Impacts of Climate Change in Israel and the Middle East

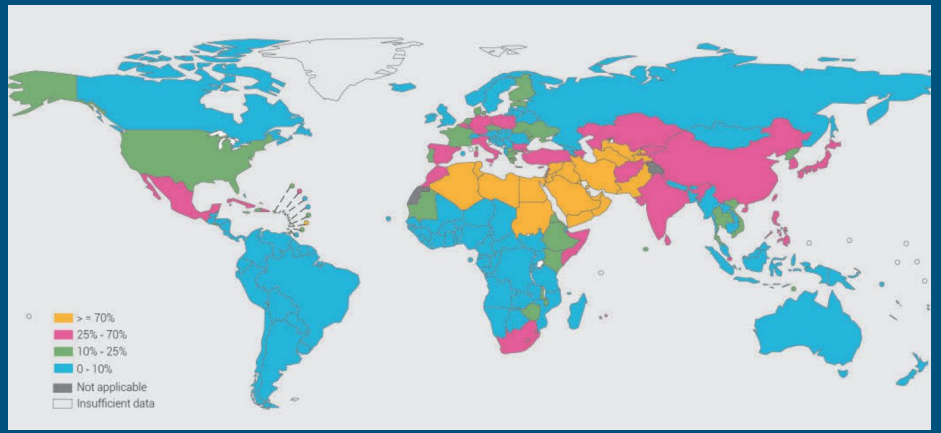
חיים וסביבה

Water

- Israel is a global leader of wastewater reclamation and seawater desalination, producing 2.1 billion cubic meters annually.
- 31% of irrigation water in Israel originates from wastewater.
- Sorek, the largest seawater reverse osmosis desalination plant in the world, produces 634,000 cubic meters of water daily, or 20% of domestic consumption.
- However, the cost per cubic meter is about 55 cents, compared to 10 cents per cubic meter of freshwater from Israel's natural resources. Unfortunately, these natural resources are rapidly declining, exacerbated by climate change.
- Urbanization, population growth, climate change, and increased standards of living are overburdening water infrastructure.

Water Scarcity

- Out of 37 countries facing ‘extremely high’ water distress, 15 are in the Middle East (Water Stress Index).
- According to the World Bank, Israel takes 87% of the West Bank aquifers, leaving Palestinians with only 13%. The result is that Israeli settlers on the West Bank get access to 300 liters of water a day, leaving Palestinians with only 75 liters per day (less than the WHO standard of 100 liters per day).
- Privatization has resulted in poorer water quality at higher prices, alongside more pollution from plastic bottles.
- Four out of 10 people globally will not have access to water by 2030 (United Nations).



Water Scarcity in Jordan

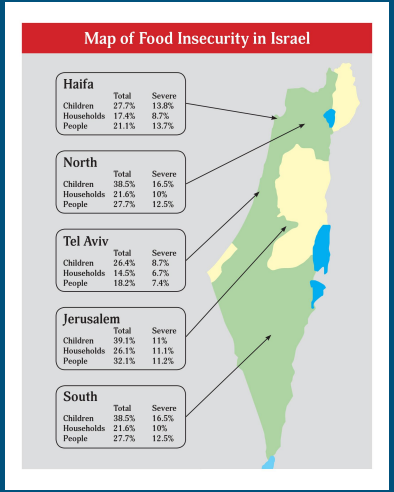
- Jordan gets nearly ⅔ of its water from aquifers, which are drying up.
- Only 9 countries in the world receive less annual precipitation than Jordan (less than 50mm per year).
- Jordan ranks fifth in nations facing the greatest water stress (World Resources Institute).
- Of Jordan's 12 groundwater basins, 10 are being pumped at a deficit.
- Groundwater is being extracted at twice the rate that it is replenished.
- Population growth accelerates water scarcity (6 million people in Jordan in 2006 to around 10 million people today).
- In Jordan, over 50% of the water supply is diverted to agriculture, and half of the remaining supply is lost due to misuse, pollution, or theft.
- Scientists predict that as the global temperature rises 4.5 degrees Celsius by 2100, Jordan will experience a 30% decrease in annual rainfall, but rainfall intensity will increase, creating more flash floods.

