This country profile was compiled by the OECD Secretariat and reflects information available as of March 2015. Further information and analysis can be found in the publication: OECD (2015) *Water Resources Allocation: Sharing Risks and Opportunities*, OECD Studies on Water, OECD Publishing. Country profiles for all of the 37 allocation regimes in 27 OECD and key partner countries surveyed for this project are available for download at: http://www.oecd.org/fr/publications/water-resources-allocation-9789264229631-en.htm.

ISRAEL

Overview and highlights

In Israel, nearly all water is publicly owned. The State acts as the legal guardian and manages it in the best interest of the public. Recent water reforms shifted the responsibility for the treatment of water from municipalities to municipal/ regional water companies. The reform aimed to raise efficiency levels and was spurred by concerns about deteriorating water quality, concerns about equity in access to water and economic development. Recent concerns about water shortages or scarcity, climate change and environmental improvement or protection have pushed forward on-going water reforms to build seawater desalination plants, which will significantly change traditional north to south geographical water allocation[1].

Three examples of allocation regimes are provided for Israel. They cover the allocation of treated wastewater for agriculture, the allocation of water produced from desalination, and the allocation arrangements arising from the founding of the municipal/ regional water corporations. Key characteristics of these various examples include:

Reuse of treated wastewater for agriculture:

- 75% of wastewater is treated and later re-used, mainly for agriculture. Treated wastewater is also for industry, gardening, etc.;
- Replacing the use of freshwater with treated wastewater helps to address inter-annual and inter-seasonal variability and build resilient to climate change. For example, during the summer, less freshwater is availability and treated wastewater is used to compensate;
- Tariffs vary among treatment facilities. The payment they receive for each cubic meter is significantly higher in summer than winter;
- Entitlements are granted in perpetuity, but conditional upon beneficial use.

Large scale desalination:

- Seawater and brackish water expected to provide a third of total water demand in Israel by 2020;
- Return flows considered on the basis of a quota of desalinated water that needs to be returned to sustain wet natural habitats;
- The allocation regime for desalinated water has established pre-defined priority classes, as follows: 1. Domestic, 2. Agriculture, 3. Industrial, 4. Environment;
- Water abstraction charges are based on metered volumes. They reflect water scarcity.

Municipal/ regional water corporations:

- Regulation of water resources' delivery and treatment;
- Water charges to be saved in a fund for the purpose of maintaining and developing local water infrastructure;
- Arrangements to deal with climate change include the deployment of a water network seeking to mitigate differences within and between areas.

[1] For further information on the Long-Term Master Plan for the National, please access: *http://www.water.gov.il/Hebrew/Planning-and-Development/Planning/MasterPlan/DocLib4/MasterPlan-en-v.4.pdf*.

Legal and institutional setting for water allocation

Institution	Scale	Main Responsibilities
Ministry of Energy	National	Policy and planning
Water Authority	National	Policy, planning and allocation
Municipal/ regional water companies	Local (Municipal)	Delivery of water to consumers and treatment of sewage; monitoring.
Drainage and river authorities	Basin	Management of ecosystems

Legal context for water allocation: Roman/ Statutory Law.
Legal definition of ownership of water resources: Ground and surface water are publicly owned.

Tracking water scarcity

A mapping exercise is under preparation to identify areas where water scarcity is becoming a problem. It will be included in the preparatory working papers for the master plan for sewage and wastewater treatment.

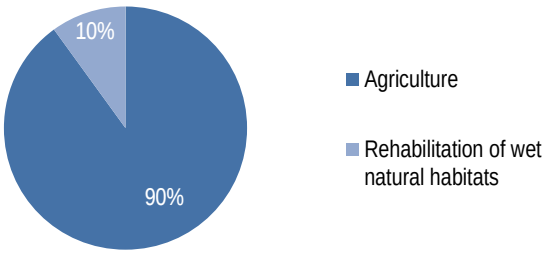
Allocation Regime 1st Example: Reuse of Treated Wastewater for Agriculture (national scale).

Physical features of the water resource

530 million cubic meters of sewage are produced annually in Israel. In order to deal with the country's water stress, 75% of the wastewater is being treated to secondary and tertiary levels and later used for agriculture, industry, gardening, etc., replacing the use of drinking water [2].

The flow rate is managed or controlled fully as the water systems are entirely regulated.

Mean annual inflow/ recharge consumed per use:



Defining the available resource pool

Are limits defined on consumptive use? Yes.

- In terms of the volume of water that can be abstracted and who can abstract water. This limit is linked to guiding documents (e.g. Regulation of treated wastewater in Israel) prepared by the Water Authority.

[2] *For further information on wastewater treatment please access: http://www.water.gov.il/Hebrew/ProfessionalInfoAndData/2012/12-Israel-Water-Sector-Wastewater-Treatment.pdf.*

Are environmental-flows clearly defined? Yes.

