

# Israel

## Climate change impacts on water systems

Observed changes and trends	<ul style="list-style-type: none"> <li>Annual rainfall has decreased by 9% on average since 1993.</li> <li>An increase in the frequency and duration of extreme weather events has been observed in recent years, including years that were either exceedingly wet or exceedingly dry.</li> <li>Nearly seven consecutive years of drought were experienced from 2003 to 2010.</li> </ul>				
Projected impacts	<ul style="list-style-type: none"> <li>Increase in average annual temperatures of between 0.3 °C to 0.5 °C per decade.</li> <li>Decrease in precipitation by 10% by 2020 and by 20% by 2050.</li> <li>Reduction of at least 25% in water availability from 2070 to 2099, as compared to 1961 to 1990.</li> <li>Reduced flows to Lake Kinneret.</li> <li>Reduced recharge of groundwater aquifers and negative impacts on freshwater ecosystems.</li> <li>Further increases in the number and frequency of extreme weather events (e.g. drought years, floods, heat waves), which will result in damage to property and ecosystems.</li> <li>Increase in the desertification of the southern part of Israel.</li> <li>Sea level rise in the Mediterranean by 0.5 meters in 2050 and one meter by 2100.</li> <li>Changes in the salinity level of the Sea of Galilee.</li> </ul>				
Primary concerns	Water quantity	Water quality	Water supply and sanitation	Extreme weather events	Ecosystems
	✓	✓		✓	
Key vulnerabilities	<ul style="list-style-type: none"> <li>Israel is characterised by arid and semi-arid climatic conditions and water scarcity is already a major concern.</li> <li>Israel already consumes more water than its natural supply (essentially provided by rainfall), with an annual deficit of 300 million m<sup>3</sup>/year as of 2011.</li> <li>No water from the Jordan River now reaches the Dead Sea, which has lost one-third of its surface area since 1930.</li> </ul>				

Sources: Ministry of Environmental Protection (2010), *Israel's Second National Communication on Climate Change*, [http://unfccc.int/national\\_reports/annex\\_i\\_natcom/submitted\\_natcom/items/4903.php](http://unfccc.int/national_reports/annex_i_natcom/submitted_natcom/items/4903.php) (accessed 21 June 2012); Ministry of Environmental Protection (2009), *Coping with Climate Change in Israel*, [http://old.sviva.gov.il/bin/en.jsp?enPage=e\\_BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^17003&enZone=knowledge\\_center](http://old.sviva.gov.il/bin/en.jsp?enPage=e_BlankPage&enDisplay=view&enDispWhat=Object&enDispWho=Articals^17003&enZone=knowledge_center) (accessed 11 November 2012); OECD (2011), *Environmental Performance Review: Israel 2011*, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264117563-en>.

## Key policy documents

Document	Reference to water?	Type	Year	Responsible institution
		National adaptation strategy	Under development	
		National adaptation plan	Under development	

## Policy instruments

Areas	Policy mix	Regulatory instruments	Economic instruments	Information and other instruments
Water quantity				<ul style="list-style-type: none"> <li>Israel Climate Change Knowledge Centre: Established by the Ministry of Environmental Protection in 2011, it aims to gather and co-ordinate scientific knowledge available on climate change. Information gathered will be incorporated in policy documents and will contribute to the formulation of a national plan on adaptation to climate change, <a href="http://old.sviva.gov.il/bin/en.jsp?enPage=e_BlankPage&amp;enDisplay=view&amp;enDispWhat=Zone&amp;enDispWho=knowledge_center&amp;enZone=knowledge_center">http://old.sviva.gov.il/bin/en.jsp?enPage=e_BlankPage&amp;enDisplay=view&amp;enDispWhat=Zone&amp;enDispWho=knowledge_center&amp;enZone=knowledge_center</a>.</li> </ul>
Water quality				
Water supply and sanitation			<ul style="list-style-type: none"> <li>Water pricing: To promote more efficient water use, tariffs for the domestic sector were raised by 40% in 2010.</li> </ul>	
Extreme weather events				
Ecosystems				

## Main research programmes

- Israel Climate Change Knowledge Centre: (see description above), [http://old.sviva.gov.il/bin/en.jsp?enPage=e\\_BlankPage&enDisplay=view&enDispWhat=Zone&enDispWho=knowledge\\_center&enZone=knowledge\\_center](http://old.sviva.gov.il/bin/en.jsp?enPage=e_BlankPage&enDisplay=view&enDispWhat=Zone&enDispWho=knowledge_center&enZone=knowledge_center).

## Principal financing mechanisms and investment programmes

## Highlights and innovative initiatives

- Reuse of treated domestic wastewater** (effluent): To ensure high-quality effluent for irrigated crops, soil aquifer treatment (SAT) has been used at the Dan wastewater treatment and reclamation plant in Tel Aviv (130 million m<sup>3</sup>/year or about 25% of total wastewater treated). Effluent is discharged to sand infiltration fields, where physical, biological and chemical processes treat it before reaching the aquifer.
- Large-scale desalination of seawater, maximising energy efficiency:** Three large-scale desalination facilities currently provide 320 million m<sup>3</sup> of potable water to all sectors. By 2015, 2025 and 2050, respectively, new desalination facilities along the southern end of the country's Mediterranean coast are expected to cover 62.5%, 70% and 100% of domestic water demand. Energy efficiency is maximised through the bidding process for the construction of these plants. Energy efficiency is promoted by giving preference to natural gas (rather than use of coal) and to efficient technological energy recovery systems. Israel's desalination water production is therefore among the most energy-efficient (3.5 kWh/m<sup>3</sup>) and cost-efficient (USD 0.54/m<sup>3</sup>) in the world. While large-scale desalination significantly increases water availability, it has potentially adverse environmental impacts, in particular in the form of greater energy consumption and thus, increases in greenhouse gas emissions.