REGIONAL COOPERATION ON WATER & ENERGY

In 2011, the Arab Ministerial Water Council adopted the *Arab Strategy for Water Security in the Arab Region to Meet the Challenges and Future Needs for Sustainable Development 2010-2030*. The strategy calls for more integrated scientific research in the region and for a mechanism to coordinate research concerned with water resources, agriculture, drinking water, sanitation and energy, as an important means of tackling water shortages in the Arab region.

In June 2012, the ESCWA Committee on Water Resources and the ESCWA Committee on Energy convened an intergovernmental consultation to initiate intersectoral dialogue and cooperation on water and energy issues facing the region. The meeting discussed the results of country-level surveys jointly completed by national energy and water officials, and identified common issues of concern. The consultation identified seven priority areas for future work:

1. Raising awareness and disseminating knowledge
2. Improving the harmonization of public policies
3. Examining the link between water security and energy security
4. Improving efficiency
5. Increasing the knowledge of technological choices
6. Promoting renewable energy
7. Integrating climate change and natural disasters as factors in decision-making

An institutional framework to support the development of a combined strategy for water and energy resource management, along with joint working groups, were proposed to address these issues.

The United Nations Development Account project, "Developing the Capacity of ESCWA Member Countries to Address the Water and Energy Nexus for Achieving Sustainable Development Goals" assists countries to address development issues from a water and energy perspective, in view of informing strategies, policies and plans at the national and regional levels. Activities are being coordinated with the League of Arab States and associated support being provided by the Federal Republic of Germany.

These efforts provide follow-up to the United Nations Conference on Sustainable Development (Rio+20) and its outcome document, *The Future We Want*, which clearly states the importance of "promoting integrated and sustainable management of natural resources".

GREEN HELP DESKS

GREEN PRODUCTION HELP DESK

In an effort to strengthen and support the development of green production sectors in the region, ESCWA partnered with local authorities to establish Green Production Help Desks (GHDs) in some member countries, including Egypt, Jordan, Lebanon, Oman and Tunisia.

The Green Help Desks provide producers and manufacturers with easily accessible information and training opportunities on green practices. Energy efficiency, water use efficiency and pollution prevention are among the main topics addressed by GHDs.

DID YOU KNOW THAT...

- Unaccounted for water in Arab countries is estimated to vary from 15% to 60% of water resources; these water losses through distribution networks waste energy and further increase the cost of providing water services.
- The biogas produced in a wastewater treatment plant could be captured and reused to cover up to 40% of energy needs within the plant.
- Approximately 0.36 kWh is needed to lift 1 m^3 of groundwater a vertical distance of 100 meters, while only 0.04 kWh is needed to pump 1 m^3 of surface water a horizontal distance of 100 km.
- Almost 75% of the Arab population lives under the water poverty line (1,000 m^3 per capita annually) and nearly half of them suffers from extreme water scarcity (500 m^3 per capita annually).

World Water Day is held annually on 22 March as a means of focusing attention on the importance of freshwater and advocating for the sustainable management of freshwater resources.

An international day to celebrate freshwater was recommended at the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro in 1992. The United Nations General Assembly responded by designating 22 March 1993 as the first World Water Day.

World Water Day 2014 on Water and Energy is globally coordinated by the United Nations University and the United Nations Industrial Development Organization.

http://www.unwater.org/worldwaterday

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Haditha Dam, Euphrates River, Iraq

Water & Energy in the Arab Region for Sustainable Development


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UN WATER WORLD WATER DAY 2014 & water energy
22.03.2014

ESCWA
United Nations Economic and Social Commission for Western Asia

Access to water and energy resources is a precondition for sustainable development. Access to these resources allows for the provision of water and energy services that are essential for improving health, ensuring food security, pursuing economic growth and alleviating poverty.

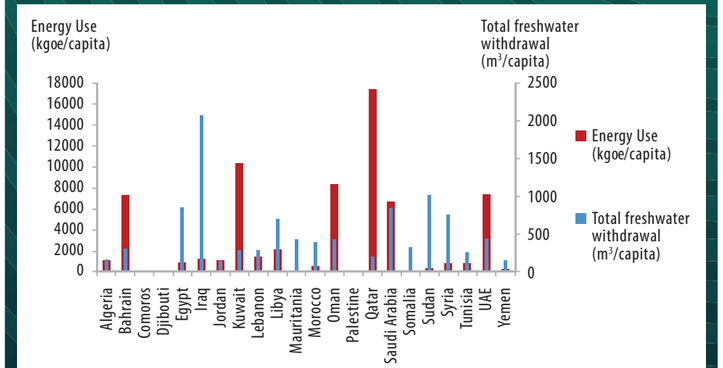
Overcoming water scarcity and ensuring energy security are among the most important sustainable development challenges facing the Arab region. However, unsustainable production and consumption patterns, rising living standards, population dynamics, transmission losses and operational costs, climate change, pollution and regional uncertainty are among the main issues affecting the ability of the region to meet its growing demand for water and energy services. The management of transboundary rivers involving countries facing different water and energy development needs presents an additional challenge.

