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for Social Policy Studies in Israel

Investment and Returns in the Environment and Health: The Water Sector, Energy, and Government Expenditures

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Or Siman-Tov, Yael Yavin, Nir Kaidar, and
Maya Sadeh

Introduction

Security concerns in Israel often push environmental issues to the bottom of the national agenda. Yet addressing these issues touches on some of the most basic and essential human needs: clean air, energy security, clean and plentiful drinking water, and safe, healthy food, access to nature, open spaces, and more.

In Israel, as well as globally, public discussion of environmental topics focuses mainly on climate change. But the environmental crisis has three major components — biodiversity loss, anthropogenic pollution, and climate change — and the challenges they pose are tightly interlinked. In recent years, numerous tools have been developed for measuring the state of the environment and its resources, allowing countries to assess their progress and compare their performance with that of other nations. Examples include the UN's SDG (Sustainable Development Goal) Index, launched in 2015 to promote environmental, social, and economic development by 2030;[1]

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1 See the UN website.

the NCI (Nature Conservation Index), developed at Ben-Gurion University of the Negev and launched in 2024, which evaluates 180 countries on four core parameters — endangered species, habitat health, the size and quality of nature reserves, and the effectiveness of conservation programs;[2] and the EPI (Environmental Performance Index), developed by researchers at Yale and Columbia Universities, launched in the mid-2000s. Every two years, the EPI ranks 180 countries on climate change performance, environmental health, and ecosystem vitality across 58 performance indicators in 11 categories (Block et al., 2024).[3]

Israel's standing in the environmental domain will be examined using the EPI. In 2024, Israel received a score of 48 out of 100 in the overall index, ranking 70th out of 180 countries.[4] Since 2014, its overall score has improved by 0.4 points. However, it is important to note that the index reflects statistical data and does not always mirror on-the-ground reality. For example, in the area of the *environment and health*, Israel received a weighted score of 64.4 and ranks 35th and above the trendline (Figure 1A), due to indicators such as drinking water and wastewater treatment and exposure to lead, even though its scores and ranking on air quality (68% of the environmental health score) are low. Although Israel's air quality is better than that of countries such as India and China, exposure levels to fine particulate matter (PM2.5) and nitrogen oxides (NO_2) are among the highest in the OECD, and Israel consistently ranks among the countries with the poorest air quality in this regard. Poor air quality in Israel is also reflected in premature mortality (a loss of about 66,000 life-years), estimated at about 5,500 deaths per year (Levi & Karakis, 2024). Moreover, although Israel ranks very low (165 out of 180) in per capita municipal waste generation due to the large volume of waste produced per person, it receives exceptionally high scores and rankings in solid waste management — namely waste collection and treatment (score of 100 and rank of 1 in this category). In this case, the score and ranking do not reflect on-the-ground reality at all, as recent years have seen severe deterioration: criminal actors have entered the sector, and large quantities of waste are dumped in open areas and illegally burned (Lavie, 2025; Sadeh & Siman-Tov, 2024).

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2 See the BioDB website.

3 See also the Yale University website.

4 The data on the website are updated periodically, so minor differences may exist between the figures shown online and those reported here.

It seems that Israel's performance in *ecosystem vitality* reflects on-the-ground reality more accurately (Figure 1B). Israel received a score of 42 out of 100 and ranks 135th, due to a low ranking in species conservation (Biodiversity & Habitat index) (149) and in the status of endangered species (Red List Index) (153), and a mid-range ranking for the condition of terrestrial and marine biome and habitats within protected areas. In agriculture-related indicators (production of agricultural output with minimal environmental damage), Israel's performance has deteriorated in the last decade, and ranks 130th. In *climate-change preparedness*, Israel is ranked only 83rd, owing to high methane emissions (178) and its minor movement toward the global goal of net-zero emissions by 2050 (115) (Figure 1C). On the carbon-flux indicator — which measures the balance between land use types that generate emissions (e.g., roads and built-up areas) and those that sequester carbon (e.g., natural vegetated areas) — Israel ranks 154th with a score of 11.4, having fallen by 47 points since 2014, a sharp decline reflecting development pressures on open spaces. These data make clear that the state must invest in smart and dense planning and development and intensify conservation efforts of open spaces.

