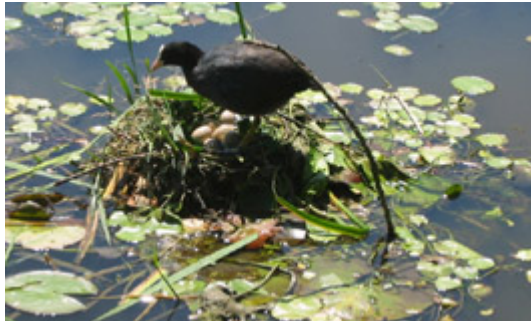


1. How does the environment use water?



Maintenance of functioning of ecosystems

- plants evaporate and transpire water
- animals drink water
- fish and amphibians live in water

Water is also used by upper-watershed ecosystems, like forests, shrublands and woodlands.

Water resource inputs maintain a dynamic in ecosystems

- Downstream, wetlands, floodplains, and mangroves need freshwater inputs.
- Water is used to maintain a (semi)-natural dynamic, often of a seasonal nature.
- Water is needed to prevent degradation and destruction of ecosystems

1. How does it use water?

2. Why is it important?

3. Effects of other sectors

4. Impact on other sectors

5. Benefits from IWRM

6. Barriers to IWRM

7. Towards change

8. Think about it



2. Why is the environment important?



Ecosystems provide goods and services

The goods and services (functions) that are provided by the ecosystems benefit people and their livelihoods. These benefits are often not fully recognised in planning and managing water resources.

Destruction of ecosystems penalises the poor most

They benefit from the “free” common resources (fuel wood, water, fisheries, fruits). They can also contribute to ecosystem degradation through over-exploitation.

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2. Why is the environment important? (2)



1. REGULATION FUNCTIONS



2. HABITAT FUNCTIONS



3. PRODUCTION FUNCTIONS



4. AESTHETIC/RECREATIONAL FUNCTIONS

Natural ecosystems provide many goods and services to humankind that are often neglected in planning and decision making.

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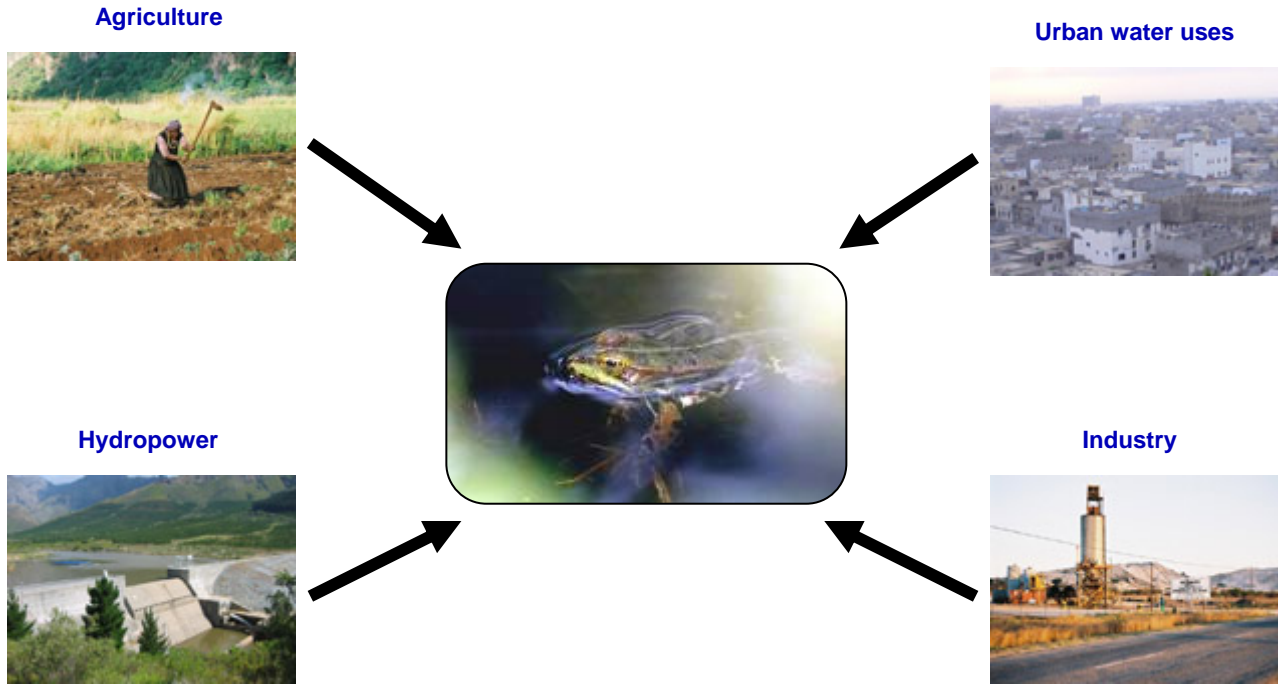
7. Towards change

