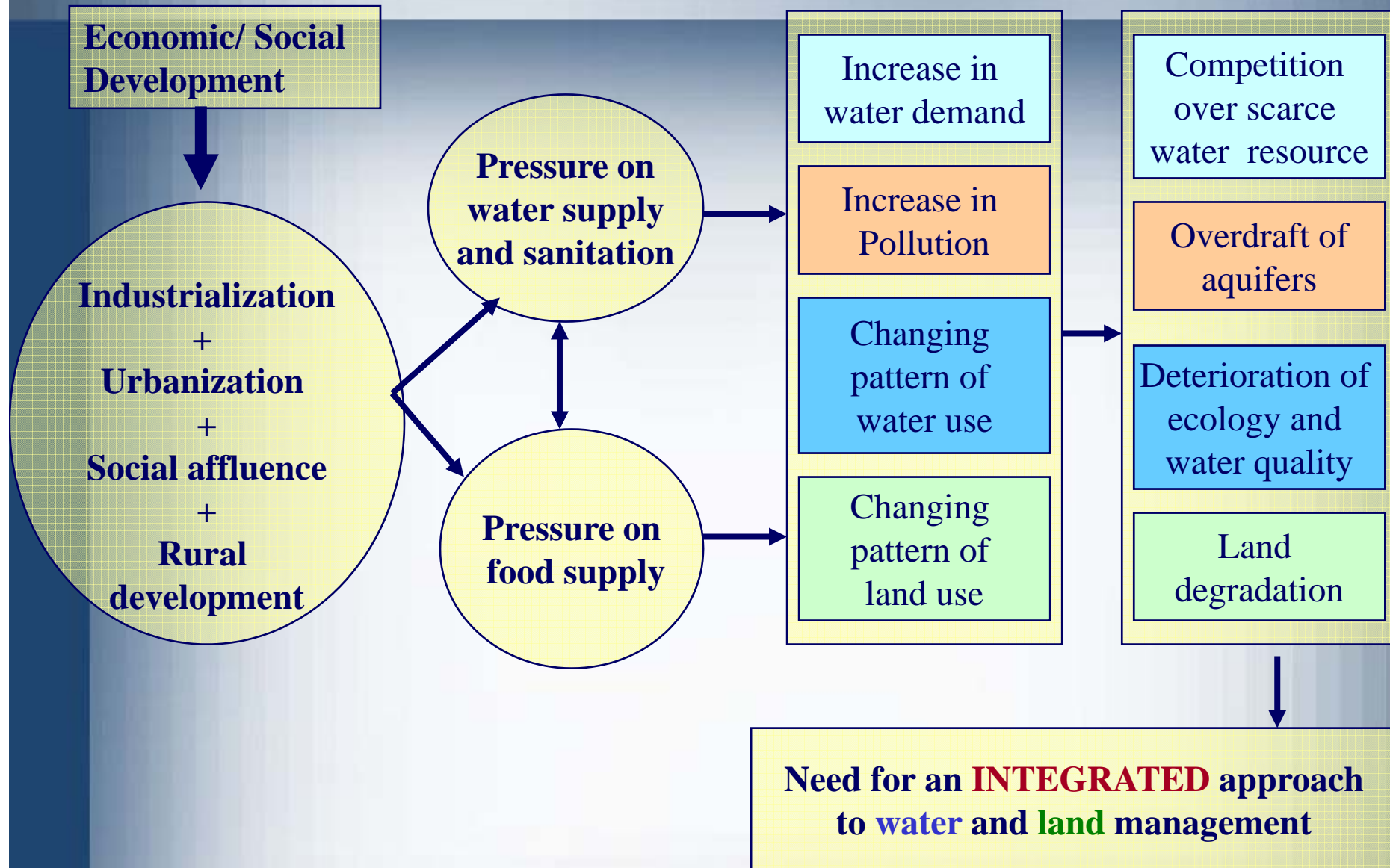
## *Socio-Economic System (SES)*



# Scope of integration: regional and global context



# Scope of integration: **integrated water and land management**



# Implementation of IWRM: **tools**

- GWP launched its IWRM ToolBox in 2003: 54 policies, actions, and tools for putting IWRM into practice
- ToolBox: 3 main categories
  1. The **Enabling Environment** or the general framework of national policies, legislations and regulations, and information for water resources management stakeholders.
  2. The **Institutional Roles** and functions of the various administrative levels and stakeholders.
  3. The **Management Instruments** and tools, including operational instruments for effective regulation, monitoring and enforcement, that enable decision makers to make informed choices between alternative actions

