



## **United Nations report warns rising energy demand will stress fresh water resources**

Paris/Tokyo, 21 March— The world's fresh water resources will suffer from efforts to meet the growing global demand for energy, concludes the 2014 United Nations World Water Development Report (WWDR).

Launched in Tokyo today, on the occasion of World Water Day, the report critically reviews the lack of coordination and planning between the two domains and urges improved management and planning at all levels to avoid shortages in energy and water supplies, and the further deterioration of natural resources.

“The *2014 World Water Development Report* shines light on the interdependence between the management of water and energy,” said Irina Bokova, Director-General of UNESCO “This interdependence calls for vastly improved cooperation between these sectors because there will be no sustainable development without better access to water and energy for all,” she added.

“Water and energy are among the world's pre-eminent development challenges and must feature prominently in the post-2015 agenda,” said Michel Jarraud, Chair of UN-Water. “This fifth World Water Development Report marks a milestone as the first annual edition. The new format responds to the need of the global community for an annual, factual and evidence-based publication with a thematic focus that links to World Water Day. I would like to express my profound appreciation to the UN Educational, Scientific and Cultural Organization (UNESCO) for hosting and leading the World Water Assessment Programme (WWAP), which has been coordinating the production and publication of the report. I am pleased that the United Nations, through UN-Water, is able to now annually deliver up-to date information on an issue that will only become more important to create a sustainable future.”

### **Water and energy: two interdependent sectors**

**Seven-hundred-sixty-eight million people** in the world have no access to an improved source of water, **2.5 billion people do not have access to improved sanitation**, while **1.3 billion people** are not connected to an electric power grid and close to 2.6 billion use solid fuel—mainly biomass—to cook. The report shows that places where people do not have adequate access to water largely coincide with those where people have no electric power, and how closely the two sectors are inter-connected

The collection, transport and treatment of water require energy, while water is used in energy production and for the extraction of fossil fuels. Electric power plants which produce 80% of electricity worldwide use large quantities of water for the cooling process.

Strategic choices made in one domain have repercussions on the other: droughts make energy shortages worse, while lack of electricity reduces farmers' ability to irrigate their fields. Pricing policies also highlight the interdependence between water and energy. Water is often considered as

## United Nations World Water Assessment Programme



United Nations  
Educational, Scientific and  
Cultural Organization



UN WATER

Programme Office on  
Global Water Assessment,  
Division of Water Sciences, UNESCO  
Villa la Colombella  
Località Colombella Alta  
06134, Colombella, Perugia, Italy

Office tel.: +39 075 591 10 11  
Fax: +39 075 591 33 23 / 075 691 96 67  
[www.unesco.org/water/wwap](http://www.unesco.org/water/wwap)

a “gift of nature”, and prices rarely reflect the real cost of its provision. Energy producers—and users—are therefore not encouraged to save water. Thus, in the Indian part of the Western Indus Basin, decades of cheap energy, associated with the digging of millions of private wells and inefficient irrigation techniques have led to an over-exploitation of the water table. Similar situations have been observed in Latin America and some Arab States, notably Oman and Yemen.

### Rising demand

In total, energy production accounts for close to **15% of water withdrawal**. But that figure is rising, and by 2035, population growth, urbanization, and changing consumption patterns are expected to push water use for energy up by 20%. Demand for electricity is expected to rise by 70% by 2035, with more than half of this growth due to developments in China and India.

Declining water resources are already affecting many parts of the world and **20% of all aquifers** are believed to be overexploited. In 2050, 2.3 billion people will be living in regions subjected to severe water stress, notably in North Africa, Central and South Asia.

The challenge of meeting the demand for energy may well come at the expense of water resources. As concern about the environment and social impacts of thermal and nuclear power plants increases, countries are trying to diversify their energy sources, seeking to reduce dependence on foreign supplies and mitigate the effects of fluctuating prices. But all of the present options have their limits.

Biofuel cultivation, which requires a great deal of water, has increased on a large scale since 2000. Shale gas extraction has also spread in recent years, particularly in the United States. But this fossil energy can only be extracted through hydraulic fracturing which requires large quantities of water and poses the risk of contaminating water tables.

