WATER AND ECOSYSTEMS

UNITED NATIONS

Ecosystems – such as forests, wetlands and grasslands – are a critical part of the global water cycle. All freshwater ultimately depends on the continued healthy functioning of ecosystems, and recognizing the water cycle as a biophysical process is essential to achieving sustainable water management.

Challenges and opportunities

Ecosystems mitigate the effects of floods and drought. 'Ecosystem services' can contribute to wastewater treatment as an alternative or supplement to conventional water treatment systems. The water purification process provided by aquatic and terrestrial ecosystems supplies water suitable for drinking, industry, recreation, and wildlife habitat. Also, the resources embedded in wastewater, including valuable water, nutrients and organic carbon, can be used for ecosystem rejuvenation in appropriate circumstances, enhancing ecosystems services with major benefits for economies and societies.

A paradigm shift is taking place, with ecosystems being recognized as an integral part of development solutions. This reflects the steps being taken towards better integrated water resources management, and therefore more sustainable development.ty.

Definition of an ecosystem

A dynamic complex of plant, animal and microorganism communities and their nonliving environment interacting as a functional unit. An ecosystem includes all living things (plants, animals and organisms) in a given area, as well as their interactions with each other, and with their non-living environments (weather, earth, sun, soil, climate, atmosphere). Each organism in an ecosystem has a role to play and contributes to maintaining the health and productivity of an ecosystem.

Facts and figures

- It is estimated that fewer than 20% of the world's drainage basins exhibit nearly pristine water quality. (UNESCO, 2009)
- Naturally occurring arsenic pollution in groundwater now affects nearly 140 million people in 70 countries on all continents. (UNESCO, 2009)
- Since 1900 the world has lost around 50% of its wetlands. (UNESCO, 2009)
- Ecosystems across the world, particularly wetlands, are in decline in terms of the services they provide. Between US$4.3 and US$20.2 trillion per year worth of ecosystem services were lost between 1997 and 2011 due to land use change. (Constanza et al. 2014)
- Globally, the number of lakes with harmful algal blooms will increase by at least 20% until 2050. (UNESCO, 2015)
- An estimated 20% of the world's aquifers is being over-exploited leading to serious consequences such as land subsidence and saltwater intrusion. (Gleeson et al. 2012)
- Ecosystem valuation has demonstrated that benefits far exceed costs of water-related investments in ecosystem conservation. The 2011 economic value of ecosystem services has been globally estimated at US$124.8 trillion. Global GDP was estimated at US$75.2 trillion in the same year. (Constanza et al. 2014).
- Soil erosion from croplands carries away 25–40 billion tonnes of topsoil every year, significantly reducing crop yields and the soil's ability to regulate water, carbon and nutrients, and transporting 23–42 million tonnes of nitrogen and 15–26 million tonnes of phosphorus off land, with major negative effects on water quality (FAO/ITPS, 2015a).

Find out more:

CBD: Ecosystem approach
UNECE: Environmental policy: Water and ecosystems
UN Environment: Ecosystems
WHO: Water, health and ecosystems
FAO: Status of the World's Soil Resources (SWSR)

UN WATER