# Implementation of IWRM: **tools**

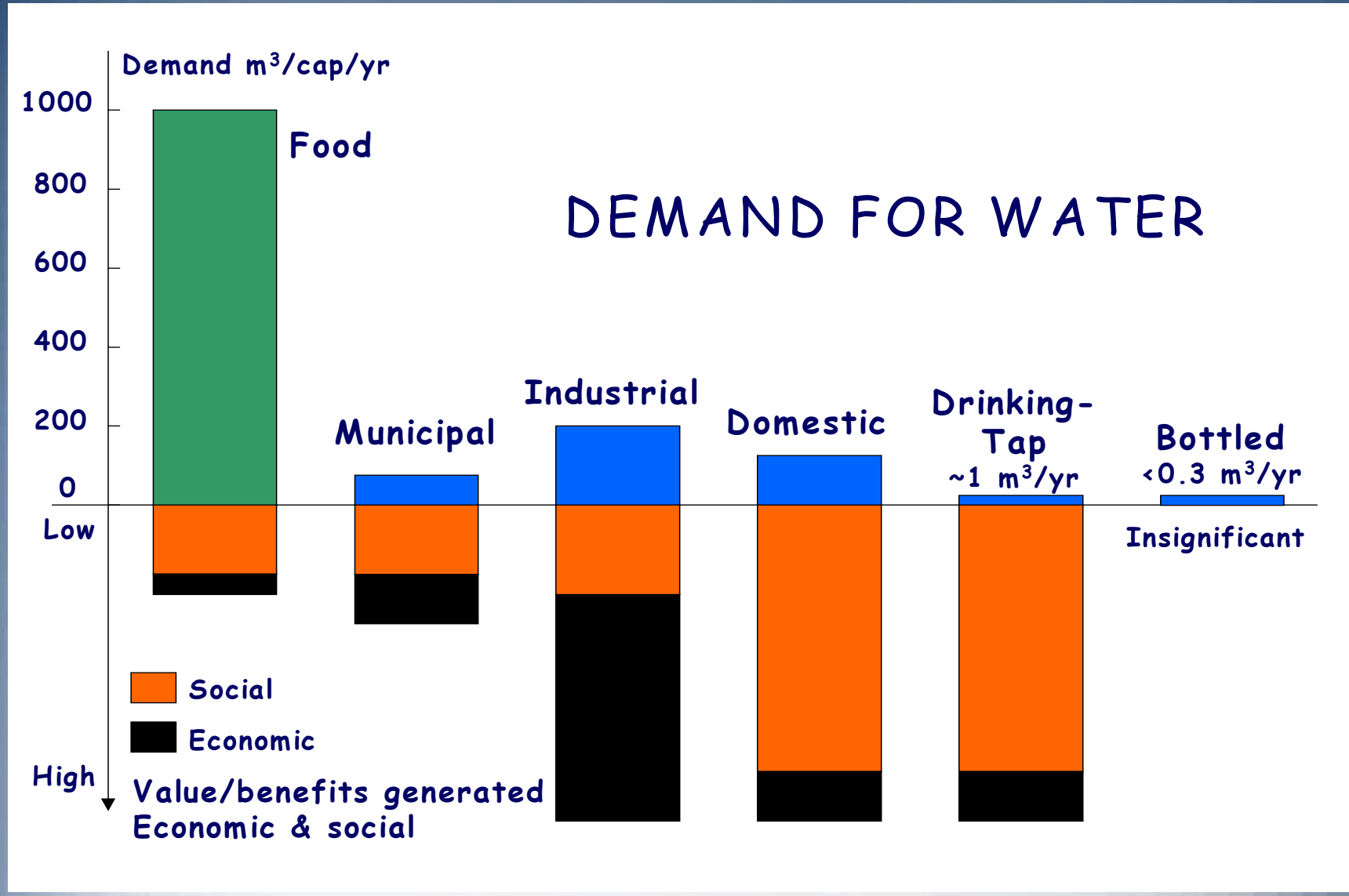
<b>Enabling environment</b>	<b>Institutional roles</b>	<b>Management instruments</b>
Policies (2)	Creating an organizational framework (11)	Water resources assessment (5)
Legislative framework (3)	Building institutional capacity (3)	Plans for IWRM (8)
Financing and incentive structures (3)	<b>Total 14 tools</b>	Efficiency in water use (3)
<b>Total 8 tools</b>		Social change instruments (3)
		Conflict resolution (3)
		Regulatory instruments (4)
		Economic instruments (4)
		Information exchange (2)
		<b>Total 32 tools</b>

**Email: [gwp@gwpforum.org](mailto:gwp@gwpforum.org)**  
**Website: [www.gwpforum.org](http://www.gwpforum.org)**

## Some key issues: **examples of overlooked integration components**

- Integration of freshwater management and coastal zone management
- **Integration of “Green water” and “blue water”**
- Integration of upstream and downstream water-related interests
- Cross-sectoral integration in implementing water-related programmes

# Some key issues: social and economic benefits per unit of water





Some key issues: **examples of underestimated cultural and social values and/or misconceptions**

<b>IWRM concept / principle</b>	<b>Potential socio-cultural conflict</b>
Water as an economic good	Perception of water as a gift of God; problem with payment especially with the paternalistic role of government
Polluter pays	Natural environment perceived as effective repository of waste
Holistic approach	Short planning horizon; uncertainty of political-economic climate; difficulties of coordination between line ministries / authorities
Stakeholder participation (especially women)	Large power distance: those traditionally lacking power neither demand it nor have time to exercise it

# Application of IWRM: The Issues

- Lack of awareness due to ineffective education, training and research systems
- Fragmented water-related institutional infrastructure
- Absence of comprehensive national water policies
- Outdated and ineffective legislation
- Inconsistencies in water resources data
- Irrationally high water demand
- Continuous high population growth

# Application of IWRM: outlook (short-term measures)

- Finalize IWRM strategy by end of 2005
  - Coordination mechanisms between various stakeholders
  - Identify **indicators** for IWRM
  - Define clear benchmarks for achievements
- Obtain a firm political commitment for IWRM strategy, enforcement of water legislations and institutional reform
  - Effective national campaign / media use
  - Weekly water agenda (Cabinet, Parliament, etc.) – Specific themes?

