

Hydropower and Reservoirs:

Two essential building blocks for a sustainable future sitting at the crossroads of two basic human needs

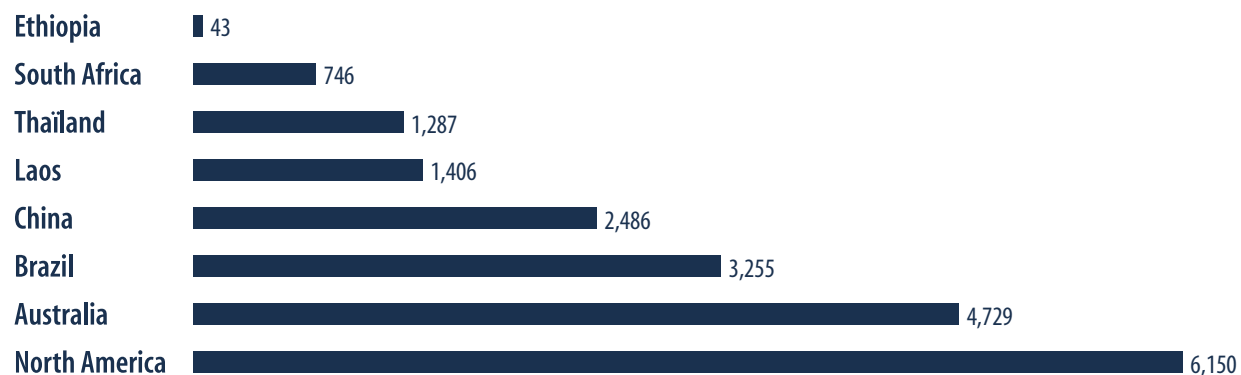
Water & Energy

Efficient measures to free humanity from the vicious circle of poverty will require both types of interventions: « soft » and « hard » ones, since capacity building alone will not alleviate extreme hardship. Investments into human capital will have to go hand in hand with well planned infrastructure implementation to sustain and facilitate basic economic activities.

In general, wealthy nations have achieved well maintained infrastructures and an adequately skilled work force.

Creating reservoirs modifies existing natural ecosystems and may also affect local populations. This requires sensitive management and involvement of affected communities, with proper mitigation and compensation, to ensure that a new social and ecological equilibrium can be established within this newborn environment. Well-managed hydropower projects with reservoirs are often the source of multiple, indirect and induced benefits. These pages illustrate reservoirs' major contribution to all aspects of sustainable development: economic development, environmental protection and social progress.

Water Storage Capacity (m³ per capita) and the Poverty Trap



Source: World Bank, 2005.

“It is thanks to the wisdom of our parents and grandparents that we enjoy today such privileged living standards, since they decided to rely on the development of the blue gold we are blessed with.”

Anita Utseth, Deputy Minister of Petroleum and Energy, Norway
Montreal, December 2005



Reservoirs

Fresh Water for Sustainable Development

Offering Manifold Services to Mankind

FIRST AND FOREMOST, THESE FRESHWATER STORAGE SCHEMES ENABLE US TO SHARE A COMMON VITAL RESOURCE, NOT EVENLY DISTRIBUTED OVER TIME AND SPACE, IN A MORE EQUITABLE MANNER. CAREFULLY PLANNED AND MANAGED, RESERVOIRS CAN ALSO MAKE A SIGNIFICANT CONTRIBUTION TO MEETING THE WORLD'S GROWING NEEDS FOR WATER AND ENERGY.

Reservoirs sustain drinking water supply by

- increasing the availability of fresh water, a vital resource that is becoming more and more scarce
- providing the poorest nations with affordable drinking water, either directly or from the groundwater table that reservoirs help maintain.

Reservoirs play a key role in clean energy production by

- responding rapidly to variations in electricity demand – they store water when demand falls and release it when demand rises
- compensating for variations in wind power production – they increase or reduce electricity generation as the wind picks up or drops
- supplying water for environmentally friendly hydroelectric stations, which emit little or no greenhouse gases and other pollutants.

Reservoirs contribute to protecting health by

- improving air quality – they displace polluting fossil-fuelled generation and enhance the air we breath
- retaining water during rainy seasons and releasing it during dry seasons, thus mitigating the harmful effects of floods and droughts on human living conditions
- enhancing food security – they increase the availability of fish, a low-cost protein source of high nutritional value, as well as the availability of crops, fruits and vegetables by sustaining irrigation.

Reservoirs can boost agricultural yields by

- increasing water availability for irrigation
- improving the efficiency of fertilizers and machinery
- helping to desalinate degraded land
- conserving water and energy – avoiding the lifting of groundwater and maximizing gravity-fed systems.

“Water, Energy, Health, Agriculture and Biodiversity (WEHAB): Five key areas in which progress is possible with the resources and technologies at our disposal today.”

Kofi Annan, UN Secretary-General

World Summit on Sustainable Development, Johannesburg, September 2002



Reservoirs support biodiversity by

- increasing the amount of available fresh water, a rare and essential resource
- supporting an abundant variety of life, just like natural lakes; for example, in northern climates aquatic ecosystems show a biological productivity that is 20 times higher than land-based ecosystems
- increasing the amount of land available to natural ecosystems. Thanks to their enabling effect on irrigation, reservoirs help to achieve higher crop yields with smaller land areas.

Reservoirs

Fresh Water for Sustainable Development

Typical activities on lakes and reservoirs

