

Water & Wetlands

FACTS

- ✓ The oceans cover 71% of the Earth's surface and contain 97% of the Earth's water.
- ✓ Less than 1% of all water on Earth is fresh water.
- ✓ 20% of the world population has no access to safe drinking water.
- ✓ 50% of the world population does not have sanitation.
- ✓ Waterborne diseases kill between five and ten million people a year.
- ✓ It takes 2000 litres of water to produce one kilogram of rice.
- ✓ Over 700 freshwater species are currently on the IUCN Red List of Threatened Species.
- ✓ 50% of the wetlands in the world were lost in the last century.
- ✓ An average citizen in the USA uses 600 litres of water per day against a Jordanian's daily consumption of 85 litres.
- ✓ Total water abstraction is projected to increase by 47% to 3,851 km³/year by the year 2025.
- ✓ Wetlands produce an estimated value of US\$ 8,700 billion per year, which equals the annual GDP of the USA.
- ✓ Hydropower provides 20% of electricity globally.
- ✓ It takes 150,000 litres of water to produce a single car.

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ARE WE RUNNING OUT OF WATER?

Currently, humanity uses an estimated 30% of the available 13,000 km³ of fresh water per year, of which over 70% for agricultural purposes. Total water withdrawal is projected to increase to 40% for the year 2025, leaving 2.8 billion people in water stressed or scarce countries.

The rivers, lakes and marshes of this world play an important role in the water cycle. They contribute to the regulation of water flows and the maintenance of water quality. However, these ecosystems are threatened around the world by the overuse of water and by their conversion for agricultural purposes which, in turn, threaten the water cycle. In the previous century, 50% of the wetlands in the world were lost. The number of threatened freshwater species is over 700.

Water management faces a difficult dilemma. On the one hand, it needs to provide water for irrigated agriculture, for sanitation and for industrial uses. The need for water is projected to increase by 47% by 2025 and this increase will further damage natural ecosystems. On the other hand, the functions of various ecosystems need to be protected so that they continue to deliver their vital functions for water quantity and water quality. This pushes for ecosystem protection and decreased water use.

WHAT IS AT RISK?

Overuse of water threatens freshwater ecosystems and the communities that depend on them for their livelihoods, as well as the hydrological processes in which these ecosystems play an important role. Wetlands produce an estimated value of US\$ 8,700 billion per year. They directly deliver goods, such as food or timber, and services, such as flood protection or recreational areas.

The degradation of wetlands threatens the provision of clean water and the often poor communities who directly depend upon them for their livelihoods. It also increases the risk of floods for downstream communities.

Economic valuation makes clear that, especially in developing countries, wetlands produce goods that are an important part of the livelihoods of local communities.

In Nigeria, a study showed that the proposed irrigation scheme would produce US\$ 0.04 per m³ of water, whereas the natural system produced US\$12 per m³.

The Mekong River produces US\$ 1.2 billion worth of fish annually, yet the proposed dams (that produce hydropower and greater water security for cities) would alter the flooding patterns upon which the fish largely depend for their reproduction.

Freshwater ecosystems purify water. The State of South Carolina in the USA found that a wetland (Congaree Bottomland Hardwood Swamp) delivered the same services as a US\$5 million purifying plant would.

Wetlands also regulate water flows. The Rhine River has been canalized and shortened by fifty kilometres, cutting it off from 90% of its floodplains. The lack of water retention capacity increases the amount of water in the river during heavy rainfall two to three times. Peak precipitation thus increases the risk of floods in inhabited areas, as happened in the Mozambique (2000), Vietnam (1999) and Europe (UK, the Netherlands, Italy in 1998 – 2000).

Freshwater ecosystems thus sustain a wide variety of animals and plants as well as human communities. Changes in these ecosystems, whether through conversion, water abstraction, pollution or changes in water flow, therefore threaten biodiversity and the livelihoods of people.

Dams

In 1999, IUCN and the World Bank co-founded the World Commission on Dams to address the controversy surrounding dams.

The WCD was to provide an independent review of dams' performance and provide guidelines for their future.

IUCN supported the review by submitting research from its field projects in floodplains that have been affected by dams and also by papers on the impacts of dams on ecosystems and species.

The report was published in November 2000. IUCN accepted the recommendation and now works on assisting other stakeholders to find ways to implement the WCD recommendations, both at the policy level and on the ground.

Spreading impacts

Sometimes, very simple measures can reduce negative impacts on ecosystems.

In the Fonseca Gulf in Mesoamerica, mangrove trees were turned into charcoal. They were cut close to the processing site, leading to destruction of part of the forest.

To decrease the pressure on the forests, the workers received boats, so they could cover a wider area: the impacts were distributed and the mangrove had time to recover.

Mangroves, on the brink of fresh and salt water, are the birth grounds of shrimp. One hectare of mangroves can 'produce' up to US\$ 30,000 in shrimp per year.

Shower for the Frog

Wetlands are an important area for biodiversity. Fish, amphibians, water birds and an array of other species depend on them.

