



Water for Nature, Nature for Water

Water Security and Nature

Where does the water we use come from? From a tap, yes, or from a well or a river. But, behind these sources is nature, which cycles, stores, cleans and releases the freshwater we use. The water that keeps us healthy and fed, and that powers industry and the economy, come to us via nature.

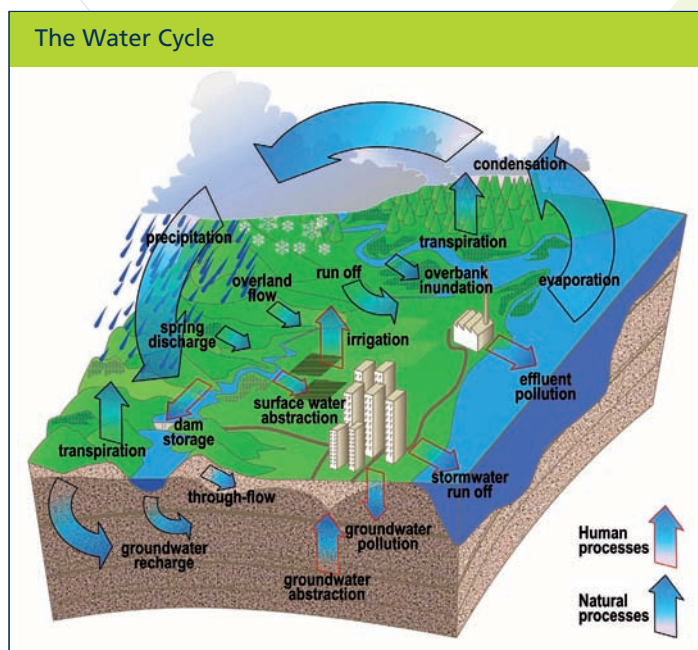
The benefits people receive from nature are ‘ecosystem services’. Forests, aquifers, soils, lakes and wetlands provide water storage, wetlands and soils filter water, rivers provide conveyance and transportation, floodplains and wetlands lower flood peaks in downstream cities, while mangroves, coral reefs and barrier islands protect coasts against storms and inundation. Nature recycles and absorbs excess nutrients and water pollution. All of these services from nature contribute to water security. All are needed in the future development agenda.

Nature, through these services, provides critical water infrastructure. This is ‘natural infrastructure’, which complements, augments or replaces conventional built infrastructure like reservoirs, dams, levees and canals. The natural infrastructure provided by ecosystems is usually highly cost-effective, and its restoration can provide attractive returns on investment in social and economic terms.

Nature alone cannot guarantee water security for people – access to the clean, safe water they need for health, livelihoods and production, where risks from drought and flooding are manageable. Water security is based on contributions of both nature and human ingenuity. Both built and natural infrastructure are needed for efficient and effective management of water resources. Arrangements for water governance therefore must not treat nature as secondary to development, but should instead empower people to build and negotiate integrated solutions for water management.

Water Solutions from Nature

Nature can only continue to deliver its services where ecosystems are healthy and functioning well. As we use and divert water, we must ensure that ecosystems receive the water they need. Nature is both the source of our water and a water user. Where this is not recognised, biodiversity is harmed and people lose the multiple benefits nature provides. Integral to water security therefore is ‘water for nature and nature for water.’





The value of water-related ecosystem services – to people’s well-being, to food and energy security, to industry, the economy and to the engines of economic growth in cities – make nature a fundamental building block of water security. Failure to account for, invest in, protect and sustain ecosystem services undermines water security and sustainable development. What should not be forgotten in the development agenda is that the reverse is also true: if we account for nature’s services and invest wisely, nature is a source of solutions for water security.

Governments of the world recognised this in The Future We Want, the outcome document from the Rio+20 Conference. Because of nature’s key role in supplying water and maintaining water quality, they committed to supporting action to protect and sustainably manage ecosystems [paragraph 122].

Stakeholders around the world participating in the Rio+20 Sustainable Development Dialogues said the same when they voted as the top-ranked recommendation for water that we should ‘secure water by protecting biodiversity, ecosystems and water sources’.

Implementing Water Solutions

Effective frameworks for water security address sharing of water among users and wastewater management. Practical experience shows this requires the participation of all water users – including the water supply and sanitation, agricultural, energy, industrial and environmental sectors – while ensuring that water management then agreed supports the water flow regimes that ecosystems need. Integrating users and uses as well as building consensus around solutions that work for both ecosystems and development is intrinsic to working with nature. In terms of delivering concrete results, ecosystem-based approaches that place nature’s services at the core of water security solutions have proved effective in catalysing successful implementation of Integrated Water Resources Management (IWRM).

Solutions for water security that incorporate natural infrastructure are known to work. These can enhance efficiency, effectiveness and equity, but also spur implementation and progress towards long-term availability of water for all. From this, benefits then flow:

- *Drinking water supply* – watershed management saved US\$5b in capital costs for New York City and US\$300m annually ; storage of Beijing’s drinking water in Miyun watershed forests is worth US\$1.9b annually.
- *Sanitation and wastewater management* – the Nakivumbo swamp provides water purification for Kampala, Uganda worth US\$2m per year compared to costs of US\$235,000.
- *Food security* - Tonle Sap lake and Mekong river fisheries supply 70-75% of people’s animal protein intake in Cambodia, are worth up to US \$500m annually and employ 2m people.
- *Energy security* – returns on investment in soil conservation has significantly extended the life expectancy of the Itaipu dam (Brazil, Paraguay) ; watershed management has been worth US\$15-40m for the Paute hydroelectric scheme (Ecuador).
- *Drought management* – watershed restoration on the Loess Plateau (China) has eliminated the need for drought-related emergency food aid to a region that is home to 50m people.



- *Climate change resilience* – with investment in developing skills and water institutions, people in the Pangani river basin (Tanzania) are negotiating ‘environmental flows’ to sustain the ecosystem services they need for climate change adaptation, food and water security.
- *Restored rivers* – in the USA, 15 jobs are created for every US\$1m invested in river restoration.

The development agenda for water must address complex challenges. There are fundamentals, however. Safe water and sanitation is one. Ensuring water is clean and used efficiently is another. Good governance for social equity is the third. Nature is the fourth. All four of these pillars will be needed for the development agenda for water to succeed.

Using nature pragmatically for water solutions in the development agenda will require that governments, donors and financing institutions make natural infrastructure part of their investments for water security. Investment should target both the maintenance and restoration of nature’s services. Alongside, capacity building and governance arrangements must establish the institutions, participation and accountability needed to ensure not just that no one gets left behind but that nature is not left out.