

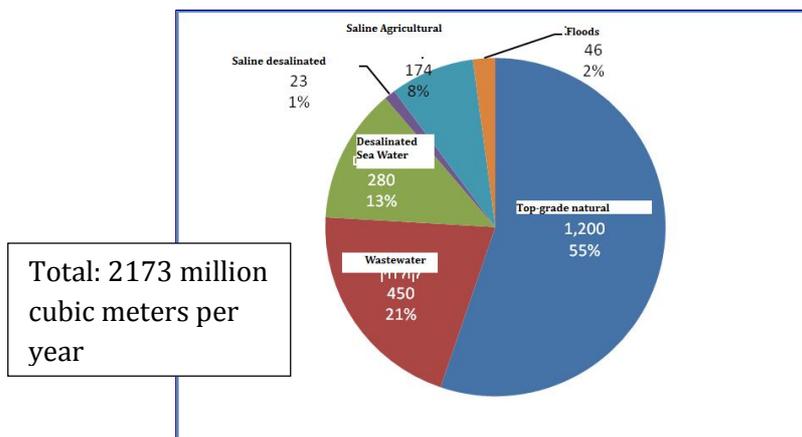


## Friends of the Earth Middle East Recommendations for Water and Agricultural Policies in Israel

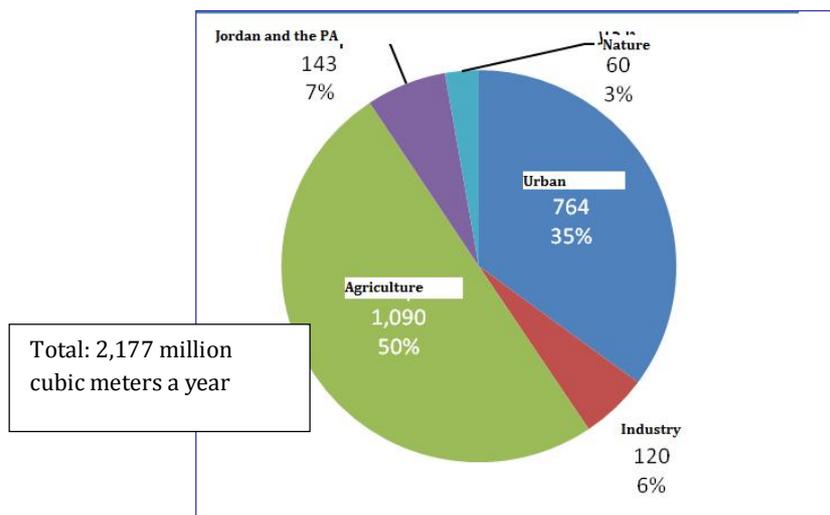
**This position paper recommends solutions for making the Israeli water sector more efficient and its consumption more sustainable.**

For many years, the Israeli water sector suffered from a shortage of fresh water and struggled to meet the growing annual demand. As a result, different strategies were implemented to manage the water shortage. These strategies were characterized by demand driven responses, including the use of treated waste water and desalination.

**Figure 1:** Israel's water sources as of 2010 (figures represent millions of cubic liters a year).



**Figure 2:** Water consumers (including treated waste water) provided by the State of Israel (figures represent millions of cubic meters per year).



**Friends of the Earth Middle East (FoEME)** aims to find sustainable solutions for the regional water shortage and identify solutions that will meet the demands of the public and nature. **FoEME's believes that the water economy as a whole must be based on preventing losses and reducing demand. Due to the high financial and environmental costs, increasing water supply by means of desalination should only be considered as a last resort and as a "security quota".**

Water management policies in Israel must encourage a reduction in demand in all sectors of the water economy. Recommendations for reducing demands in the domestic sector have been the focus of past studies published by FoEME. Special attention should be given to the agricultural sector – the largest water consumer in Israel, using 50% of the total water resources produced in Israel annually.

