

Author:	Dr. Dziegielewski, Academy for Educational Development Consultant
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Delivery:	Shera Bender sbender@aed.org

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By Ben Dziegielewski*

## **WATER DEMAND MANAGEMENT POLICY FOR JORDAN**

### **PART A. SPECIFIC POLICY CONSIDERATIONS**

The Water Demand Management Policy of the Hashemite Kingdom of Jordan addresses the management of water demands in all sectors of the Jordan's economy including municipalities, industry, tourism, agriculture and other activities of national importance. Many provisions of this policy are already in practice. Specific policy statements address the following ten specific considerations:

- 1. Universal Water Metering and Loss Control** (involving tracking of water flows throughout water transmission, treatment and distribution systems with a goal to identify and repair water leaks and increase the proportion of water that is metered and billed to residential, commercial, industrial and public sector users of water).
- 2. Fulfilling “Unserved” Water Demands** (e.g., with a near-term goal to satisfy the presently unmet demands in municipal and industrial uses including the educational institutions and water needs to support tourism. This goal will be accomplished not only by using the new sources of water, but also using water savings that are achieved through the ongoing water demand management and water conservation and loss reduction programs).
- 3. National Plumbing Standards and Water Conservation Codes** (primarily the development of a National Plumbing Code including the implementation of National Plumbing Standards with acceptable safety and quality requirements to ensure that all plumbing products are certified thus preventing the inferior products that quickly deteriorate and cause leaks, or products that are made of inferior materials and sold as high grade from entering the market in Jordan).

4. **Water Pricing and Cost Recovery** (e.g., structuring the municipal water and wastewater tariffs to include price incentives for water conservation and setting the price levels to recover the cost of operation and maintenance and the costs of the ongoing necessary capital improvements in water supply systems).
5. **Comprehensive Water-Use Information Program** (e.g., development and maintenance of a comprehensive national inventory of all water withdrawals and uses, which is essential for understanding the effects of spatial and temporal patterns of water use on the quality, availability and sustainable use of existing water resources).
6. **Public Awareness and Education** (e.g., consistent with the Water Strategy for Jordan, an ongoing public information and education program is needed to increase and maintain high levels of public awareness of the importance of water for the well-being of the country and its future economic and social development).
7. **Best Management Conservation Practices** (e.g., establish a list of water demand management BMPs to be coordinated by the WDMU at the Ministry of Water and Irrigation and implemented by the regional WAJ offices at the Governorate level).
8. **Public Buildings Efficiency Improvement Program** (e.g., retrofit of non-conserving plumbing fixtures in all the military, the civil defense, intelligence services, military hospitals, royal palaces and other governmental and public buildings).
9. **Water Demand Management Research and Development** (e.g., special studies on water use in the municipal, industrial, agricultural and other sectors to support and guide the ongoing water demand management policies and programs).
10. **Recognition of Individuals, Institutions and Industry for Advancement in Water Efficiency** (with an aim to establish an annual Award to recognize individuals, institutions and other entities for their contribution to the improvements in water-use efficiency in Jordan).

Other aspects of WDM policy address Legislation and Institutional Arrangements for the development and implementation of water demand management policies and programs.

## **PART B. WDM POLICY STATEMENTS**

The long-term National Water Demand Management Policy of Jordan is aimed at influencing and controlling water demand and water usage to achieve a better utilization

of the available water resources while meeting the objectives of social and economic development of the country. The National WDM Policy is consistent with the Water Strategy of the Kingdom and conforms to its long-term objectives. While the policy is national, it is being implemented by Governmental agencies with the primary responsibilities being vested in the Ministry of Water and Irrigation and the Ministry of Agriculture.

## **BACKGROUND**

The Hashemite Kingdom of Jordan is facing an unremitting imbalance between the total sectoral water demands and the available supply of freshwater. In the year 2003, only 890 million cubic meters (MCM) of the estimated total demand of 1,388 MCM were delivered to all users in Jordan. This represents a shortfall of 498 MCM or 36 percent of total water needs. By 2020, the total demand for water is expected to increase to 1,685 MCM because of the large increases in population, improvements in living standards and economic activity. While the new sources of water supply are expected to increase the available water from the current level 890 MCM per year to 1,289 MCM per year by 2020, a shortfall of 396 MCM representing 24 percent of total demand will remain and will have to be managed through appropriate demand-reduction programs.

In order to address some of Jordan's water problems, a National Water Strategy was developed in 1997 and published in 2002. Among the 47 recommendations contained in the Strategy were the following:

- Priority of 100 liters per capita per day for basic human needs
- Creation of a national water data bank
- Full utilization of all wastewater for irrigation purposes
- Full but sustainable development of aquifer resources
- Adoption of a five-year resource development plan

In the demand management and conservation area, the Water Strategy cites the following:

- Achievement of the "highest possible efficiency" in water conveyance, distribution and use
- Adoption of measures to "maximize the net benefit from the use of a unit flow of water."
- Definition and assignment of roles in water conservation to be played by the different sectors of society.
- Promotion of water saving systems and devices.

Although the Strategy does not identify any specific demand management programs, it is clear that the Ministry of Water and Irrigation supports the implementation of demand management efforts as a necessary part of the long-term solution.

## **POLICY STATEMENTS**

The National WDM Policy includes the following statements, which provide guidance for the development and implementation of demand management measures and programs in all sectors and regions of the country.

