Box 16.3: **Israel is finding that desalination poses its own challenges**

Declines in freshwater quality and quantity in an already water-poor region have made it urgent for Israel to develop new approaches to water management.

Israel began desalinating water five decades ago (Avgar, 2018). Today, more than 35% of freshwater production comes from desalination (700 million m^3). By 2019, desalination provided 70% of domestic and municipal water. The government is targeting 1 100 million m^3 by 2030 (Government decision #3866).

The growing volume of desalinated water is creating challenges of its own. Lack of magnesium in the daily diet is associated with heart disease and this condition is becoming more prevalent in Israel in areas where desalinated water is the only source of drinking water, spurring discussion about whether to add magnesium to the water (Rosen *et al.*, 2018).

Desalination has also resulted in saltwater intrusion into aquifers and agricultural soil, owing to the use of reclaimed water for irrigation. Damming the Sea of Galilee to prevent it from flowing through the Jordan River into the Dead Sea has also led to a drop in sea level.

The vast use of reclaimed water has totally re-organized Israel's water supply and sanitation sector. In 2019, some 93% of wastewater was centrally treated and 86% was re-used in agriculture.

One emerging concern being investigated is the potential influence of contaminants such as pharmaceutical drugs and hormones on public health. These contaminants are not completely eliminated by wastewater treatment plants and might spread to crops and other agricultural products through irrigation. As Miarov *et al.* (2020) note, 'monitoring and regulation of these compounds are uncommon around the world and should be a priority due to Israel's high use of wastewater.'

Reducing demand will be vital to ensure sustainable management of the water sector in Israel. This will require a combination of technology, economic incentives, education and public awareness campaigns. Food security will benefit from producing more with the same amount of water. The national Agricultural Research Organization's Volcani Centre has been targeting crop species which consume little water and would, thus, be adapted to the local climate and soils; the centre has taken an approach typical of the Israeli research culture, a two-way flow of information between researchers and farmers.

Source: compiled by author