

# Roundtable on Financing Water

## OECD-WWC-Netherlands Roundtable on Financing Water

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### Session 4. Background paper

#### Attracting private funding through public finance: A case study of desalination of sea water in Israel

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Israel has been facing the challenge of water scarcity since its establishment. At the end of the 1990s, the Israeli government decided to achieve independence in the field of water supply, and promoted tenders for the construction of several desalination plants. Today, desalinated water constitutes up to 85% of the drinking water in Israel and guarantees a reliability in water supply.

There are five seawater desalination plants in Israel: Ashkelon, Palmachim, Hadera, Sorek and Ashdod. A relatively small desalination plant in Eilat combines the desalination of water from sea and brackish wells.

#### Seawater desalination plants in Israel - overview:

Location of the facility	Name of Concessionaire	Implementation stage	Annual water supply (MCM)	Date to begin water supply	Agreement Type/Length
Ashkelon	VID DESALINATION LTD (owned by IDE Technologies Ltd + OakTree Investment Fund)	operating	117	August 2005	BOT 24 years and 11 months
Palmachim	VIA MARIS DESALINATION LTD - The company is fully owned by the Infrastructure Fund for Israel - 100%	operating	90	May 2007 (the water flow has been expanded over the years from 30 to 90 MCM/yr)	BOT 24 years and 11 months
Hadera	The H2ID Group is owned by IDE Engineering Technologies Ltd. and Housing &	operating	127	December 2009 (the water flow has been expanded over the	BOT 24 years and 11 months

	Construction Ltd.			years from 100 to 127 MCM/yr)	
Sorek	SDL - Sorek Desalination Ltd. is owned by IDE Engineering Technologies Ltd. + Hutchison Water Israel Holdings Pte. Ltd. (" HWIH ")	operating	150	November 2013	BOT at least until 19.5.2037 (or 24 years and 11 months from the beginning of the operation)
Ashdod	Ashdod Desalination Ltd. -fully owned by Mekorot Initiation and Development Ltd.	Temporary operating licence	100	October 2015	BOT at least until 8.12.2038 (or 24 years and 11 months from the beginning of the operation)

### **Operational model for desalination plants**

The water output of each desalination plant is fixed in the agreement with the relevant operator of the desalination plant. Over the years it has been decided to expand some of the facilities. Each year, the "Operations Committee" in the Water Authority examines the required annual desalination output, in accordance with the current condition of the water sector and the estimation for the coming year. Accordingly, instructions are given to the various desalination operators whether to produce the quantity specified in the agreement or if a reduction is required in the quantity of desalinated water.

### **Financing model of desalination plants**

PPP projects have been promoted by Israel in a variety of infrastructure areas since the mid-1990s, totalling more than NIS 30 billion (over \$7 billion) to date, about half of them in transportation, 20% in energy, and 23% in seawater desalination.

All of the major desalination plants established in Israel, with the exception of a desalination facility in Palmachim, were built using the BOT-method (Build, Operate Transfer) in which the concessionaire designs, finances, builds and operates the facility for 25 years. The desalination plant in Palmachim was built using the BOO-method (Build, Operate, Own) in which the facility remains in the ownership of the concessionaire after the end of the concession period.