- According to each system's characteristics and the need to rehabilitate or sustain it at adequate levels. In some places a minimum quota of water has been set and must be allocated to ecosystems. Other flows including freshwater and terrestrial biodiversity are currently considered in ongoing works to address biodiversity in all habitats.

What is the status of resource pool? Neither over-allocated nor over-used.

Are there arrangements to deal with impacts of climate change? Yes.

- By improving the level of treatment wastewater in all treatment facilities to allow a wider range of uses for the treated water, including drinking; promoting the use of treated water for agriculture by subsidies and ensuring adequate supply levels; encouraging industrial plants to treat their own water and reuse it; and, using treated water to revive and sustain wet ecosystems.

Factors taken into account in the definition of the available resource pool		
Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)		
Base flow requirements		
Return flows (how much water should be returned to the resource pool, after use)		
Inter-annual and inter-seasonal variability	✓	In summer, less freshwater is available, hence, more treated wastewater is used to compensate. Tariffs for treatment facilities also vary – the payment they receive for each cubic meter of treated water during summer is significantly higher than winter.
Connectivity with other water bodies		
Climate change	✓	Wastewater treatment to replace freshwater. Planning of treatment facilities aims to meet future demands and to have surplus capacity, in case of drought years.

Entitlements to use water

Definition of entitlements

Are entitlements legally defined? Yes.

Are private entitlements defined? Yes, however, private entitlements in Israel are very rare. Nearly all of the water is owned by the public, the State being the legal guardian in all aspects and manages it in the best interest of the public. Municipal and regional water corporations have been established to manage water supply to consumers. However, they do not own rights over water, but are only responsible for delivery and quality of water, as well as the removal of wastewater after use.

Nature of entitlement: Defined as the purpose that water may be used for. Water corporations purchase their entitlements from the central water company (Mekorot) and are legally responsible for their delivery to end users.

Characteristics of entitlements

If the entitlement is not used in a given period, it remains in place for the period it was issued for.

Are entitlements differentiated based on the level of security of supply (or risk of shortage)? Yes. Based on an assessment of the size of land, type of crops and other agricultural needs.

Is there a possibility to trade, lease or transfer entitlements? Yes. Farmers can apply to the Ministry of Agriculture and request the reallocation of quotas. Sometimes reallocation is also done illegally.

Period granted for: in perpetuity, but conditional upon beneficial use.

Return flow obligations: not specified.

Type of users not required to hold a water entitlement to abstract water: None. Water is a public resource and delivery for different uses is done through the regional water corporations.

Requirements to obtain a new entitlement or to increase the size of an existing entitlement: Conditional on reallocation of entitlements.

Pre-defined priority classes

Abstraction charges

User category	Abstraction charge?	Basis for charge	Reflects water scarcity?
Agriculture	✓	Metering of volume	Yes
Domestic			
Industrial			
Energy production (not including hydro power)			
Hydro power			
Other. Specify:			

For industry and agriculture sectors, tariffs are planned to gradually increase, until they reflect the full cost of water and subsidies (currently funded by the domestic sector) can be removed.

Dealing with exceptional circumstances

(Information in this chart applies to all 3 examples in this profile)

Distinction between the allocation regimes used in "normal" and extreme/severe water shortage times? Yes.

How is the amount of water made available for allocation adjusted? For treated water, the amount available is dependent on the capacity of the treatment facilities (often stable throughout the year). For potable water, the use for agriculture is gradually decreasing over the years, as it is being replaced by treated water.

Definition of "exceptional" circumstances: Drought years are defined as years with less than 75% of average annual precipitation. However, the official declaration of a drought year depends on the Minister of Finance, due to the financial implications involved. During these years, tariffs for water use may increase and quotas may be limited. Water may be allocated from uses like gardening to agriculture or domestic uses and public saving campaigns are initiated by the government.

Legal bodies declaring the onset of "exceptional" circumstances: Ministry of Finance. Stakeholders such as farmers are also involved since they can apply to the Ministry of Agriculture, and through a consultation process with the Ministry of Finance over the impact of environmental damages, the decision is made.

Monitoring and enforcement

(Information in this chart applies to all 3 examples in this profile)

Responsible authority:

- In agriculture, Water Authority/ Ministry of Agriculture – monitored for every consumer;
- In domestic, municipal water corporations;
- In industrial, Water Authority – monitored for every plant;
- In environment, Water Authority/ Ministry of Environmental Protection/ Ministry of Agriculture;
- In transfer to the sea or another system Water Authority, National Nature and Parks Authority, Ministry of Environmental Protection.

Types of withdrawals monitored: agriculture, domestic, industrial, environment and transfer to the sea or another system.

Monitoring mechanisms: metering.

Sanctions: only in agriculture, where very high levies are imposed for overconsumption, both of effluents and potable waters. In domestic and industrial uses, consumption is not limited.