**FoEME** recognizes the importance of agriculture in terms of its values, nutrition and contribution to the economy. In this spirit, recommendations for the agricultural sector are primarily focused on reducing water demand (especially fresh water demand).

1. **Increase the tariff for fresh water in the agricultural sector.** Such a step carries some drawbacks alongside substantial benefits. Firstly, the immediate repercussion of an increase in the tariff for fresh water for agricultural use will be direct financial strain on farmers who rely on fresh water, who may abandon their crops (especially for crops competing with imported produce), or even cause a halt in production. The resultant reduction in agricultural production volume associated with rising fresh water tariffs will make the local market more reliant on food imports and its associated risks.

Regardless of increasing tariffs for fresh water, Israel is not capable of maintaining a self-sustained food market due to the low level of fresh water available per capita. In addition, in spite of the anticipated loss of revenue to the agricultural sector, and since this sector constitutes only a small percentage of labor, GDP and the export markets, the harm, if incurred, will be marginal with respect to the market as a whole. Such harm will be diminished if the Water Authority continues its policy of compensating farmers who provide proof for implementing water-saving measures (such as installing irrigation systems, shade nets, etc.).

The **major benefit for raising fresh water tariffs** is that the policy encourages the maximum use of treated waste water for irrigated agriculture purposes. This policy will also encourage farmers to grow water-efficient crops (such as olives and almonds), discourage farmers from growing water intensive crops (such as bananas and avocados). The policy will increase efficiency and adoption of water-saving technologies, while causing a shift towards the production of natural varieties that require lower quantities of water (avocados, dates and tomatoes).

**Table 1.** Water prices for different sectors as of July 1, 2011 (all rates per cubic meters, excluding VAT)

Domestic (water corporation supplier)	Industry	Agriculture (water supplier – Mekorot)			
		fresh water	Brackish	Wastewater <sup>2</sup>	
<b>NIS 7.44</b> (including sewage charges)	<b>4.83NIS</b>  Saline and wastewater <b>1.36-1.56</b>	Quantity A - up to 50% of quota <b>NIS1.65</b>	Depending on degree of salinity. Ranges from <b>NIS 0.67-1.0</b>	<b>0.8NIS</b>	<b>Water per quota</b>
		Quantity B 50-80% of quota - <b>NIS1.9</b>			
		Quantity C 80-100% of quota <b>NIS2.41</b>			
<b>11.97NIS</b> (Including sewage charges)	Exception up to 8% <b>Exception NIS 5.3</b>	Exception up to 10% <b>NIS3.62</b>	Exception up to 8% <b>NIS 0.84-1.25</b>	Exception up to 8% <b>1.0NIS</b>	<b>Water exceeding quota</b>
	Exception exceeding 8% <b>NIS6.3</b>	Exception exceeding 10% NIS 6.0	Exception exceeding 8% <b>NIS 1-1.5</b>	Exception exceeding 8% <b>NIS1.2</b>	

Source: The Water Authority 2010, OECD 2010: 26-27.

1. Does not include special rates for the Valley of Springs and Jordan Valley Regional Councils: NIS1.65-0.7 per cubic meters, see section 2).

2. Wastewater at a tab level for unlimited agricultural irrigation; does not include the Shafdan wastewater-treatment plant rates, which are higher and lower grade, at lower rates.

More specifically, FoEME supports raising the tariffs for fresh water for agricultural, making the top consumption rate (over 80% of the quota) equal to the marginal cost of fresh water in Israel, i.e. desalination cost. Furthermore, these revised tariffs should apply to the entire country. However, in places where there is concern over contamination of water resources and therefore the use of treated waste water is not possible, the price increase will be more moderate.