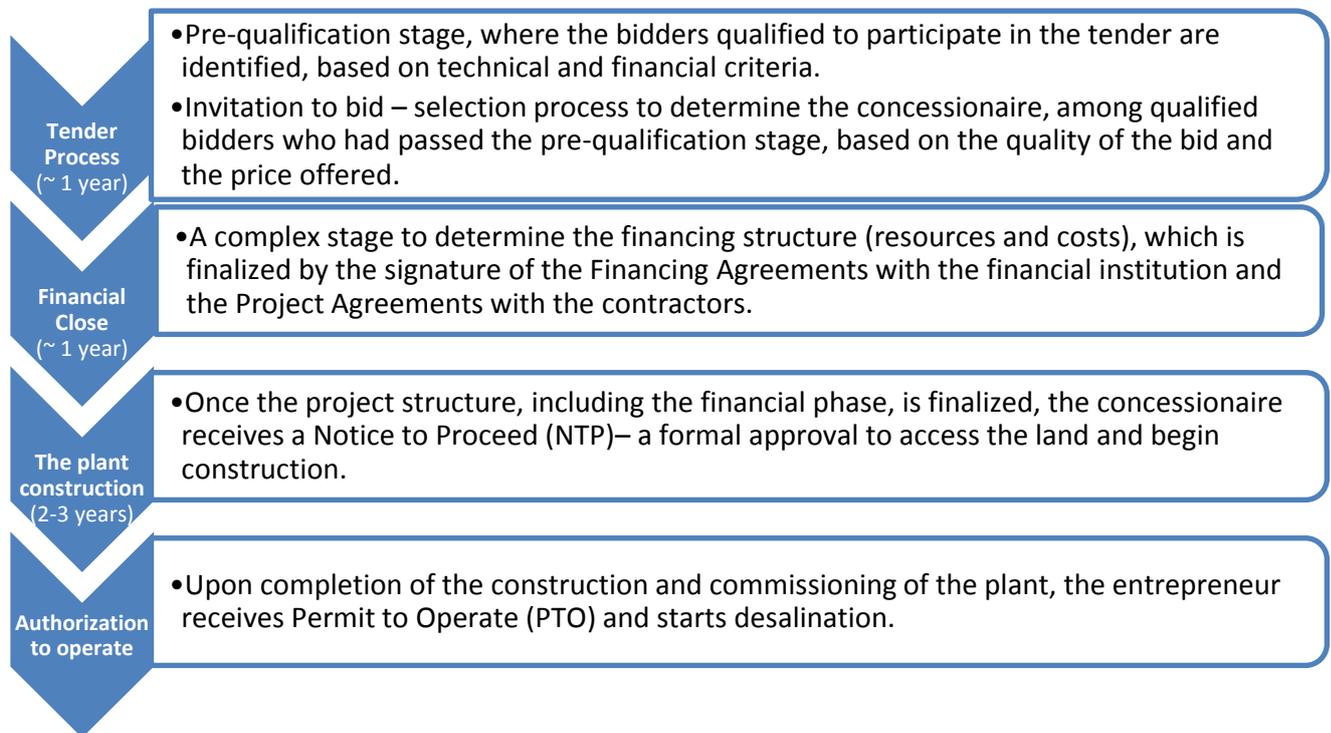
The State of Israel is currently promoting additional projects in the area of water, amongst others another desalination facility in northern Israel to supply water to the northern communities and a water purification facility in the central region.

### **The process of issuing a tender for building a desalination plant**

The inter-ministerial committee for water desalination is headed by the Senior Deputy to the General Accountant in the Ministry of Finance - the authority responsible for issuing and managing the desalination tenders. The tender committee comprises also representatives from the

governmental Authority for Water and Sewage, Ministry of Energy, the Budget Division of Ministry of Finance and the “Projects in cooperation with the private sector” division at the government-owned Inbal Insurance company. The committee is also being assisted by engineering, legal and financial advisers.

Once the tender has been published, a multi-staged process is held as follows:



### **Managing the project**

The Water Desalination Administration (the “WDA”), under shared responsibility of the General Accountant and the Water Authority, is responsible for managing water desalination projects on behalf of the government, from the moment of the award decision and on. The WDA is closely monitoring the planning and construction of the plants, as well as their ongoing operation, and ensures the compliance of the concessionaire with all the requirements of the contract, including quantity and quality of desalinated water, which is supplied to the national water system. Additional members of the WDA are the Budget Division of Ministry of Finance, Ministry of Energy and the “Projects in cooperation with the private sector” division at Inbal Insurance.