One cute example is the Kihansi Frog, a frog that lived near the Kihansi waterfall in Tanzania. Because of the noise of the waterfall, it waved its front paws to attract mates.

Unfortunately, the construction of a dam ruined its habitat. The last specimens of the Kihansi frog now live in an artificial pond, under a human-made shower.

WHAT HAS THE INTERNATIONAL COMMUNITY DONE ON WATER?

Water has been on the international agenda for a long time. Discussions and actions started in Mar del Plata in 1977, continued through Dublin and were consolidated into Chapter 18 of Agenda 21 in Rio de Janeiro (UNCED Earth Summit) in 1992. They were reaffirmed in Paris 1998, CSD-6 and in the Second World Water Forum and Ministerial Conference.

In 1971, the Convention on Wetlands was signed in Ramsar, Iran for the protection and wise use of wetlands. There are presently 130 Contracting Parties to the Convention, with 1108 wetland sites, totalling 87.25 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance. The Convention greatly helps in protecting some of the unique wetlands in this world.

The Dublin Statement on Water and Sustainable Development (January 1992) calls for action to protect ecosystems as 'water is a vital part of the environment and a home for many forms of life on which the well-being of humans ultimately depends'. At the 2nd World Water Forum, the concern for ecosystems returns in the call to protect ecosystems: 'to ensure the integrity of ecosystems through sustainable water resources management'.

These deliberations have resulted in a move towards integrated water resources management, greater awareness on water issues, new techniques that maximize water efficiency and increased protection of freshwater ecosystems. In fact, wetlands are constructed these days to replace part of the chemical-based sewage treatment systems. Yet, even with the international commitments and these improvements, there will still be a wide gap between the available water and the needs of the 8 billion people in 2025, especially without further damaging freshwater ecosystems.

DRINK WATER AND THINK OF THE WELL

Economic valuations of wetland functions show that maintaining wetlands as natural ecosystems most often is a very sensible option. By ascertaining these functions, trade-offs between development options become clear: is it better to save a wetland for its purification functions, or to convert the wetland for rice production?

Such insight will inevitably lead to the protection of certain (parts of) ecosystems. Some areas may provide purification functions, others may have large benefits in terms of their natural products. Furthermore, changes in water use and supplies are required.

Firstly, it is clear that water is overused. The efficiency of water use for food production needs to increase through the application of water saving techniques.

Of the 70% of water that is used for agriculture around the globe, 70% evaporates. It takes 2000 litres of water to produce 1 kilogram of rice, a major staple food for 2 billion people. An average citizen in the USA uses 600 litres of water per day (against 85 litres in for instance Jordan). It takes 150,000 litres to produce a single car.

Secondly, behavioural changes have to be encouraged so that people use less water. This goes from individuals, who need become aware of the finiteness of water resources, to companies and governments. A system of water pricing, economic incentives, law and governance structures needs to be put in place to promote water savings and efficient water management.

Thirdly, measures to increase water supplies can be put in place. Especially in built-up areas, for instance in Western Europe, rainwater is 'effectively' transported to sea by sewage systems. This water can be retained and used for a variety of activities, such as watering the lawn, and thus also contribute to flood prevention. Rainwater harvesting is an interesting option to increase water supplies for domestic uses.

The use of water should be subject to negotiations and agreement between different water users. Participation of all stakeholders in water allocation and development debates is required to arrive at improved solutions. Water management should thus involve all stakeholders to arrive at the optimum allocation of water and the use of water to achieve common development objectives.

The IUCN Water & Nature Initiative

The IUCN Water & Nature Initiative is a 5-year action plan to demonstrate that ecosystem-based management and participation of stakeholders will help solve the water dilemma of today – bringing rivers back to life and maintaining the livelihoods of many.

It will implement ecosystem-based management in seven basins around the world and develop tools on freshwater information, governance, participation, law and economics to support the sustainable use of our freshwater resources.

QUOTES

“The goal is a water agenda that is nature-based, managerially practical and socially compassionate.” – Sir Martin Holdgate, former IUCN Director General

“We cannot compete with nature, we cannot even control it – but we can work with it and with each other, to realize our dream of clean water, healthy ecosystems, and prospering societies for all the peoples of the globe.” – Her Majesty Queen Noor of Jordan, Patron of IUCN

“Debates on water have often divided people. But in the maintenance of the water cycle we can work together, for water that is managed, used and conserved.” – Achim Steiner, IUCN Director General

“Rivers and lakes are vital: they are the livelihood of many people, especially in poor rural communities. These communities do not benefit from large-scale irrigation or large dams, but from small improvements in their access to resources and the way they use them.” – Jean-Yves Piro, IUCN Wetlands & Water Resources Programme

“We do not know the worth of water until the well is dry.” – English proverb

IUCN'S RESPONSE

IUCN works on the ecosystem approach to water management. The ecosystem approach places human needs at the centre. It aims to manage the ecosystem, based on the multiple functions that ecosystems perform and the multiple uses that are made of these functions. The ecosystem approach does not aim for short-term economic gains, but aims to optimize the use of an ecosystem without damaging it.

