Jordan water scarcity, strategy and alternative solutions:
A politico-economic perspective

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National Centre for Competence in Research – Trade Regulation
Jordan water scarcity:
Presentation and defining the problem

- Jordan’s water picture
- Coping strategy
- Politics of water
- Alternative options
MENA water scarcity

- First global region to run out of sufficient water - 1950s
- MENA hydro-system unable to meet rising water demand
- Indicator of scale of water deficit = level of food imports
- Pop growth, living standards, climate change

- But global hydro system / freshwater in surplus
  - global food trade (virtual water)
  - balances MENA water deficit
  - achieves water / food security for region
  - disguises level of crisis
Water picture:
Land, resources, demography

- 90% arid; 4th most-water deprived
- Landlocked
- Less access than neighbours to surface water
- Downstream
- Huge pop growth - refugees
  - 5.87m
# Water picture: Resources

<table>
<thead>
<tr>
<th>Source</th>
<th>Quantity</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Developed surface water</td>
<td>300 MCM</td>
<td>34%</td>
</tr>
<tr>
<td>Groundwater</td>
<td>420 MCM</td>
<td>48%</td>
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<tr>
<td>Treated wastewater</td>
<td>90 MCM</td>
<td>10%</td>
</tr>
<tr>
<td>Desalinated</td>
<td>10 MCM</td>
<td>1%</td>
</tr>
<tr>
<td>Peace treaty</td>
<td>50 MCM</td>
<td>6%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>870 MCM</strong></td>
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*Numbers indicative*
Water picture: Resources v. Demand MCM 2007 (GOJ official figures)

Resources v. demand 2007 (MCM)

- Demand, 1505
- Resources, 867
- Deficit, 638

Water demand by sector 2007

- Irrigation: 72%
- Municipal: 24%
- Touristic: 1%
- Industrial: 3%
Water balances 2007

- Demand exceeds resources 638 MCM
- Population (2008) 5.87m
- Annual per capita availability 145 cm/y
  (International poverty line 500 cm/y)

- Deficit met drawing on aquifers / rationing
- Food imports provide water security
‘Water foot-print’ reflects size of virtual water imports*

Jordan’s Water Foot-print = total water use
✓ minus water used for commodity exports
✓ plus ‘virtual’ water in commodity imports

= 6.27 billion cm/yr
= 27% water self sufficiency
= 73% of water footprint imported

* Quantification method developed by Chapagain & Hoekstra, 2008
Towards water crisis

“The hard reality is that Jordan is consuming more water than it has available from secure (annually renewable) sources. A water catastrophe is imminent as groundwater resources will slowly dry up”.

Washington Embassy of the Hashemite Kingdom of Jordan
Water Strategy 2008-2022

- **Context:**
  - Growing water scarcity / unsustainability of system
  - Past emphasis on expanding supply / weak demand management
  - Tension: economically sound policies v. politically-based policies
  - Signs of donor fatigue over water mismanagement

- **Objectives:**
  - Provision of sufficient / safe drinking water (MDG)
  - To reduce water deficit / improve long term outlook
    - **Deficit:** 638 MCM → 503 MCM (without RSDS; 3MCM with RSDS)
    - **Resources:** 867 MCM → 1132 MCM
    - **Demand:** 1,505 MCM → 1635 MCM
Water Strategy 2008-2022

- **Strategy (% of total resources)**
  - Decrease reliance on underground water (32% → 17%)
  - Develop surface waters (34% → 22%)
  - Increase treated wastewater for agriculture (10% → 13%)
  - Increase dependence on desalination (1% → 31%)

- **Implementation**
  - Institutional reform, with PSP
  - Capping / regulation of irrigated agriculture
  - Appropriate water tariffs
  - Develop alternative sources: **MEGA projects**
    - Disi Aquifer ($900m)
    - Red Sea Dead Sea Conveyor ($16bn)
Jordan River Basin
Renewable Resources
900 MCM (FAO)
Jordan water politics:
Political pressure to pump

- Geographic location; demography, water scarcity
- Asymmetric power
  - Israel – hegemon; Syria – upstream; Saudi Arabia – shared Disi aquifer
- Domestic power structure/sanctioned discourse
- Strategic location and donor largesse
Alternatives: in-sector / across-sector?
Politics, risk, cost, funding?

A. RSDS: (Refill Dead Sea; plus desalination)
   - Politically independent / Brine into Dead Sea

JRSP: Aqaba Desalination
   - Politically independent / Where to put brine? Who will fund (No Peace dividend)

B. Turkey Peace Pipeline
   - Politically dependent on Turkey / Syria
   - Medium term – more costly than desal; Longer term – less costly?

C. Integrated cross-sector approach; economically sound policies
   - Boost adaptive capacity
   - Market mechanisms – PSP; Tariff reforms, subsidy reform
   - Aided by new discourse on “value of Water”
Thank you

Valerie Yorke