Examining the linkages between the water and energy sectors presents an opportunity to manage these natural resources in a more efficient and integrated manner for a more sustainable and secure future.

WATER & ENERGY CONSUMPTION PATTERNS

Nearly all Arab countries suffer from scarcity in freshwater resources, while energy endowments vary significantly across the region. These two conditions affect development decisions on a daily basis. For example, in 2011, the energy consumption per person in Qatar was 55 times that in Yemen. The energy endowments available to Qatar and other countries of the Gulf Cooperation Council allow for seawater desalination and the use of water at a rate of 300 to 750 liters per person per day, while freshwater consumption in certain mountainous areas of Yemen can be as low as 25 liters per person per day.

Energy Use and Freshwater Withdrawal in Selected Arab Countries (2011)



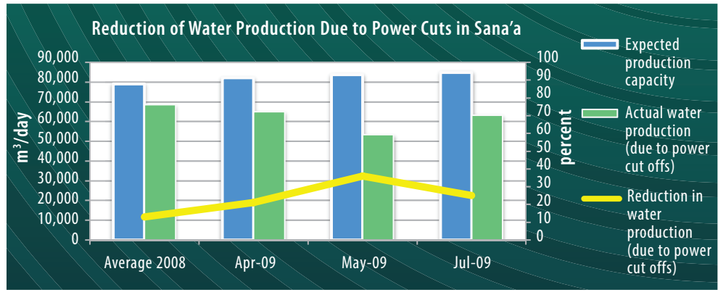
Source: *World Bank, World Development Indicators.*
kgoe: *kg of oil equivalent, m³: cubic metres.*

WATER & ENERGY ARE CO-DEPENDENT

Water and energy are inherently intertwined. Produced water is released and reused during the extraction of oil and gas, while water is needed to generate thermal power and hydropower. Meanwhile, energy is required to extract groundwater, pump water for drinking and irrigation, and treat sewage.

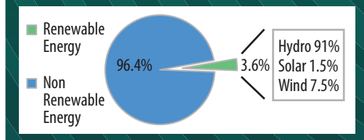
Joint analysis of both sectors exposes co-dependencies and bottlenecks. For instance, intermittent energy and water supply is common in Jordan, Lebanon, Palestine and Yemen. Water services are interrupted when water or energy is scarce. A discontinuous supply of energy results in further water shortages and loss of water quality caused by fluctuating water pressure in distribution networks. This in turn increases water losses, allows contaminants to infiltrate pipes and harms human health.

Reduction of Water Production Due to Power Cuts in Sana'a



Examining both sectors together also reveals costs and opportunities for investments in new technologies. For instance, the water sector is the largest consumer of electricity in Jordan. Efficiency gains in both sectors thus results in mutual benefits. Meanwhile, co-generation plants common in countries of the Gulf Cooperation Council desalinate water while also producing electricity. Plans to desalinate seawater using nuclear energy in some Arab countries must also consider whether there are sufficient amounts of water made available to cool and operate a nuclear power plant.

Power Generation from Different Sources (2011)



Egypt, Lebanon and Kuwait have committed to increase the renewable energy share of their national electricity production to 20%, 12% and 5% respectively by 2020, while Morocco will increase the share of renewable energy in its installed generation capacity to 42%.

With approximately 300 days of sunshine per year, the Arab region benefits from plenty of solar radiation. However, renewable energy, including solar energy, accounts for a small fraction of the total energy supply, while over 96% of generated power is still derived from fossil fuels.

Concentrated Solar Power (CSP) desalination projects are underway in Morocco, Qatar, Saudi Arabia, Tunisia and the United Arab Emirates. These projects will reduce fossil fuel energy consumption and associated emissions of greenhouse gases (GHGs) to mitigate climate change, while potentially improving water sustainability and the capacity to adapt to climate change.

TOWARDS A NEXUS APPROACH

Water and energy issues cannot be addressed separately if energy, water and socio-economic strategies are to be formulated to insure sustainable development in the region. Accordingly, the region should:

- Promote the use of renewable energy in the water sector, especially for desalination.
- Raise awareness and understanding of water-energy linkages in the Arab region.
- Improve energy efficiency when pumping water through distribution networks, irrigation networks and from groundwater aquifers.
- Encourage water pumping during off-peak electricity periods.
- Invest in appropriate water treatment technologies that are suitable for the use in hot, arid and semi-arid environments.
- Encourage greater dialogue and collaboration between water and energy decision makers, as well as counterparts engaged in agriculture, environment, social justice and economic development.
- Promote virtual water gains through regional and international trade.
- Assess and incorporate climate change factors when designing water and energy resources management strategies and plans.
- Improve the continuity, reliability, efficiency and quality of energy and water services through joint management schemes.
- Improve water use efficiency in agriculture and support innovative technologies for energy savings.
- Promote demand side management approaches that take into consideration water and energy consumption patterns across the domestic, industrial and agricultural sectors.
- Pursue supply side measures that achieve efficiency gains from improved coordination between the water and energy sectors.

A regional approach for addressing the water and energy nexus should consider associated issues related to the linkages between water, energy and food, as well as the effects that extreme weather events (such as droughts and floods) and climate change can have on water and energy resources and services.