Figure 1A. Score in the area of the environmental health versus the total EPI index score, international comparison, 2024

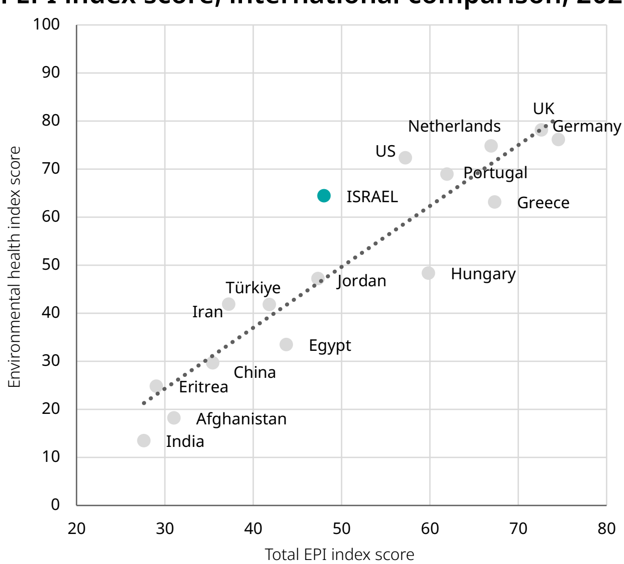


Figure 1B. Score in the area of the ecosystem vitality versus the total EPI index score, international comparison, 2024

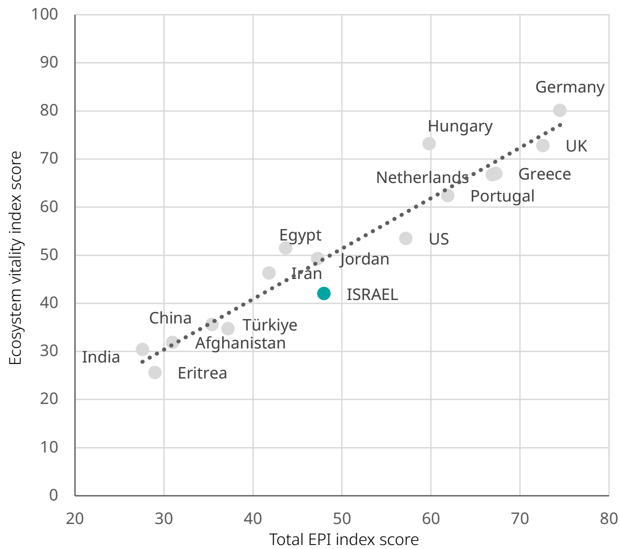
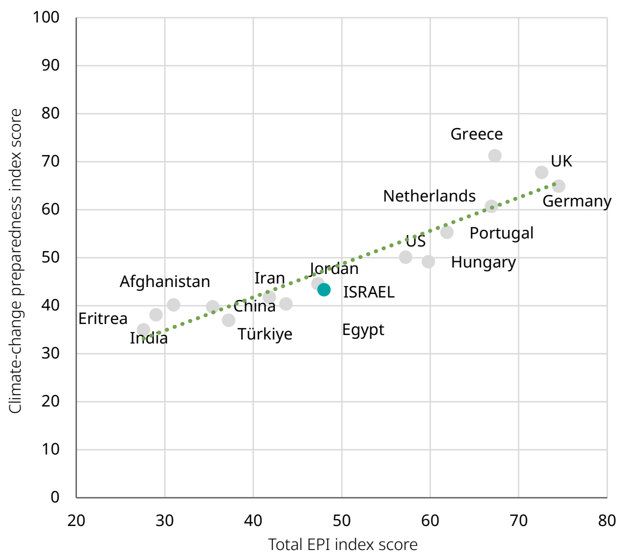


Figure 1C. Score in the area of climate-change preparedness versus the total EPI index score, international comparison, 2024



Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: EPI

This chapter is divided into three main parts. The first examines government investment in environmental protection. The second focuses on the energy sector and reviews the available renewable alternatives, their feasibility, their economic viability, and the environmental and health implications of transitioning to them. The final part addresses Israel's water sector in its various dimensions, including the shift to desalination and the importance of preserving natural water sources.

Government expenditure on environmental quality

Government spending on environmental protection includes expenditure on waste treatment; nature conservation, including biodiversity conservation; reducing air and water pollution; and mitigating climate change and its impacts. The environment is a public resource and directly affects citizens' well-being. It also helps reduce morbidity and, in turn, healthcare system costs (Xia et al., 2022), preserve agricultural productivity (Omer et al., 2005), and save energy (Li et al., 2012). This section reviews the composition of government spending on environmental protection and how it has changed, and presents an international comparison of spending on waste treatment, the largest component of environmental spending in Israel.