Water Scarcity in Gaza

- Only 1/10 Gazans have access to safe drinking water.
- Just 3% of the territory's shrinking water supply remains safe for human consumption.
- According to the UN Conference on Trade and Development, water scarcity could render Gaza uninhabitable by 2020.
- Increased temperatures and delayed rainfall due to climate change have led to the need for more water and electricity. The Israeli blockade prevents this, exacerbating the environmental impact.
- If the state of emergency in Gaza's water and sewage sector continues, an endemic disease outbreak or other public health crisis is imminent, with the risk of it spreading to Israel and Egypt.
- Contaminated water causes 26% of all illnesses in Gaza.
- Palestinians in Gaza have access to approx. 27 litres of water per person per day (2014), much less than the 100 litres recommended by WHO.

Global Food Shortages

- Israel imports 90% of its grains and legumes, making it totally dependent on availability and affordability in ‘breadbasket’ nations.
- Wheat emergency stocks in Israel are at ~135,000 tons, while Israelis consume 1.1 million tons of wheat a year. Emergency stocks of feedstuffs for animals would meet demand for about two weeks.
- Israeli emergency stocks are maintained by import companies, not the government.
- Monoculture and genetically engineered seeds are hurting natural crop resistance.
- Natural disasters can lead Israel to being dangerously unprepared for food shortages.

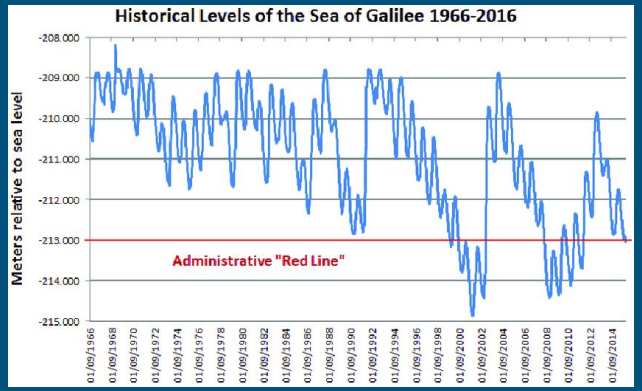


Natural Disasters

- The warming process in the Mediterranean basin is 1.5x more rapid than in other regions of the world.
- The growing extremes in temperatures will mean the shutdown of public life in Israel for a few days per year.
- Israel will become more reliant on air conditioners. Intolerable heat waves and the resulting influx of air conditioner usage could collapse the power grid.
- The International Energy Agency estimates that by 2050, 1.9 billion people living in hot countries will be without access to an air conditioner.
- By 2100 the Israeli summer is likely to be 49% longer, and the winter will be 56% shorter.
- Sea-level in the Mediterranean is projected to rise 0.5 meters by 2050, and possibly reach 1 meter by 2100.

Natural Resource Depletion

- Future rainfall supply could decrease by up to 30%, with more frequent and prolonged droughts, combined with increased evaporation.
- The Dead Sea loses about one meter each year, mostly from the reduced water supply from the Jordan River.
- The Sea of Galilee has fallen about 27m since 1960 from growing water demands combined with dry winters.
- The Jordan River's flows have been reduced from 1300MCM per year in the 1960s to less than 10MCM per year in 2013.
- The Dead Sea has shrunk by ⅓ in the last two decades.
- 97.7% of Israel's electricity production comes from oil, gas, and coal sources (2015).



Waste

- Israel produces 5.3 million tons of waste per year, an average of 1.7 kg per person per day.
- Just 21% of the waste is recycled.
- A source separated recycling system means the public is responsible for separating their waste, requiring public education and cooperation.
- Just 10% of recyclable waste makes it into the correct bins.
- Recycled plastics in Israel are unsustainably turned into disposable single use items.
- More than ⅓ of Israel's waste is organic matter that can be composted, however there are no industrial compost sites in Israel.
- Food scraps that break down in landfills create methane gas.

Climate Refugees and Security

- The World Bank predicts that by 2050 there will be over 140 million climate refugees worldwide.
- The ‘weaponization of water’ - dams becoming a focal point in the struggle and a weapon in the war.
- Migration may constitute the most critical societal response to climate perturbations. The massive out-migration from Syria’s northeast and the Assad regime’s inability to provide the basic needs of these migrants arguably contributed to the outbreak of the civil war.