# Driving forces for water use

Socio-economic development

Aridity

## Pressures

Socio-economic

Hydropolitical

Environmental

## State

Water quality

Water quantity

## Impact

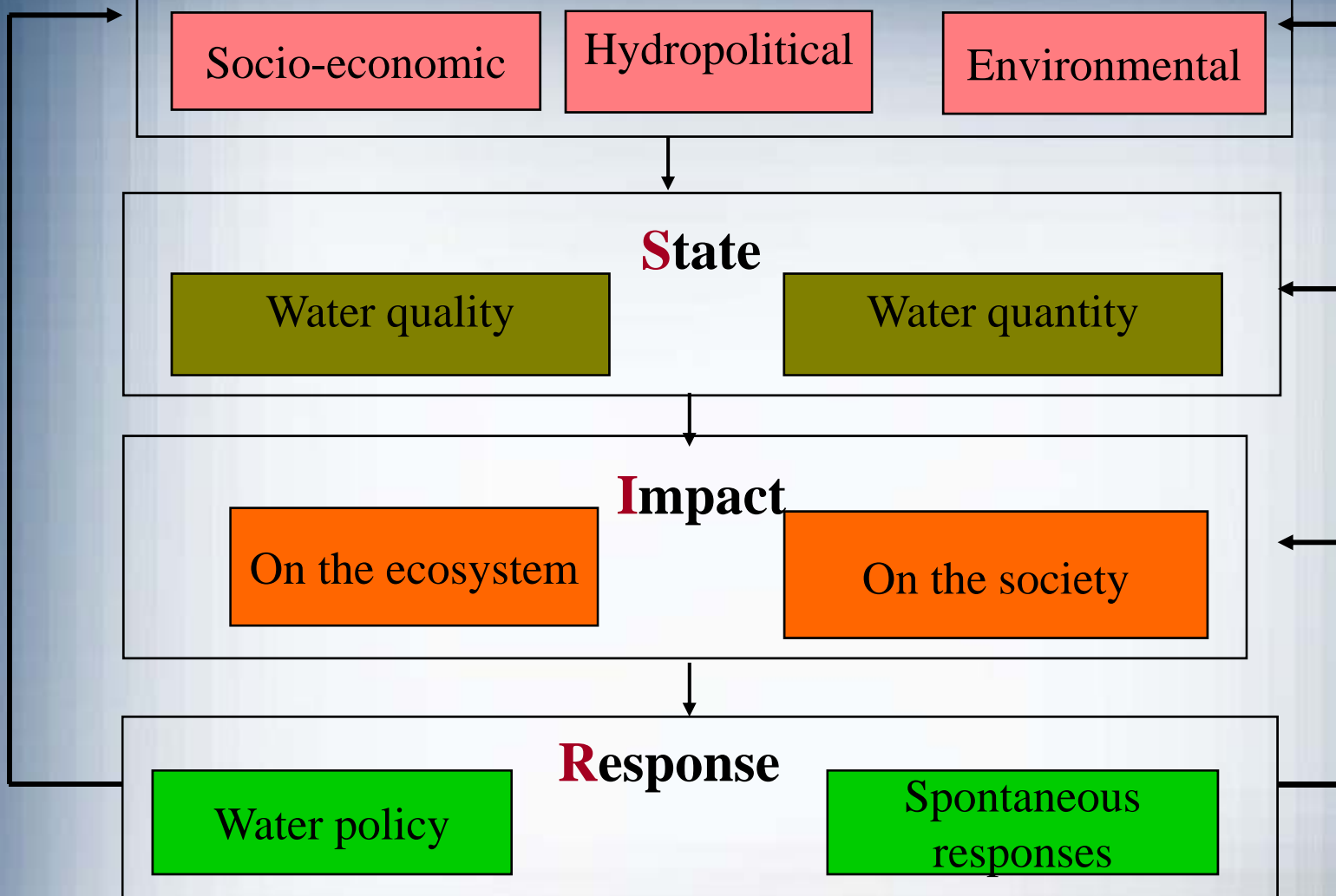
On the ecosystem

On the society

## Response

Water policy

Spontaneous responses



# Application of IWRM: outlook (short to long term measures)

- A platform for good and effective communication between stakeholders – build trust
- Focus on creating an environment-conscious and water-oriented society
- A thorough understanding of hydro(geo)logical characteristics and socio-economic conditions in each basin