In 2024, actual public spending on environmental protection in Israel totaled about NIS 10.7 billion (in 2024 prices),[5] around 1.2% of total public sector expenditure (excluding interest payments on public debt). Most of this spending — about NIS 9 billion (87%) — is financed by local authorities, with the remainder financed by central government. As noted, most expenditure is directed to waste management, as shown clearly in Figure 2, which presents spending between 2013 and 2024 by category. Local authorities finance 92% of this component. In 2024, spending on waste treatment accounted for 83% of total environmental protection expenditure, while spending on wastewater management accounted for 8.4%. Spending on air pollution prevention is particularly low, despite Israel's relatively high mortality attributable to air

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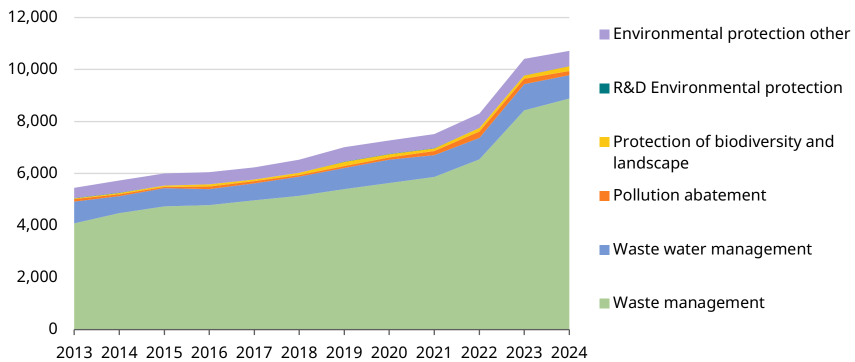
5 See the CBS, Table 25.1, General government expenditure, by function, September 23, 2024. Expenditure on environment protection is classified according to COFOG (Classification of the Functions of Government), a universal classification system for functions of government expenditure developed by the UN. Data for 2024 were taken from OECD, 2025b.

pollution.[6] Only a negligible share of the budget (less than 0.02%) is invested in research and development in environmental protection — and this share has been declining over time.

Looking over time, in 2024, expenditure on waste treatment was 54% higher than in 2013, even though the population grew by only 25% over the same period — with the main surge occurring in the last three years (2022–2024). The explanation is that starting in 2022, the Maintenance of Cleanliness Fund began to be used extensively to establish advanced facilities for waste treatment and recycling. Notably, this investment is intended to reduce spending on waste treatment over time. By contrast, spending on wastewater management increased by only 7% over the period — about one-quarter of the rise in population — making it difficult to manage wastewater properly and leading to a rise in malfunctions (we expand on this in the section on water management and environmental resource management).

Figure 2. Government expenditures on environmental services, by sub-category

NIS millions, 2024 prices



Note: The category "Environmental protection other" relates to environmental education and training, regulation and enforcement, etc.

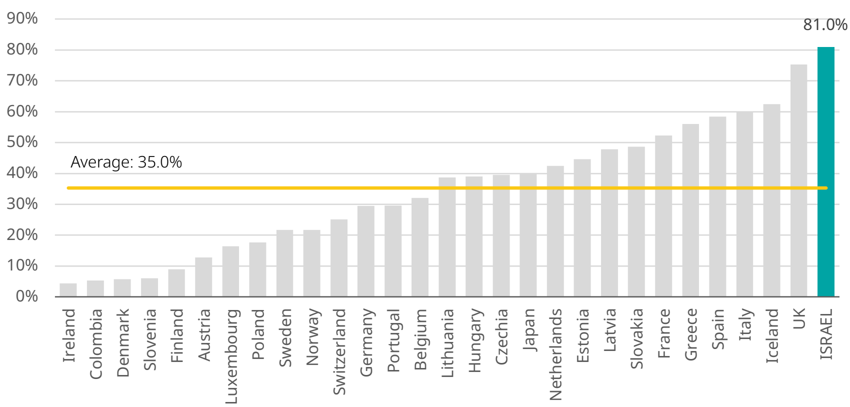
Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: OECD

6 In 2023, 5,510 cases of premature death were recorded as a result of exposure to fine particulate matter, nitrogen dioxide, and ozone. For more details, see Levi and Karakis (2024).