In the Saloum Delta of Senegal, rich mangrove forests yield oysters in abundance. However, the practice of cutting the entire root off the mangrove has been adopted to harvest the oysters faster. This practice damages the mangroves and thus endangers the oyster harvest in the long run.

The ecosystem approach involves all stakeholders in water management to coming to agreement over the use of natural resources. In many areas, this means addressing the balance of power between different stakeholders. It requires training and other capacity building to increase the participation of underprivileged groups or community-based organizations in decision making.

In the Diawling delta, Mauritania, an IUCN project releases artificial floods from a dam to inundate the floodplain. There was some discussion between the women and men: the women wanted the floods in May to start the growth of *Sporobulus* sp., used in the artisanal production of mats. The men wanted the flood in July, to start the spawning of fish.

After much debate, it was agreed to have a short flood in May for *Sporobulus*, and a large flood in July. They furthermore agreed, when little water is available, to alternate between the two.

With these stakeholders, IUCN works to optimize the benefits of freshwater ecosystems to humanity and biodiversity. The conservation of biodiversity and the management of ecosystems are the basis for the development of communities and can directly contribute to alleviating poverty. The key lies in sustainable use: utilizing natural resources for human benefit, while ensuring the system can generate these resources over an extended period of time, if not forever.

In the Diawling delta, Mauritania, the artificial floods brought back fish. In 1996, total catches were 10,000 kilogrammes, which increased to 130,000 kilogrammes after 4 years of artificial flooding. The water also brought back the birds: from 10,000 birds to 40,000 birds in 2 years, including some endangered species.

IUCN uses its approach of ecosystem protection, biodiversity conservation and poverty alleviation in field projects around the world. In these large-scale field projects, issues of development, health, drinking water, and agriculture are addressed in an integrated manner to arrive at sustainable development.

In the Waza-Logone area of Cameroon, 37 wells in 33 villages led to a reduction of 70% in water-borne diseases. The restoration of seasonal flooding of the river with alphabetization and training in fisheries, agriculture and small production have dramatically improved livelihoods.

The lessons from these projects are used to develop national and international policy agreements. IUCN supports international Conventions, such as the Convention on Wetlands and the Convention on Biological Diversity, with the identification of unique wetlands, their management, and national water and wetland policies. It furthermore works with its Commissions and scientific experts to develop knowledge on the various processes in wetland management.

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A WEB OF EXPERTISE

The IUCN Wetlands & Water
Resources Programme works in over
42 countries worldwide with 60 staff.
The Programme works together with
other IUCN Programmes,
Commissions, members and partners,
at the local level in the execution of
field projects as well as at the global
level in the formulation of policy
advice to international Conventions or
policy agreements.

Created in 1948, **IUCN – The World
Conservation Union** brings together
79 states, 113 government agencies,
754 NGOs, 36 affiliates, and some
10,000 scientists and experts from
181 countries in a unique worldwide
partnership. IUCN's mission is to
influence, encourage and assist
societies throughout the world to con-
serve the integrity and diversity of
nature and to ensure that any use of
natural resources is equitable and
ecologically sustainable.
IUCN is the world's largest
environmental knowledge network
and has helped over 75 countries to
prepare and implement national
conservation and biodiversity
strategies. IUCN is a multicultural,
multilingual organization with 1000
staff located in 42 countries. Its
headquarters are in Gland,
Switzerland.

<http://iucn.org>

<http://www.waterandnature.org>

WATER AND WETLANDS GLOSSARY

Wetland: “wetlands are areas of marsh, fen, peatland or water, whether natural or artificial, permanent or temporary, with water that is static or flowing, fresh, brackish or salt, including areas of marine water the depth of which at low tide does not exceed six metres.” – Convention on Wetlands.

Ecosystem: a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit.

Biological diversity – “biodiversity” means the variability among living organisms from all sources including, *inter alia*, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems.

Salinization: the deposition of salts in soils due to seawater intrusion or irrigation that renders the soil unfit for cultivation. Salinization can render soils useless in five years.

Large dams: barriers of concrete or earth that are built across a river or stream to obstruct or control the flow of water, especially in order to create a reservoir, with a wall height of more than 15 metres.

TO LEARN MORE

IUCN Wetlands & Water Resources Programme (<http://iucn.org/themes/wetlands/>)

IUCN Water & Nature Initiative, Vision for Water and Nature
(<http://www.waterandnature.org>)

Vision 21: Water for People
(<http://www.wsscc.org/activities/vision21/core/v21summary.html>)

International Conference on Freshwater (<http://www.freshwater-2001.de>)

3rd World Water Forum (<http://www.worldwaterforum.org>)

Global Water Partnership (<http://www.gwpforum.org>)

Convention on Wetlands (<http://www.ramsar.org>)

Waternet: water, conflict and politics (<http://waternet.rug.ac.be>)

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