### **On the Role of Water Demand Management**

1. The idea of water conservation is not new to Jordan because in this region of low rainfall the people had to survive by harvesting rainwater and minimizing their water usage. This behavior has continued until modern times as the recent survey data indicate that nearly two thirds of the households in Amman and one third in rural areas of Jordan reuse water within the household.
2. Given the general scarcity of freshwater in the region, water demand management and water conservation will continue to play an important role in achieving sustainable water use in Jordan.

### **On the Unserved Water Demand**

3. Because of the chronic shortages of water and the low efficiency of water supply and distribution systems, the actual use of water by many users in the urban and rural areas of the country is below the internationally established targets of daily per capita usage. On average, the residential water demand may be 30 to 50 percent below the total demand, which includes the actual use and the “unserved” demand. Water savings that will be achieved through the implementation of water conservation programs will be an important source of additional water to meet the unserved demands.

### **On Plumbing Codes and Standards.**

4. The new Plumbing Code in Jordan includes standards for showerheads, faucets, and water closets. These standards specify the maximum water use in liters per minute or liters per flush for all plumbing fixtures that are installed in newly constructed buildings. The water-efficient plumbing fixtures mandated by the Jordan’s Plumbing Code will reduce national water demand and wastewater flows over time due to the installation of these fixtures in new construction and also a gradual voluntary replacement of the older less efficient fixtures with the Plumbing Code-compliant models.
5. The availability and consumer adoption of water efficient fixtures and water-efficient appliances such as dishwashers and washing machines will have a significant impact on future water use without requiring any significant changes in water-using behavior or diminishing the basic functions of this equipment. The resultant water savings will provide monetary savings in the necessary investments on water supply and wastewater disposal.

6. At present, plumbing products sold and used in Jordan (such as pipes, valves, tools, and other materials) do not have to go through a certification for product quality standards. In some cases, inferior products that quickly deteriorate and cause leaks, or products that are made of inferior materials and sold as high grade. A Plumbing Product Certification Program through Daman could potentially save large quantities of water by eliminating water leakage in households if the quality of plumbing and plumbing products was improved. Once the certification program is approved then there will be need to remove non-compliant sanitary ware from the market after a one year grace period. Toilets with cisterns larger than 6-liter flushes, in particular, need to be removed from the market.

### **On Universal Water Metering and Loss Control**

7. Given the water situation in the Kingdom, it is important to increase the proportion of municipal water that is metered and billed to residential, commercial, industrial and public sector users. Universal metering of water use is part of the National Water Strategy. It is also important to identify and repair all water leaks in the distribution system.

### **On Water Pricing and Cost Recovery**

8. The municipal water and wastewater tariffs in Jordan provide important economic incentives for water conservation. The tariffs are structured to discourage high water use by charging higher prices at higher quantities of water use. Also by setting the price levels to recover the cost of operation and maintenance and also the costs of the ongoing capital improvements in water supply systems provides an additional incentive for efficient use of water. Further development and evaluation of conservation-oriented water tariffs for both municipal and agricultural uses of water is being undertaken by the MWI.

### **On Comprehensive Water-Use Information Program**

9. The WDMU at the MWI has begun the development and maintenance of a comprehensive national inventory of water withdrawals and uses. The National data on water use are needed for the protection and monitoring of freshwater resources of the Kingdom (especially to assess stress on rivers and aquifers) and to assess the availability of water resources to support the population and economic growth of the country. Reliable estimates of water use are essential for understanding the effects of spatial and temporal patterns of water use on the quality, availability and sustainable use of existing water resources.

### **On Public Awareness and Education**

10. Consistent with the Water Strategy for Jordan, an ongoing public information and education program is needed to increase and maintain high levels of public awareness of

the importance of water for the well-being of the country and its economic and social development. The WDM Policy ensures that public education continues through a fixed program that uses a variety of measures including the relevant messages and media using the character (Abu Tawfir) developed during previous education campaigns. Periodic survey of public opinion on adoption of water conservation measures will be conducted to assess and enhance the educational program.

### **On Implementation of Water Demand Management Programs**

11. The Ministry of Water and Irrigation will continue to play a leading role in the development and implementation of WDM programs and appropriate water efficiency measures. The WDM Unit at the Ministry is undertaking some nationwide demand-reduction programs. These include the Public Buildings Efficiency Improvement Program (i.e., retrofit of non-conserving plumbing fixtures in all the military, the civil defense, intelligence services, military hospitals, royal palaces and other governmental and public buildings) and the Best Management Conservation Practices Program, which establishes a list of water demand management practices BMPs to be coordinated by the WDMU at and implemented by the regional WAJ offices at the Governorate level.

### **On Water Demand Management Research and Development**

12. The WDM Unit and the MWI is undertaking special studies of water use in the municipal, industrial, agricultural and other sectors. The purpose of these studies is to support and guide the ongoing water demand management policies and programs in the country.

13. A competitive long-term research program on water demand management needs to be undertaken by the Ministry in collaboration with the major universities and research institutes in Jordan.

### **On National Recognition of WDM Accomplishments**

14. The importance of WDM in Jordan justifies the establishment of annual awards to industrial firms, institutions and individuals for their accomplishments in achieving greater efficiency of water use or making notable contributions to the scientific underpinnings of water demand management.