Conflict resolution mechanisms? Yes, consumers may apply to local water corporations to resolve any conflict. Subsequently, if conflict is not resolved, they can apply to the water authority.

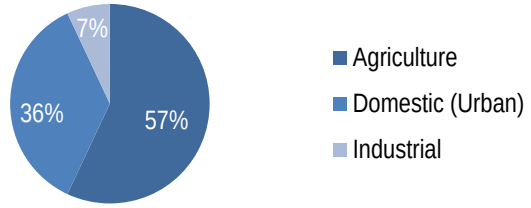
Allocation Regime 2nd Example: Large scale desalination (national scale)

Physical features of the water resource

Desalination plants are located along the Mediterranean coast and in Eilat (the Red Sea). Currently they provide 600 Million cubic meters (MCM) a year and are expected to provide 750 MCM/year by 2020, all produced from seawater and brackish water. This equals to a third of total water demand in Israel.

The flow rate is managed or controlled fully as the water systems are entirely regulated.

Mean annual inflow/ recharge consumed per use:



Defining the available resource pool

Are limits defined on consumptive use? Yes.

- For agriculture, in terms of the volume of water that can be abstracted. This limit is linked to guiding documents (e.g. Master Plan for Desalination in Israel 2020[3]) prepared by the Water Authority.

Are environmental-flows clearly defined? Yes.

- According to each system's characteristics and the need to rehabilitate or sustain it at adequate levels. In some places a minimum quota of water has been set and must be allocated to ecosystems. Other flows including freshwater and terrestrial biodiversity are currently considered in ongoing works to address biodiversity in all habitats.

What is the status of resource pool? Neither over-allocated nor over-used.

Are there arrangements to deal with impacts of climate change? Yes.

- Desalinated water adds to the balance of water that can be inserted into receding groundwater reservoirs to protect them from penetration of seawater and other pollutants. Also, used to sustain the balance in water bodies (creeks and reservoirs) to prevent deterioration of the water level (due to over-consumption and decreasing precipitation) enabling their use in the future.

Factors taken into account in the definition of the available resource pool

Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)		
Base flow requirements		
Return flows (how much water should be returned to the resource pool, after use)	✓	A defined quota of desalinated water is returned to the environment to sustain wet natural habitats.
Inter-annual and inter-seasonal variability	✓	During the summer, less freshwater is available and desalinated water is used to compensate.
Connectivity with other water bodies		

[3] For further information on the Master Plan for Desalination in Israel 2020, please access: *http://www.water.gov.il/Hebrew/ProfessionalInfoAndData/2012/07-Israel-Water-Sector-Desalination.pdf*.

Climate change	✓	Desalination of seawater and brackish water to replace freshwater. Planning of desalination plants aims to meet demands in the future and create surplus capacity, in case of drought years.

Entitlements to use water

Definition of entitlements

Are entitlements legally defined? Yes.

Are private entitlements defined? Yes, however, private entitlements in Israel are very rare. Nearly all of the water is owned by the public, the State being the legal guardian in all aspects and manages it in the best interest of the public. Municipal and regional water corporations have been established to manage water supply to consumers. However, they do not own rights over water, but are only responsible for delivery and quality of water, as well as the removal of wastewater after use.

Nature of entitlement: Defined as the purpose that water may be used for. Water corporations purchase their entitlements from the central water company (Mekorot); legally responsible for their delivery to end users.

Period granted for: in perpetuity, but conditional upon beneficial use.

Return flow obligations: not specified.

Characteristics of entitlements

If the entitlement is not used in a given period, it remains in place for the period it was issued for.

Are entitlements differentiated based on the level of security of supply (or risk of shortage)? Yes. Based on an assessment of the basis of size of land, type of crops and other agricultural needs.

Is there a possibility to trade, lease or transfer entitlements? Yes. Farmers can apply to the Ministry of Agriculture and request the reallocation of quotas. Sometimes reallocation is also done illegally

Type of users not required to hold a water entitlement to abstract water: None. Water is a public resource and delivery for different uses is done through the regional water corporations.

Requirements to obtain a new entitlement or to increase the size of an existing entitlement: Conditional on reallocation of entitlements.

Pre-defined priority classes

Abstraction charges

User category	Abstraction charge?	Basis for charge	Reflects water scarcity?
Agriculture	✓	Metering of volume	Yes
Domestic	✓	Metering of volume	Yes
Industrial	✓	Metering of volume	Yes
Energy production (not including hydro power)			
Hydro power			
Other. Specify:			

For the domestic sector, water consumption is set in quotas, according to the number of people in the household and socioeconomic variables. Once the base quota is passed, the tariff for surplus consumption applies. For the industrial and agricultural sectors, the tariffs are planned to gradually increase, until they reflect the full cost of water and subsidies can be removed.

