Third Biennial

Rosenberg International Forum on Water Policy

The Reform in Israeli Agricultural Water Pricing: A New Way or No Way?

:Prepared by

Eli Feinerman – The Hebrew University of Jerusalem, and

.Gadi Rosenthal – Kivun – Strategy & Economics Ltd

October 2002

Presentation Outline

1. ***The Israeli Water Economy***
   - Background and current water crisis,
   - Administrative and institutional framework,
   - Pricing practices,
   - The new strategy.

2. ***The Reform in Agricultural Water Pricing***
   - Objectives and major characteristics,
   - Compensation scheme,
   - Main difficulties,
   - Concluding remarks.

Background and Current Water Crisis

- **Chronic scarcity is a fact of life in Israel where aggregate demand exceeds the supply of fresh water in a semi-arid environment.**

Main Features of the Water Crisis

- Shortage of freshwater and steadily increasing deficit;
- Poor and deteriorating groundwater quality (gradual salination, intrusion of sea water into the coastal aquifer, contamination of resrvoirs);
- Environmental crisis: drying up of rivers and lakes and pollution of streams.

Main Quantitative Expression of the Crisis

- A sharp decrease in water supply where the agricultural sector bears the brunt of the necessary cuts;
- Increased development of unconventional water resources: recycling of urban and industrial wastewater and desalination of seawater.
- ***A large-scale transition in agricultural water use, from good quality water to treated wastewater, is expected to occur within the next few years.***

Factors contributing to the crisis

- Population and economic growth, growing households&industrial demand;
- Demands of neighboring entities (55MCM + 35 MCM for Jordan and the Palestinian Authority, respectively);
- Long-term neglect and over pumping of fresh water sources (more then natural recharge), insufficient attention to water-associated environmental issues in a semi-arid country;
- ***Inefficient institutional and administrative mechanisms for water allocation and control; A culture of poor decision-making (Hydro-politics).***

Administrative and Institutional Framework

- All water sources are publicly owned and their utilization is controlled by the Water Commissioner;
- A single government-owned company, Mekorot, supplies approximately 60% of the total water supply;
- The Water Commissioner issues permits for production (pumping) to suppliers as well as allocations (quotas) for agricultural consumers;
- Trading in water quotas is unlawful;
- Decision making and management relating to the water economy take place in many forums, and is greatly affected by special interest groups (Hydro-politics);
- A bureaucratic maze and lack of synchronization of the different

Pricing Practices

- Water charges depend on the type of use: prices for agricultural use are lower than prices for industrial and urban use. Prices for brackish water are lower than prices for fresh ; water. Within each sector prices do not depend on location

- Tiered pricing is levied on agricultural users.

Prices (US $ per m^3)

Agricultural :	fresh	0.22	(average)
	recycled	0.12	
Municipalities :		0.35	
Industry :			0.30

- Prices for water delivered by the national company, Mekorot, are determined by the government in a process open to political pressure (skillfully applied by the agricultural lobby).

.)Pricing Practices (Cont

- **Private water suppliers set prices with minimal government interference;**
- **Extraction Levy: a new form of "scarcity price" aimed at reflecting the "scarcity value" of water in the ground water aquifers;**
- **Prices charged by Mekorot for agricultural users are subsidized, with the government covering approximately 20% of the cost of supplying the water;**
- **It seems that since 2001, policy makers, as well as many farmers, are beginning to realize that raising water prices for the agricultural sector is inevitable;**
- ***The success of the agricultural lobby resulted in over utilization of water for many years, and it is one of the major reasons for the current severe water crisis.***

The New Strategy to Overcome the Crisis

(adopted in principal)

- Intensive desalination (currently negligible, 400 MCM planned for the end of the decade);
- Agricultural shift to recycled water (currently 280 MCM, more than 500 MCM planned for the end of the decade);
- Higher quality of treated wastewater;
- Privatization (especially of new facilities);
- Increased attention for environmental concerns;
- ***Reform in agricultural water pricing***.

The Proposed Reform in Agricultural Water Pricing

- The reform is the result of a recent (and a rare) agreement, on significant policy changes in the practices of agricultural water pricing. The agreement is between the two most influential public key players in the Israeli water economy: the Ministry of Agriculture and the Ministry of Finance;

- The declared goals of the reform are ***to increase the overall efficiency of water allocation to agriculture and at the same time to give farmers incentives to fulfill their national goal of protecting the land (via cultivation) and preserving the landscape.***

Major Characteristics of the Reform

1. Canceling the tier-pricing system and equating agricultural water prices (which vary by water quality) to the prices charged for urban use;

2. Compensating farmers by redistributing to them **all** the state's **additional** revenues resulting from the increased water prices. Farmers are required to cultivate **all** the areas in their possession;

3. A constant annual payment by the Ministry of Finance to the Ministry of Agriculture, independent of water use, aimed at supporting the investment in activities with characteristics of public-good.

Compensation Scheme

(1) $T = \sum_i \{\text{Aggregate Revenues from Increased Water Prices}\}_i$

$+ \sum_k \{\text{Aggregate Revenues from Increased Extraction Levies}\}_k$

i= Index of water type (fresh water, recycled water, saline water), k= Aquifer index

Aggregate Compensation

(2) $AS = X(1.5S_1 + 1.2S_2 + S_3 + 0.8S_4 + 0.6S_5 + 0.5S_6 + 0.2S_7)$

X is the *basic level* of support per dunam of land planted for **Irrigated** field crops and vegetables

(3) $$X = \frac{\text{T= Total Revenue Available for Disrtibution}}{(1.5S_1 + 1.2S_2 + S_3 + 0.8S_4 + 0.6S_5 + 0.5S_6 + 0.2S_7)}.$$

(S_1,S_2,S_3,S_4,S_5,S_6,S_7) represent the aggregate areas planted for (irrigated orchards, irrigated flowers, irrigated field-crops and vegetables, unirrigated orchards, unirrigated vegetables, unirrigated field crops, fallow land).

Main Difficulties

In principle, the general idea of the reform- - to substitute the subsidy for water by subsidy for land - - can be partially justified from the point of view of the economy at large. Unfortunately, the details of the reform, especially the ***forced linkage*** between the aggregate increase in costs of irrigation water and the aggregate compensation payments to farmers, imply many difficulties:

- The costs and benefits associated with the reform vary among farmers, and has a potential for significant discrimination against some;
- The reform will yield a significant income transfer from growers of irrigated crops to non-irrigators;
- The reform creates artificial dependencies among farmers and imposes upon them an additional source of uncertainty (namely, uncertain compensation payments).

.)Main Difficulties (Cont

- The “cake of revenues” available for distribution is likely to shrink significantly with the planned large-scale transition from irrigation with fresh water to irrigation with recycled wastewater;

- ***Second best compensation scheme;***

- The application of the reform is quite costly and involves ***numerous technical difficulties.***

Concluding Remarks

- A ***comprehensive case study*** presents a preliminary evaluation of the quantitative impacts of the reform on Israeli farmers and illustrates most of the above difficulties;

- Although the 1/1/2002 was determined as a starting date of the reform, it has not been implemented yet;

- The Minister of Agriculture, who initiated the reform, is threatening to resign, if the reform will not be implemented soon;

- The General Director of the Prime Minister's office nominated a new committee to re-evaluate the whole issue of agricultural water pricing before applying the reform;

- The main reasons for the delay are the strong objection of some groups of farmers in some regions who are expected to lose significantly and an awareness of the difficulties, considered here, by some policy makers.