Global Water System Project
International Cooperation for Integrative Research on Water

Freshwater ecosystems - the hidden natural capital

The Bonn Nexus Conference encourages system thinking: What are the linkages between sectors, environmental externalities, and synergies between human well-being and ecosystem health?

Photo: C. Pahl-Wostl

Rehabilitated wetland in Australia

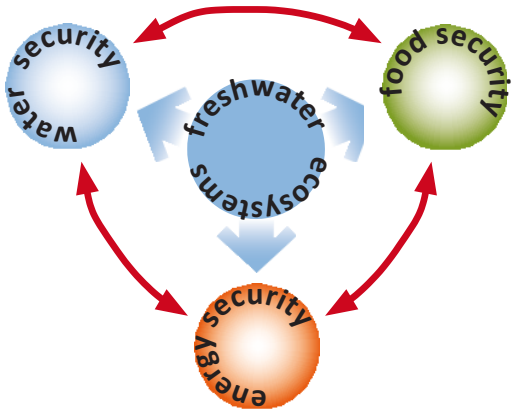
Ecosystem services are highlighted in Bonn as an important pillar of human securities, but the role of freshwater ecosystems has been largely hidden in the nexus. With freshwater biodiversity and ecosystems disappearing much more rapidly than the terrestrial ones, we are losing essential services such as fish production, water purification, carbon sequestration, nutrient cycling and resilience against shocks. Drivers behind this loss of freshwater ecosystems include water abstraction, dams, pollution, land use and climate change.

The Global Water Needs Initiative (GWNI) of the Global Water System Project raises awareness for freshwater ecosystems in rivers, lakes, wetlands and riparian zones and puts them into the context of managing and governing water and land.

The GWNI provides scientific knowledge on environmental flow requirements for maintaining or restoring freshwater ecosystems, in order to inform societal negotiations on desirable ecosystem services. It informs about risks and vulnerabilities associated with over-allocating freshwater to other competing uses, such as irrigation or power generation. It builds a consolidated nexus-database on freshwater ecosystems, develops tools to quantify tradeoffs for different water and land management alternatives and addresses associated governance challenges.

A more resource efficient green economy depends on freshwater and terrestrial ecosystems as the natural capital from which to derive multiple benefits. GWNI provides new knowledge within a nexus approach for integrating environmental flows in the planning of new dams, diversions or land use in the catchment. With that it complements other nexus components such as increasing water use efficiency, reducing water demand, storing water more efficiently, and designing multi-use systems which co-produce various services. Together with partners from all sectors, the GWNI identifies requirements for effective governance structures in order to move from awareness raising, negotiation and planning to implementation of sustainable environmental flows.

Fig: Modified nexus diagramm



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