

WATER USE

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THE NEED FOR WATER

Uses of fresh water include agricultural, industrial and household (including drinking, cooking, gardening and sanitation) activities. Apart from this, water for the environment is needed to maintain important ecosystems, such as wetlands. Agriculture is by far the largest water-use sector, accounting for about 70 percent of all water withdrawn worldwide from rivers, lakes and aquifers. In developing countries, irrigation can account for more than 90 percent of all water withdrawn, and it therefore plays a major role in food production and food security.

Water use in many countries is occurring at unsustainable rates; for example, the withdrawal of groundwater from aquifers is at levels greater than the replenishment rate, causing water tables to drop. In addition, many water supplies, such as summer river discharge derived from glaciers, are threatened. However, as the world population continues to grow, with an estimated 9 billion by 2050, there will be increasing pressure on water resources, not only from agriculture but also from other water use sectors.

Considering the close linkages between climate and the hydrological cycle, the effects of climate change and climate variability will have a significant impact on water resources around the world, especially in developing countries. Such climatic phenomena will also affect

non-irrigated agriculture, which depends entirely on rainfall and accounts for some 60 percent of production in developing countries. Reliable observations are therefore essential when undertaking assessments and predicting the effects of climate change on food production, and to allow the development of adequate adaptation strategies.

WATER USE DATA AND INFORMATION

Major efforts have been made to assess the different elements of the water balance and to predict current and future water needs for the different use sectors. In 2005, FAO in collaboration with other partners produced a new version of the digital global map of irrigation areas. It is based on 10 825 sub-national statistical units and geospatial information on the location and extent of irrigated agricultural areas. It is therefore an important product, which will improve future global studies on water and food production.

FAO's global information system on water and agriculture, AQUASTAT, collects and disseminates data and information by country and by region. The objective is to provide users with comprehensive global, regional and national information and analysis on the state of agricultural water management across the world, with an emphasis on developing countries and countries in transition. The database includes: geospatial information (including maps); statistics; country profiles; regional reviews; thematic studies; and other information.

A number of other international and regional organizations also provide information about water use and water-use changes, these include:

- UN Water, which is the official United Nations mechanism for follow-up of the water-related decisions reached at the 2002 World Summit on Sustainable Development and the Millennium Development Goals.



2 000 to 5 000 litres of water are required to produce a person's daily food



The digital global map of irrigation areas. The map shows the percentage of each 5 by 5 arc minute cell that was equipped for irrigation around the year 2000, and is an important data set for global studies related to water and land use [Source: FAO and University of Frankfurt]

- The World Water Assessment Programme (WWAP), which is hosted by UNESCO, coordinates the UN World Water Development Report (WWDR), a periodic review designed to give an authoritative picture of the state of the world's fresh water resources. The report is based on data and information provided by national authorities and local institutions.
- Water Portal of UNESCO, which provides links to programmes on fresh water coordinated by UNESCO.
- The Joint Monitoring Programme (JMP) for water supply and sanitation hosts information gathered by WHO and UNICEF.
- Global Resource Information Database of UNEP, which gives access to environmental datasets from different sources worldwide.
- Water Balance Framework Models of IWMI provide software tools, including the IWMI World Water and Climate Atlas and Policy Dialogue Model.
- Satellite agencies have developed a number of products derived from satellite imagery related to water resources, such as climatic data and vegetation indices. Such data can, for example, be downloaded from the NASA Goddard Space Flight Center (GSFC) Earth Sciences, Data and Information Services Center.

FUTURE MONITORING REQUIREMENTS

Systematic collection and monitoring of water-related data is essential for a comprehensive understanding of the state of the world's water resources. There is still considerable uncertainty concerning water use for agriculture, the extent and distribution of irrigated land, water extracted for industrial and domestic uses, as well as water needed for the environment to maintain its important ecosystem functions. To keep up with growing food demand, FAO estimates that by 2030 the effective irrigated area will need to increase by 34 percent in developing countries, and 14 percent extra water will have to be abstracted for agricultural purposes. Growing scarcity and consequent competition for water stand as major threats to future advances in food security and poverty alleviation, especially in rural areas.



RELATED LINKS:

FAO-AQUASTAT: www.fao.org/ag/aquastat | **UN-Water:** www.unwater.org/flashindex.html | **World Water Assessment Programme:** www.unesco.org/water/wwap
UNESCO Water Portal: www.unesco.org/water | **Joint Monitoring Programme for water supply and sanitation:** www.wssinfo.org/en/welcome.html
Global Resource Information Database of UNEP: www.grid.unep.ch/data/index.php | **IWMI:** www.iwmi.cgiar.org
World Bank - Water Resources Management: www.worldbank.org/water | **Challenge Program on Water and Food:** www.waterforfood.org