2. **Standardize fresh water tariffs for agriculture for all geographical locations.** Farmers in certain areas enjoy lower fresh water tariffs as a result of historic agreements and/or a lack of alternative effluents in these areas. For example, the Jordan River Valley and the Beit She'an Valley among others, enjoy very low tariffs – approximately NIS 0.7-1.6/ m<sup>3</sup> for fresh water. These lower tariffs makes agriculture in these areas more affordable at the expense of the environment. In addition, these historic agreements create inequality among farmers throughout the country. Variations in the fresh water tariffs among farmers in different geographic areas in Israel should be cancelled incrementally and other alternative effluents should be provided such as treated waste water.

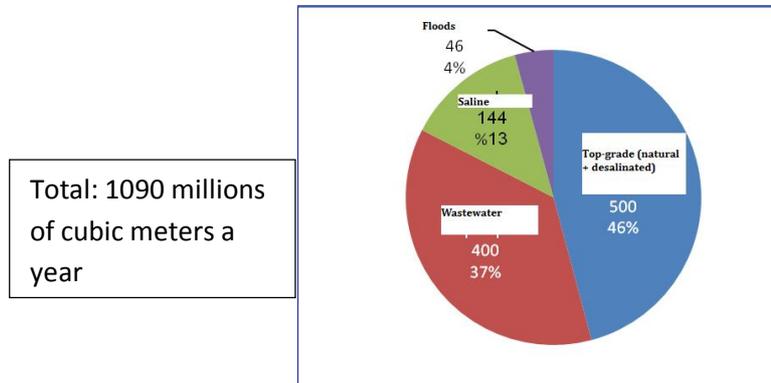
In desert-lying areas, agriculture should be based on local water sources (including brackish water) and/or recycled water. In areas where these alternative water sources are not available the government should encourage job creation in other fields or directly subsidize the farmers. When examining the use of local water sources for agriculture, the overall costs and benefits must

be weighed carefully, taking into consideration the local water source's ecosystem services, as local sources may dwindle as a result of excessive pumping, compared with the costs and benefits of agricultural land services that may be diminished as a result of a reduction in fresh water quotas.

3. **Lower the tariff for treated waste water for agriculture.** Farmers should continue to pay only the cost of conveying water from the wastewater treatment plants to the agricultural fields, and storing the effluent for irrigation. The state should subsidize the costs of treatment plants in areas that are distant from population centers.

4. **Increase quotas for marginal water (treated wastewater and brackish water) and reduce quota for fresh water for agricultural use.** This step has similar repercussions to raising the fresh water tariff and lowering the tariff of treated wastewater. It aims to encourage farmers to change their water-consumption patterns as they will pay more if they exceed the new quotas. This recommendation is in accordance with the master plan of the Water Authority, which anticipates a substantial reduction in fresh water quotas for agriculture along with an increase of quotas for treated wastewater. As with the recommendation for raising the tariff for fresh water, it is recommended to subsidize farmers who prove that they have adopted water-saving technologies.

**Figure 3** – Water sources for the agricultural sector in Israel (figures represent millions of cubic meters per year).



Source: The Water Authority 19:2011

Roughly 160-180 mcm of wastewater and treated wastewater are pumped annually to streams or absorbed into the ground. The state should immediately set up suitable sewage systems in all communities, and mandate the total reclamation of wastewater for agricultural purposes. Increasing the availability of treated wastewater by these means should help the agricultural sector reduce its fresh water consumption and thus significantly reduce the need for desalination.

The option allowing "A Plots" in moshavim to use treated wastewater should be promoted. "A Plots" are located adjacent to the residential areas and most are therefore not approved for irrigation by treated wastewater. Wastewater irrigation with full adoption of the Inbar Standards for properly identifying

treated waste water pumps and pipes with colored and printed markings, as is already adopted in public parks, has no sanitary implications even in "A Plots", provided that the standards are implemented and the necessary precautions are taken to prevent risks.

5. **Actively encourage the cultivation of water-efficient plant varieties, which are capable of being irrigated with marginal water and adoption of water-saving technologies.** This process will occur naturally if the above recommendations are adopted, but proactive encouragement by the Water Authority and the Ministry of Agriculture in this direction (for example in the form of a subsidy, research and development funds, as well as conferences and seminars for farmers on this issue) can maximize the resultant benefits. Furthermore, year-round investment in irrigation control systems to detect leaks should be examined to minimize water loss.

