Effective Water Demand Management in the GCC Countries

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Overview

- Water Resources in the Arab Region
- Available Resources
- Present Demand
- Drivers of WDM in GCC Countries
- Desalinated Water Production in GCC countries
- Introduction
- Action Leading to WDM
- Possible WDM Strategies
- Public Education Strategy
- Regulatory Intervention
- WDM and Water Economic
- Saving through economic incentives and disincentives
- Principles and guidelines for Effective Water Charge
- Measuring the Results
- Financial Indicators
Water Resources in the Arab Region

- Arab World is facing severest water scarcity.
- Located mostly in the arid and semiarid zone, most of the possible water resources already developed.
- Several Arab countries are suffering water deficiency and others heading that way.
- Per capita consumption rates are the lowest in the world municipal and industrial water will double and triple over next years.
- Depletion of non-renewable groundwater, pollution, salt-water intrusions, are common.
- Conflicts on shared water are higher than anywhere in the world.
- Agriculture is increasingly unable to meet demands levels and food imports increasing
## Resources

<table>
<thead>
<tr>
<th>Source</th>
<th>Billion m3/y</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface Water</td>
<td>350</td>
<td>88.1</td>
</tr>
<tr>
<td>Groundwater</td>
<td>35</td>
<td>8.8</td>
</tr>
<tr>
<td>Desalinated Water</td>
<td>4.8</td>
<td>1.2</td>
</tr>
<tr>
<td>Reuse of TSE</td>
<td>7.6</td>
<td>1.9</td>
</tr>
</tbody>
</table>

![Pie chart showing water sources](image)
Present Demand

- Agriculture: 87%
- Domestic: 6%
- Industrial: 5%
- Others: 2%
Challenges

1. Climate
- Hyper Arid to Arid Conditions
- Average precipitation 56 mm/year
- Evaporation may exceed 4000 mm/year

2. Vulnerability
- More than 50% of renewable water resources generated outside the region.
- Growing demands and uses increase pressure on already fragile and scarce water resources
- Physical and environmental destructions caused by conflicts and wars.

Absolute Water Scarcity by 2025
Challenges

150 billion m$^3$/year water deficit
Implications:
An increase of demands by about 4.6 km3 every year to satisfy a population growth rate of 7.5 million per year.
Challenges

Water Demand Trend

150 billion m3/year water deficit

Rapidly growing population and diminishing per capita share

Population (Million)

Water Share (cu.m/cap/yr)

- Population
- Share from IRWR
- Share from ARWR
Challenges

About 80% of food production depends on erratic rainfall.
Irrigated agriculture share is 87% of the available water resources.
The region is net importer of food with an average 80 million tons per year, and import bill about US$ 23.5 billion annually.
Agriculture directly employs about 33 million person; half of them are females and perhaps similar number in non-farm activities.
Challenges

With distinct differences from one country to the other in the region, further 83 million persons (27%) need to be supplied with safe water and 96 million (30%) with sanitation services in order to meet the MDGs.
Challenges

- Environmental degradation including deteriorated water quality and salinization.
- Pollution caused by fast growing cities and industries.
- Insufficient wastewater treatment facilities.
- Poor or non-existing solid-waste management.
- Weak pollution control and abatement programs.
Thank You!