

United Nations Human Rights --  
Office of the High Commissioner

**Jordanian water sector**

Background

Jordan is one of the 10 most water-poor countries in the world with annual per capita water availability of 120 – 145 m<sup>3</sup>/per capita/year (far below the international water poverty line of 500 CM/a/cap). Facing limited water resources and ever-growing demand creating significant imbalance, the different sectors are in competition on a scarce resource. Agriculture is the largest water consumer with 60% of the water use in Jordan in 2011 when "Drinking water remains the most essential and the highest priority issue" as H.M. King Abdullah II said since 1999. Sectors as industry and tourism need to be supplied to ensure economic development.

Challenges

Jordanians people have to deal with unavoidable challenges on the resource side as well as on the demand side:

1. A growing water demand:
  - High population growth (2.5%/year) and large refugee influxes as recently Syrians
  - Rising water needs for expanding economic sectors, such as industry and tourism. By 2030, water demand will double and reach 1,550 MCM, 650 MCM more than currently funded supply.
2. Limited water resources:
  - In 2012, water abstraction exceeded groundwater safe yield by roughly 200%. 10 out of the 12 groundwater aquifers, which are the main water resources, are over-exploited leading to decline in groundwater level and quality.
  - The impact of climate change will lead to precipitation variability and an increase of summer temperatures (of ca 2.2°C).
3. Limited financial resources:
  - Limited funding and private sector participation for the implementation of water projects.
  - Limited energy sources available for water projects and Jordan is highly dependent on foreign energy sources (96% of energy comes from imported oil and gas).
4. An unstable regional situation
  - Regular large refugee influxes as mentioned previously and,
  - Lack of coordination with neighboring countries regarding the management of water resources (surface and groundwater).

Jordanians water Authorities are therefore grappling with difficult policy decisions in order to determine the most efficient water allocation across sectors.

National goals

In 2008, the Ministry of Water and Irrigation established a national water strategy "Water for life: 2008-2022". National goals for the water sector are presented hereafter:

1. Water supply is secured for the Jordanian population in sufficient quantities and according to appropriate specifications and standards at suitable prices.
2. Water supply is secured for all sectors in sufficient quantities to fulfill the social, economic and environmental goals sustainably at suitable prices.
3. All cities and housing communities are covered with wastewater services.
4. The efficiency of water usage by all sectors is maximized.
5. Water institutions are organized and strengthened in a way that they can fulfill current and future functions.

#### Activities

In its quest to the national goals aforementioned, the Ministry of Water and Irrigation (MWI) aims to:

#### 1. In term of water supply:

##### 1.1. Develop conventional and non-conventional water resources:

- ✓ The conventional water resources to ensure the largest possible quantity of fresh water for drinking purposes:

- Surface water:

Jordan is collecting 360 MCM/year of water flow through dams and ponds (360 and 30 MCM/year respectively) out of a potential 500 MCM/year of rainfall.

- Exploitation of aquifers:

275 MCM of groundwater are renewable and are heavily over-exploited. The non-renewable DISI aquifer will be exploited and aims to pump 100 million cubic meters of water annually to Amman since this year.

- Transboundary and shared water:

About 40% of water in Jordan comes from shared water resources. Jordan has embarked on very fruitful projects (RDSC, GLOWA, EXACT, etc.), together with its neighbors and has agreements on water sharing rights with Israel, Syria and a Memorandum of Understanding (MoU) with Saudi Arabia but it is confronted to the regional situation.

- ✓ The non-conventional water resources:

- Desalination:

The Red-Dead Sea Conveyance project (RDSC) is aiming to provide Jordan and regional interests with 250 MCM of desalinated seawater by the year 2020, through the construction of a pilot desalination plant. The implementation of this mega-project faces difficulties to find financial support.

In 2010, Jordan's desalination capacity stood at 85 MCM. Most of the desalination plants are small-scale and owned and operated by the private sector, mainly for irrigation purposes after mixing desalinated brackish groundwater with freshwater. There is a significant scope for expansion of desalination practices. However, the wide-scale implementation of this technology faces numerous technical and economic barriers.

- Water reuse, especially for agricultural purposes:

Reclaimed water will be used for industry and agriculture in order to save freshwater for domestic uses. In 2010, 24 operational wastewater treatment plants (WWTP) were operational in Jordan, treating 110 MCM of water, of which 97 MCM/year are treated by the main WWTP (As Samra). Its expansion by 45 MCM/y has been committed for 2015. Jordan is also developing decentralized wastewater treatment for small

communities. In the future, the construction of new WWTP should provide an additional 31 MCM of freshwater. Financial issue is the main obstacle for the implementation.

1.2. Improve water services & sanitation services through:

- ✓ The improvement of the performance of regional water authorities by establishing public water companies for the management of water and wastewater services. Pursuing private sector partnerships through certain business units of the decentralized structures were outsourced to private companies. These actions have led to the reduction of operational water losses, the reduction of customer complaints and an increase in water supply efficiency for 80% of the population.
- ✓ The upgrade and the restructuration of water networks and system in the big cities with the support of international donors. The current rate of non-revenue water is 43%.
- ✓ The improvement of energy efficiency in the water sector: The Water Authority of Jordan is the largest electricity user in the country (18% of the national energy consumption). Based on a successful PPP to increase the energy efficiency of a pumping station, Energy Contracts are being commissioned to the private sector.
- ✓ The rehabilitation and expansion of sewage networks.