6. **Reduce the total area approved for irrigated agriculture.** Between 2000-2010 the total area of cultivated farmland was reduced by 10-25% as a result of urbanization and sprawl. The environmental implications for the reduction in agricultural area are varied. On the one hand, the loss of active farm lands minimizes environmental benefits related to agricultural areas such as the preservation of open space and seepage/ ground water inputs. On the other hand, farm lands have many external negative costs, such as soil and water pollution, decline in soil fertility and soil erosion. While there is no place in this publication to go into a deep discussion on this issue, it can be determined that in terms of the water sector, the smaller the total irrigated agricultural area and the more intensive the cultivation technique, the easier it is to maximize water efficiency, control costs, reduce leakage.

7. **Discourage agricultural produce exports.** A competitive and successful export sector is a clear interest for the Israeli economy, but its benefits should be carefully examined including the hidden costs arising from exporting large quantities of "virtual water" through the export of agricultural produce. In the past, the Ministry of Agriculture encouraged (through planting grants) cultivation of produce intended for export. This policy should be stopped and replaced with a policy that encourages the cultivation of water efficient varieties. In addition, a policy to restrict exports of virtual water through agriculture should be considered.

8. **Cover water reservoirs to prevent evaporation at a government subsidized rates.** Many water reservoirs for agricultural irrigation waters (both fresh water and wastewater) have high evaporation rates which lead to a considerable water loss. Covering the reservoirs will save tens of millions of cubic meters a year. Furthermore, it can be done by means of solar panels or sheets which would generate electricity and return the investment costs.

9. **Reduce livestock agriculture.** Livestock agricultural has many external costs including groundwater contamination, surface water contamination, emission of large amounts of greenhouse gases (largely methane), and a high consumption of fresh water. For example, to produce one liter of milk, 990 liters

of fresh water are needed (in Israel, this number is actually lower, since most of the animal feed is imported from abroad). The 2006 reform of the dairy sector contributed greatly to the reduction of environmental pollution from the cowsheds. However, the environmental impacts of livestock grazing on wildlife and vegetation species in surface water are still at critical levels. To moderate the negative impacts of livestock agriculture, policies should be enacted support the import of animal products and encourage the public to consume less meat and other animal based products and more fresh vegetable based foods.

**10. Encourage cross-border cooperation. Friends of the Earth Middle East** supports the adoption of solutions to regional water challenges by means of cooperation, which serves the common interests of all residents that share common water sources and basins. In the agricultural sector, there is a solid basis for cooperation between Israelis, Palestinians, and Jordanians in a variety of areas. For example, Israel has a vested interest for encouraging and supporting the establishment of wastewater treatment facilities in Palestine. Such systems, which hardly exist at present in the West Bank, will prevent the contamination of fresh water resources that are common to Israel and the Palestinian Authority, such as the mountain aquifer and cross border rivers that currently absorb large amounts of pollution from untreated wastewater. In addition, treated waste water for use in the Palestinian agricultural sector could enable the release of fresh water for other purposes and may help prevent excessive-pumping and the depletion of natural water sources.

**To read the full study on which these recommendations are based upon and for more information on FoEME, please visit our website at: [www.foeme.org](http://www.foeme.org).**

EcoPeace/ Friends of the Earth Middle East (FoEME) is a unique organization at the forefront of the environmental peacemaking movement. As a tri-lateral organization that brings together Jordanian, Palestinian, and Israeli environmentalists, our primary objective is the promotion of cooperative efforts to protect our shared environmental heritage. In so doing, we seek to advance both sustainable regional development and the creation of necessary conditions for lasting peace in our region. FoEME has offices in Amman, Bethlehem, and Tel-Aviv. FoEME is a member Friends of the Earth International, the largest grassroots environmental organization in the world.

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