Renewable energy sources appear less damaging for water supplies. Hydroelectricity currently meets 16% of energy demand worldwide and its potential is still underexploited. Nevertheless, the construction of dams can have a negative impact on biodiversity and human communities.

Other alternative energies are gaining ground. Between 2000 and 2010, wind power and solar energy around the world grew by 27% and 42% respectively. But although these technologies require very little water, they supply power intermittently and need to be combined with other sources that do require water. So, despite progress in renewable energies, fossil fuel is likely to retain its lead in the years ahead. The International Energy Agency expects fossil fuels to dominate at least until 2035, followed by renewable energies.

### Meeting the power challenge

The Report highlights the need to coordinate water and energy management policies to meet the challenges ahead. This includes revising pricing practices to ensure that water and energy are sold at rates that reflect their real cost and environmental impact more accurately.

Considering the scope of investments required to develop durable alternative infrastructures, the private sector has a major role to play in supplementing public expenditure. In 2008, it was estimated that developing countries would need to spend \$103 billion annually on improved water, sanitation and wastewater treatment to achieve the internationally agreed Millennium Development Goals by 2015. Another

United Nations  
World Water  
Assessment  
Programme



United Nations  
Educational, Scientific and  
Cultural Organization



\$49 billion per year will be needed to achieve universal energy access by 2030.

Systems which allow for the combined production of water and electricity probably hold the key to the future. This solution is particularly adapted to the arid regions. Thus, the power plants of Fujairah in the United Arab Emirates and Shoaiba in Saudi Arabia serve both for sea water desalination and energy production.

Water is increasingly being recycled to generate energy. The organic matter it contains serves for the production of methane-rich biogas. In Chile, the Farafana plant treats 50% of the wastewater of Santiago producing close to 24 million cubic metres of biogas. One hundred thousand residents use this energy in lieu of natural gas. In Stockholm (Sweden), buses and taxis run on biogas produced from wastewater. The interest in this technology is also growing in developing countries. In Maresu (Lesotho), 300 families use biogas as cooking fuel.

The United Nations World Water Development Report (WWDR) is a collaborative effort of the 31 UN entities and 36 international Partners that make up UN-Water. It is coordinated and produced by the World Water Assessment Programme (WWAP) which is hosted by UNESCO. Until 2012, the report was issued every three years, taking comprehensive stock of the world's water resources. As of this year, the report will focus on one theme and be presented annually on World Water Day whose theme will be the same as that of the report. This year's events for the Day will be coordinated by United Nations University (UNU) and the United Nations Industrial Development Organization (UNIDO) on behalf of UN-Water.

\*\*\*\*

Media contacts: Agnès Bardon, UNESCO Press Service,  
[a.bardon@unesco.org](mailto:a.bardon@unesco.org)

Tel in Paris: +33 (0) 1 45 68 17 64,  
Mobile in Tokyo (from March 19 to 22): +33 (0) 6 80 24 13 56

Simona Gallese, WWAP Communications Officer,  
[s.gallese@unesco.org](mailto:s.gallese@unesco.org)

[Daniella Bostrom, UN-Water Communications Manager,](mailto:daniella.bostrom@unwater.org)  
[+41 79 159 92 17, daniella.bostrom@unwater.org](mailto:daniella.bostrom@unwater.org)

The report is **under embargo until 21 March** (2 am GMT)

Advance access for media is available:

<http://www.unesco.org/new/en/natural-sciences/environment/water/wwap/for-the-media/>

username: media-WWDR2014

password: wwdr2014-MEDIA

Programme Office on  
Global Water Assessment,  
Division of Water Sciences, UNESCO  
Villa la Colombella  
Località Colombella Alta  
06134, Colombella, Perugia, Italy

Office tel.: +39 075 591 10 11  
Fax: +39 075 591 33 23 / 075 691 96 67  
[www.unesco.org/water/wwap](http://www.unesco.org/water/wwap)