1.3. Protect of the water resources through:

- ✓ The implementation of water protection zones on the level of decision-makers and on the level of local stakeholders (Rehabilitation of the Rahoub Spring).
- ✓ The strengthen of skills and know-how on water protection at household levels through the Water Wise Women Initiative.
- ✓ The control of the protection areas with support from the Environmental Rangers.
- ✓ Reach out to the population of Jordan via awareness campaigns.

2. In term of water demand:

Support efficient water demand management:

- ✓ Water demand management policy:
  - Elaboration of a five years Water Demand Management Strategic Plan (2011-2015).
  - Development of 'standards, codes and regulations (update of the sanitation plumbing code, testing lab, etc.) and tools and technologies (audits, Water-use and water-demand management information program, databases, public-private partnership, etc.).
- ✓ Water efficient practices:
  - Promotion of efficient water using practices in all sectors (households, irrigation, tourism, industry, hospital, offices) to reduce the gap between available water supply and water demand (rainwater harvesting, the reuse of greywater, assistance for low income consumers, training programmes, etc....).
- ✓ Heightened public awareness:
  - Awareness campaigns with school students, women as main water users at household level, religious sector using media outlets (radios, TV, newspapers, publications, etc.) and 'water clubs' in schools.
  - Promotion of water savings at the household level through the establishment of Water Wise Women groups.

3. Improve water governance:

- ✓ Restructuring of water sector to strengthen structures and clarify mandates between policy-making and bulk water supply.

- Establishment of a multi-stakeholder Water Council headed by the Minister of Water and Irrigation to increase accountability and transparency.
- Establishment of a regulatory monitoring committee to monitor utilities' performance.
- ✓ Enhancement of policies and tools:
  - Update of the National Water Strategy and regulations.
  - Improvement of long term planning and management through the update of the National Water Master Plan (NWMP) and the application of data and information management tools such as WEAP.
  - Integrated water resources management taking into account water valuations study carried out in order to bridge the gap between expenditures and incomes.
- ✓ Improve transparency of water governance through:
  - Sustainable agriculture in the Jordan Valley with 22 Water User Associations established, which cover almost 80% of the irrigated area in order to represent their interests vis-a-vis the Government and other institutions. Farmers take over the tasks of retail water distribution management according to a specific bylaw.
  - Participatory platform with water users in the Highlands: the Highland Water Forum including the development and the implementation of an Action Plan for sustainable groundwater management together with all stakeholders, namely from the agricultural sector.

#### Next steps

MWI will continue and strengthen actions in the field of:

1. Conventional water resources:
  - ✓ Upgrading networks to reduce non-revenue water.
  - ✓ Enhancement of energy efficiency of water utilities and pumping stations and up-scaling nationwide Energy Contracts with PPP.
  - ✓ Development of water harvesting through recharging dams.
  - ✓ Regional cooperation for shared water resources.
  - ✓ Development of the protection of the water resources and catchment areas.
2. Non-conventional water resources:
  - ✓ Rehabilitation and expansion of sewage systems (63% of households are currently connected to the sewage system).
  - ✓ Development of desalination treatment plants using renewable energy with the priority of implementing the first phase of the Red-Dead Sea Conveyor Project.
  - ✓ Heighten wastewater treatment capacities, to reach the objective of 250 MCM/year of treated wastewater in 2025, and capture treated effluent for reuse. MWI seek further cooperation with the private sector worldwide to be able to expand these best practices nationwide.
3. Water demand management:
  - ✓ Continue to promote efficient water demand management and up-scaling best practices in all sectors (rainwater harvesting, greywater, reuse, irrigation efficiency at farm level, etc).
  - ✓ Improve awareness of water scarcity and the importance of conserving and protecting our limited water resources.
4. Strengthened water institutions:
  - ✓ Updated strategy has to be endorsed by the Water Advisory Council and applied.

- ✓ Establishment of a reliable and dynamic databank helping the decision-making process through the automation of the water resources monitoring system.
- ✓ Improving local capacity building to enhance the quality of water planning (information base, modeling capability, etc.) and desalination techniques.

The Water Authorities have to work on all the parts of the water management: reorganize the water sector in order to strengthen the water institutions, find new water resources, work on the demand to ensure an efficient use of each drop of available water, etc. The limited financial resources are the main obstacles. The socio-cultural context is also a break to change, especially in the agricultural sector which has to be capped in order to supply drinking water to the population.

From the point of view of the Jordanian Ministry of Water and Irrigation, water resources and wastewater management should be reflected in the Sustainable Development Goals / post 2015 development framework. As shown previously, the issues of water resources and wastewater management are in the centre of MWI activities to reach our national water goals, respectful of the human rights.

Ministry of Water and Irrigation,  
Jordan