The water sector in the Syrian Arab Republic

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Summary

The main policy of the Ministry of Irrigation is to distribute the available water resources based on the needs of priority for drinking water.

There are several Ministries involved in water activities (such as the Ministry of Irrigation, Ministry of Housing and Utilities, Ministry of Local Administration and Agriculture) for planning operational purposes, monitoring and regulation activities.

The following shows percentages of water usage relating to various sectors:

Sector	Drinking water	Industry	Irrigation and other
Percentage	5%	7%	88%

The Ministry of Housing and Utilities, through its water supply and sewerage establishments in the governorates, is taking measure for water conservation and demand management and pollution control through:.

- Providing all settlement communities with portable water.
- Rehabilitating, improving and expanding for reducing leakage losses in distribution networks.
- Protecting the settlement-zone of any resources.
- Meeting the increasing water demands, desalination of brackish in semi-arid area like Salemya in Hama, which has 5% of resource with high salinity.
- Reusing treated water in agriculture, i.e., Damascus sewage treatment plant, with capacity of 280000 m^3/day has good effects on public health. There aren't any epidemic diseases since five years ago.
- Pollution control in rural areas, we prepare comprehensive regional plant to address the pollution from sewage in the Syrian Arab Republic, which covers all basins and settlement communities.

1. Introduction

The Syrian Arab Republic is situated on the eastern coast of the Mediterranean with a population of 15,000,000, in an area of 185,000 km.

Regionally, the Syrian Arab Republic is described as semi-arid zone, which means that it will suffer in future, from scarcity of water. So, we should exert more efforts to preserve this vital from being wasted and polluted. Also, it is of our priorities to exploit, maintain and adopt best.

2. Water resources

The total volume of water available throughout the Syrian Arab Republic for industrial, agricultural, municipal and commercial matters is inadequate and distributed as follows:

2.1 Surface water

The surface water in the Syrian Arab Republic consists of a number of small rivers and lakes in the western part of the country (Quaik, Efrean, El Sin, El Kebir El Shamali, El Kebir El Janubi, Orantes, Barada, Al Awaj, and Yarmuk rivers and Qatene Lake) and the large Euphrates River in the east with the Al

Khabour and Al Baleakh tributaries and Al Assad lake. In the far east there is the Dajle river which is also across boundary river.

The smaller rivers are mostly spring-fed and show strong seasonality with sometimes' ephemeral characteristics. There is a strong interaction between the groundwater levels and spring flow, as indicated by dwindling flows with increased groundwater extraction.

The available surface waters al practically used completely for domestic water supply which consists 63% of total distributed system (network).

2.2 Groundwater

37% of the drinking water is being extracted from groundwater resources. As a consequence of the seasonality of surface waters, groundwater resources are used in combination with the surface waters. In some cases they are the only available resources. The amount of water available for use in Syria is not well quantified, nor is the amount abstracted fully monitored. Nevertheless, it is clear that all available resources are used to the limit and that coping with further increases in water demands will require immediate and well-planned action. Groundwater resources are divided into the following seven aquifers:

1. Coastal aquifer.
2. Barada and Al Awaj aquifer.
3. Al-Badia aquifer.
4. Euphrates aquifer.
5. Orantes aquifer.
6. Quaik aquifer.
7. Yarmuk aquifer.

3. The water sector

The main policy of the Ministry of Irrigation is to distribute the available water resources based on the needs giving priority for drinking water. There are several Ministries involved in water activities, (such as Ministry of Irrigation, Ministry of Housing and Utilities, Ministry of Local Administration and Agriculture) for planning operational purposes, monitoring and regulation activities.

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3.1 Ministry of housing and utilities

The Ministry, through its water supply and sewerage establishments in the governorates, is taking the following measures for water conservation and demand management and pollution control:

1. Supply all settlement committee with good quality of water.
2. Rehabilitation, improvement and expansion for reducing leakage losses in distribution network.
3. To protect the settlement-zone of any resources.
4. In summer (dry season), we distributed drinking water according to strict programs regulating pumping intervals.
5. Using and repairing meters to control infringement on the network.
6. Preparing framework for cost retrieval: Supplying drinking water to all citizens in the Syrian Arab Republic is a public utility. This task is facing difficulties due to tremendous growth of population, increasing cost of water projects and expanding networks. So, the government is unable to ensure the supplying of water quantity and funding. Therefore, the government imposed tariffs on water consumption in order to get people involved in cost. The following table shows tariffs for 1 m^3 put in

year 2000 to be applied by general establishment for drinking water in Syria, such as the following categories:

Monthly category	**Syrian pound**
1. Domestic	
• 1-20 m^3	3.00
• Over 20 m^3 up to 30 m^3	4.50
• Over 30 m^3 up to 60 m^3	13.50
• Over 60 m^3	19.00
2. Governmental: There are no categories	8.50
3. Industrial, Tourist and Commercial	22.00

7. To meet the increasing water demands, desalination of brackish in semi-arid area like Salemya in Hama, which has 5% of resource with high salinity.
8. Reuse of treated water in agriculture, i.e., Damascus sewage treatment plant, with capacity of 280000 m3 has good effects on public health. There isn't any.
9. Limiting Leakage: By using sophisticated electronic devices, which can spot out leakage points along networks, without trenching streets. We just got 13 water loss analysis vans for general establishments for drinking water.
10. Use the up to date and adequate technology for exploitation and maintenance of drinking water projects.
11. There are 12 W.W.T.P., Three of them are already under operation (Salamieh, Damascus, Homs) and the remaining plants are now being under construction. (Aleppo, Hama, Dara'a).
12. The purpose of constructing the above mentioned plants is to reuse wastewater in irrigations.

3.2 Ministry of Agriculture

The Ministry adopted new irrigation methods to replace the traditional immersion irrigation. Modernizing superficial irrigation through symphonic tanks, [4 x 50 m] and furrows lines sewage flow, which will increase efficiency from 35 to 40% and reduce wastage up to 60%.

- Collective Irrigation:
  A. Sprinkling: Increased Saving Water from 55%-70%.
  B. Splashing: 32-37.
  C. Using laser technology for determining water quantities for irrigation.
- Water Harvesting:
  Collecting rainwater in Al-Badia Zone to increase sustained plantation covering for grazing.

3.3 Ministry of Industry

Industries use groundwater and discharge their wastes without treatment. Some industries do have treatment facilities but unfortunately with low operation efficiency.

4. Problems of water management and investment in the Syrian Arab Republic

1. Water projects in the Middle East countries are suffering from a number of problems. This matter affects economic, social, scientific and technical reality. i.e., the unavailability of water resources management strategies and weakness of experiences in advisement, use and work.
2. Population growth and decreasing of water quantities. At the end of 2001, the population of the Syrian Arab Republic is about 18,000,000 per capita. By the year 2020 this population will reach 28,000,000 while the available water resources will continue decreasing.