Dealing with exceptional circumstances

Same information as above for 1st example.

Monitoring and enforcement

Same information as above for 1st example.

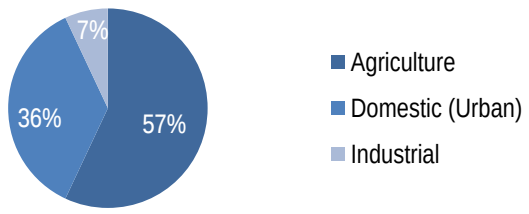
Allocation Regime 3rd Example: The founding of Municipal/ Regional Water Corporations (national scale)

Physical features of the water resource

Relevant reform to all water resources in Israel, dealing with the regulation of their delivery and treatment. Payments for the use of water will be saved in a fund to be used only for the purpose of maintaining and developing local water infrastructure.

The **flow rate is managed or controlled** fully as the water systems are entirely regulated.

Mean annual inflow/ recharge consumed per use:



Defining the available resource pool

Are limits defined on consumptive use? Yes.

- In terms of the volume of water that can be abstracted. This limit is linked to guiding documents (e.g. Long-Term Master Plan for the National Water Sector, 2012[4]) prepared by the Water Authority.

Are environmental-flows clearly defined? Yes.

- According to each system's characteristics and the need to rehabilitate or sustain it at adequate levels. In some places a minimum quota of water has been set and must be allocated to ecosystems. Other flows including freshwater and terrestrial biodiversity are currently considered in ongoing works being done to address biodiversity in all habitats.

What is the status of resource pool? Neither over-allocated nor over-used.

Are there arrangements to deal with impacts of climate change? Yes

- Aside from the measures described in the first two examples, the deployment of water network also considers differences between areas and seeks to mitigate this difference by delivering water from surplus areas to shortage areas. The type of water (treated or freshwater) is also taken under consideration due to price differences.

Factors taken into account in the definition of the available resource pool

Factor	Taken into account?	If taken into account, how?
Non-consumptive uses (e.g. navigation, hydroelectricity)		
Base flow requirements		
Return flows (how much water should be returned to the resource pool, after use)	✓	A defined quota of desalinated water is returned to the environment to sustain wet natural habitats.
Inter-annual and inter-seasonal variability	✓	During the summer, less water is available and the allocation to gardening and agriculture declines.
Connectivity with other water bodies		
Climate change		

Entitlements to use water

Definition of entitlements

Are entitlements legally defined? Yes.

Are private entitlements defined? Yes, however, private entitlements in Israel are very rare. Nearly all of the water is owned by the public, the State being the legal guardian in all aspects and manages it in the best interest of the public. Municipal and regional water corporations have been established to manage water supply to consumers. However, they do not own rights over water, but are only responsible for delivery and quality of water, as well as the removal of wastewater after use.

Characteristics of entitlements

If the entitlement is not used in a given period, it remains in place for the period it was issued for.

Are entitlements differentiated based on the level of security of supply (or risk of shortage)? Yes. Based on an assessment of the basis of size of land, type of crops and other agricultural needs.

Is there a possibility to trade, lease or transfer entitlements? Yes. Farmers can apply to the Ministry of Agriculture and request the reallocation of quotas. Sometimes reallocation is also done illegally.

[4] *For further information on the Long-Term Master Plan for the National, please access: http://www.water.gov.il/Hebrew/Planning-and-Development/Planning/MasterPlan/DocLib4/MasterPlan-en-v.4.pdf.*

Nature of entitlement: Defined as the purpose that water may be used for. Water corporations purchase their entitlements from the central water company (Mekorot); legally responsible for their delivery to end users.

Period granted for: in perpetuity, but conditional upon beneficial use.

Return flow obligations: not specified.

Type of users not required to hold a water entitlement to abstract water: None. Water is a public resource and delivery for different uses is done through the regional water corporations.

Requirements to obtain a new entitlement or to increase the size of an existing entitlement: Conditional on reallocation of entitlements.

Pre-defined priority classes

Abstraction charges

User category	Abstraction charge?	Basis for charge	Reflects water scarcity?
Agriculture	✓	Metering of volume	Yes
Domestic	✓	Metering of volume	Yes
Industrial	✓	Metering of volume	Yes
Energy production (not including hydro power)			
Hydro power	✓	Metering of volume	Yes
Other. Specify:			

Do pricing arrangements reflect scarcity? For the domestic sector, water consumption is set in quotas, according to the number of people in the household and socioeconomic variables. Once the base quota is passed, the tariff for surplus consumption applies. For the industrial and agricultural sectors, the tariffs are planned to gradually increase, until they reflect the full cost of water and subsidies can be removed.

Dealing with exceptional circumstances

Same information as above for 1st example.

Monitoring and enforcement

Same information as above for 1st example.