### **The rationale behind the PPP in the water sector**

From the early stages of formulating the Israeli policy with regards to the water market in general and water desalination in particular, and especially since the end of the 1990s – the approach was to strive to minimize the governmental involvement and increase competition in the market, by incentivizing the entry of private actors.

The Public Private Partnership system serves these aims and generates economic growth without increasing the short-term budget deficit of the government. The Built-Operate-Transfer (“B.O.T”) model is very suitable for the realm of water infrastructure, which is characterized by a long concession period (20-35 years) and a constant stream of revenues and the government defines

required outputs (namely, water quantities and water quality) instead of inputs (namely, the amount of membranes, the quantity of cement needed etc.). Moreover, this is an effective allocation of risks between the public and private sectors. The government becomes a purchaser of a service instead of being an owner, while the payment to the concessionaire is given through the water tariff.

In this model, the private sector is responsible for the planning, financing, construction, operation and maintenance. The fact that the desalination plant is built by its future operator is indeed critical, due to the synergies between the different project stages which enhance efficiency and cost-effectiveness. The whole life cycle of the project is taken into account already at the early construction phase (the so-called “Life Cycle Cost”), therefore a “Special Purpose Company” (“SPC”) is established for every project. The SPC enters into contractual arrangements with sub-contractors for construction and operation, and the owners of the SPC invest the equity required for the project. This approach attracts additional resources by incorporating private finance (e.g. institutional funding or banks) and is based on the optimal use of the private sector in constructing and operating public facilities, utilizing advanced know-how and technologies and thus achieving value for money.

Among the downsides of this model for the government are:

- Tender costs (“transaction costs”);
- Constraining future governmental budget;
- Temporary control of private sector over public infrastructures;
- Additional funding costs (due to transferring project risks to the private sector which incorporates them in the water price and since the cost of raising capital to the private sector is higher in comparison to the public sector).

### **Allocation of risks**

The concession agreement defines the risk sharing between the state and the concessionaire for every stage of the project life. Each side bears responsibility for the risks it is better positioned to manage – meaning that the public sector needs to transfer to the private sector the optimal share of risks and not the maximum share. Usually, the risks sharing will be allocated as follows:

- Concessionaire: construction risk (schedule and costs), operational risk, technology risk;
- State: expropriation risk, the risk of uncovering an archaeological site (Antiquities Law – 1978), statutory / legislative risk;
- Shared risks: demand-side risk, *force majeure*, financial risk.

### **Project finance structure**

Israel has applied the “Project Finance” approach to fund its water desalination projects – the revenues stream from the project throughout the concession period are the guarantee for repaying the debt for its construction. The payments structure in all the desalination plants in Israel is a constant payment by the government for cubic meter, based on availability (“take or pay” contract) and the actual amount of water supplied to the state. Mekorot company purchases the desalinated water and is reimbursed for these costs through the water tariff rate. Hence, the Water Authority takes into account the desalination costs when determining the water tariff for domestic use (which has a constant and a varying component, as explained above). Accordingly, the loans that are taken for constructing the desalination project are of the “Non-recourse” kind, and the collateral is mainly the projected cash flows in the project and the project itself. In this way, the risk exposure of the funding entities is limited mainly to the project itself, avoiding the risks deriving from other activities of the companies holding the SPC. The funding entities are usually organized as a consortium of banks and

institutional investors from Israel and abroad. The lending provided to the project is usually around 80% of the construction costs, while 20% is the equity invested by the owners of the concessionaire company.

The abovementioned finance structure creates two incentives for the project's success:

- High involvement of the funding entities in monitoring the concessionaire and the project, as the repayment depends upon its success.
- Incentive for the concessionaire to operate in a way that maximizes the potential revenues. The holders of the project company are the last ones in the distributions of cash flow from the project which is being generated only upon operation and in connection with water quantity and quality, which serves firstly the operational costs and then the senior debt. Thus, owners' equity and returns to shareholders depend on the success of the project.