8. Think about it

3. How is the environment affected by other sectors?

Environment's needs for water are easily neglected

The needs of water for nature, or the environment, are too easily neglected in considerations of water allocations. But if too much water is allocated for other sectors, the impacts on ecosystems can be devastating.



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3. How is the environment affected by other sectors? (2)

Agriculture



Impact of agriculture on the environment is of major importance

The agriculture sector is most important as a user of water and impacts most heavily on ecosystems' "water share". Abstraction of water for agriculture is leading to dried up rivers, falling ground water tables, salinated soil and polluted waterways. Carefully considered multipurpose projects can combine irrigation with aquifer recharge, land drainage and ecosystem sustenance.

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3. How is the environment affected by other sectors? ⁽³⁾

Urban water uses



Urban water uses can cause pollution

Urban water uses, in particular wastewater effluents, pollute downstream ecosystems if not sufficiently treated.

The treatment of effluents is often costly and, especially in developing countries, not considered a high priority given other needs. When due consideration is given to the value of ecosystems, effluent recycling and reuse are often seen to be cost-effective conservation measures.

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3. How is the environment affected by other sectors? ⁽⁴⁾

Hydropower sector



Hydropower sector affects water regime

The hydropower sector affects downstream ecosystems by changing the water and sediment regime and blocking migratory movements of fish and amphibians.



In some cases reservoirs have provided new habitats for animals and investments have been made in environmental protection upstream. Combining considerations of power generation, flood control and ecosystem protection can mean new operational rules for reservoir releases.

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3. How is the environment affected by other sectors? ⁽⁵⁾

Industry



Industry affects water quantity and quality

Industry often has substantial impacts on ecosystems downstream through water use and pollution.

Mining, for example, has affected many waterways in Latin America. In Western Europe industrial pollution has taken its toll on aquatic ecosystems during the last century. Transfer of recycling technologies to developing countries could help to pre-empt ecosystem damage from industrial development.



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4. How does the environment affect other sectors?

Environment as competitor for water

Water assigned for ecosystem protection is not available for other uses.

Well functioning ecosystems provide benefits downstream

Ecosystems can provide good quality water for other uses



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5. Benefits of IWRM to the environment



Provides a voice for the needs of the environment

Raising awareness among other users



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5. Benefits of IWRM to the environment

(2)



More emphasis on maintaining the underlying ecosystem

Uniting different stakeholders



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5. Benefits of IWRM to the environment

(3)



Positive side effects for other natural resources

Focus on several field level interventions:

- protecting upper catchments,
- pollution control
- environmental flows



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6. Barriers to implementing IWRM in the environment

Urge for action

Of all the sectors, the environment is probably the one with most to gain from implementation of IWRM. Usually at the end of the queue (if not missing altogether) when water allocations are made, it is suffering the consequences of water scarcity and poor awareness.



Stumbling blocks to be overcome:

Lack of awareness

Lack of political will

Lack of human and financial resources

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7. Implications for change: legal, institutional, human resources

Recognition of needs of environment

A major requirement of water sector reform is to provide recognition of ecosystem needs alongside the demands of domestic, industrial and agricultural water users.



Which way to go?

Legislative adaptations

Harmonisation and strengthening of national legislation to include an environmental perspective into water management and other sectoral policies and legal arrangements.

Institutional adaptations

Water departments need to function more as brokers between various other departments and stakeholders, rather than stand-alone units.

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7. Implications for change: legal, institutional, human resources (2)

Capacity building

The above requires a substantive capacity building in facilitation, mediation, negotiation and surveillance. At present, water managers are often not well equipped to take on these responsibilities as they require knowledge and skills beyond those traditionally taught to an engineer or hydrologist.



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8. Think about it

In IWRM:

- Are environmental issues considered in policy development?
- Are institutional arrangements made to integrate environmental concerns in water management?
- Are management instruments to address environmental requirements available and used?
- How can environmental management be integrated into IWRM policies and practices

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