As noted, local authorities bear most of the cost of waste management, which includes the costs of sorting waste, transporting it to sorting and landfilling sites, landfilling costs, royalties paid to the Israel Land Authority, and the landfill levy (which is transferred to the Maintenance of Cleanliness Fund) (Infospot, 2025; State Comptroller, 2025). For example, in 2025 the Jerusalem municipality spent about NIS 690 million on waste management overall — around 35% of the municipality's expenditure under "local services" and about 7% of its total budget.

An international comparison (Figure 3) shows that, in 2023, Israel's share of spending on waste management out of total environmental expenditure was the highest among OECD countries — 81%, compared with an OECD average of about 35%. Part of this gap reflects the increase in investment in waste infrastructure noted above, but the spending gaps were also large earlier (in 2021, for example, Israel's share was 78% compared with an OECD average of 39%).

Figure 3. Government expenditure on waste management as a percent of total government expenditure on environmental protection, international comparison, 2023



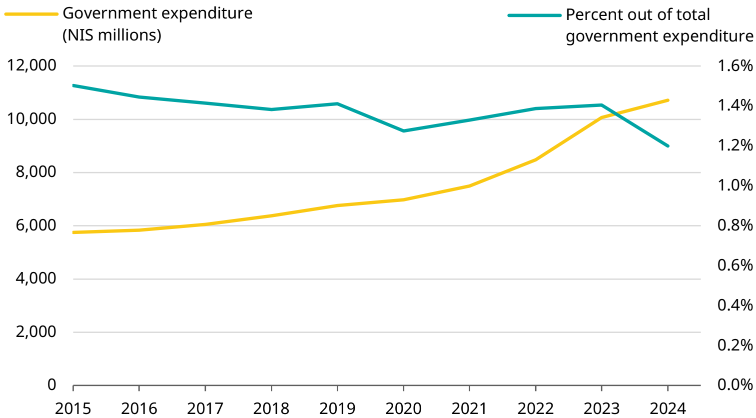
Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: OECD

Among the reasons for Israel's high spending on waste treatment are the shrinking number of landfills, which has driven up both disposal costs and the gate fees charged by landfill sites; inefficient arrangements by the Ministry of Environmental Protection for separating waste at source; and the lack of facilities for generating energy from waste (Daskal & Ayalon, 2021). One effective way to reduce spending in this area is to shift the cost of waste treatment onto those who produce the waste, as is common in many local authorities in Europe, the US, Canada, and East Asia that implement PAYT (Pay-As-You-Throw) policies. This approach provides a direct incentive to reduce waste generation and disposal and encourages separation and recycling. Adopting it in Israel could substantially reduce spending on waste treatment. At the same time, given the widespread dumping of waste in open areas in Israel, steps should be taken to foster a culture of environmental responsibility and strengthen enforcement.

Looking at trends in total public expenditure on environmental protection over time (Figure 4), actual spending rose from NIS 5.8 billion in 2015 to NIS 10.7 billion in 2024 (in 2024 prices). Over the same period, its share of total government expenditure fell by 0.3 percentage points — from 1.5% to 1.2%. The drop in spending in 2020 can be attributed to the rise in other government expenditures during the COVID-19 period. This was followed by a slight increase in the relative share of environmental spending, but, in 2024, there was another decline, apparently due to the government's higher defense spending. As part of recent cuts, the Ministry of Finance canceled a NIS 200 million budget earmarked for climate initiatives (2023–2024); reduced funding from the Citizens of Israel Fund for renewable-energy projects (of the NIS 190 million planned for 2025, only NIS 10 million was allocated); froze the transfer of funds for closing environmental gaps in the Arab sector that had been promised under Government Decision 550 (2021);[7] and halted the transfer of about NIS 11 million to support environmental organizations (Adam, Teva V'Din, 2021, 2023, 2025a, 2025b; Gaton, 2025; Sadeh & Shafran-Natan, 2023).

7 Government Decision 550 from October 24, 2012, Decision 550: Five-Year Development Plan for Arab Society to 2026.

Figure 4. Government expenditure on environmental protection and as a percent of total government expenditure (net of financial transfers)
NIS millions, 2024 prices



Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: CBS

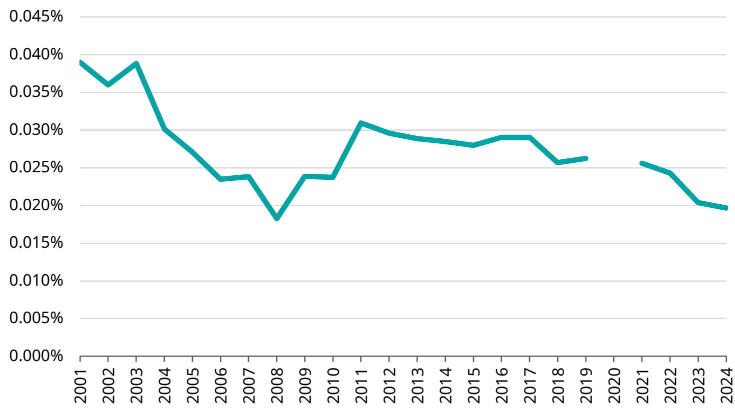
It is important to note that government spending does not capture total public expenditure on environmental protection. In many European Union countries, environmental regulation is relatively stringent — for example, carbon taxes, laws aimed at reducing emissions from vehicles, extended producer responsibility for recycling electronic waste, and more. Israel has also recently introduced a carbon tax, but it is relatively low, mainly the levy imposed on natural gas. The tax per ton of carbon dioxide in Israel currently stands at NIS 33, and it is expected to rise gradually to NIS 192 per ton by 2030.[8] In contrast, in Europe the tax in 2024 ranged from €11 (about NIS 44) per ton in Spain to €133 (about NIS 530) per ton in Switzerland (Cayol et al., 2025).

8 According to Government Decision 1261 from January 14, 2024, Taxation of Greenhouse Gas and Local Pollutant Emissions (the Carbon Tax).

Environmental protection as a share of GDP

Figure 5 presents the budget of the Ministry of Environmental Protection as a share of GDP from the early 2000s to the present. It is clear that in the initial years this share declined sharply, reaching an all time low in 2008 of 0.018% — the lowest point in all the years examined. Between 2008 and 2011, the share increased, but then it began to fall again — though at a more moderate pace — until in 2024 it once again approached the 2008 low.

Figure 5. Ministry of Environmental Protection budget as a percent of GDP



Note: For 2020, data were not available.

Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: Ministry of Environmental Protection, Budget key

In summary, although public spending on environmental protection in Israel has grown over the past decade, reaching NIS 10.7 billion in 2024 (2024 prices), the share of expenditure as a percentage of GDP has declined over the years, as has its share of total government expenditure, which today stands at only about 1.2%. Most of this expenditure is directed toward waste management, with only a very small share allocated to areas such as air pollution prevention, research and development, or reducing environmental disparities.

The electricity sector and green energy

Background

Electricity production in Israel has relied for decades on finite fossil fuels — initially oil and coal, and in recent years primarily on the fossil gas (commonly referred to as *natural gas*) discovered in Israel. According to estimates, Israel's fossil gas reserves will suffice for local consumption for about 20 years, depending on the rate of extraction, the extent of exports, the discovery of additional gas sources (if any), and the share of energy supplied by alternative sources (Kuprak, 2023).

The use of these polluting energy sources has led to greenhouse gas emissions, exposure to air pollution, and a deterioration in Israel's energy security. Data on energy from fossil fuels show that the *security margin* — that is, the gap between production capacity and peak demand — fell from 37% in 2014 to just 15% in 2023 (Grubman, 2025). The increase in energy consumption, driven in part by population growth, therefore requires an expansion of installed capacity[9] and energy generation to meet demand. For this reason, transitioning to renewable energy, which provides electricity free of greenhouse gas and air-pollutant emissions, is of strategic importance. Increasing the installed capacity and production of renewable energy will improve Israel's energy security.[10]

Renewable energy in Israel

Thanks to Israel's sunny climate, solar energy has the greatest potential among all renewable energy sources. Realizing this potential is essential for reducing dependence on polluting fuels. However, the country's small size, population distribution, and the high density of the central region require planning and developing infrastructure that enables optimal use of this resource.

9 *Installed capacity* refers to the amount of electricity a power plant can produce at a given moment, measured in watt or kilowatt. Actual electricity production (or consumption) is the power generated (or consumed) multiplied by the duration of generation (or consumption), measured in kilowatt-hours (kWh). Energy production facilities of different types or using different technologies are able to generate electricity for varying lengths of time.

10 When examining renewable energy data, it is important to distinguish between generation potential (measured in MW or GW) and actual production (measured in MWh or GWh), as detailed above.

Ahead of Israel's signing of the Paris Agreement in 2015 — under which countries committed to taking steps to reduce greenhouse gas emissions — the State of Israel set long-term targets for integrating renewable energy into electricity production: 13% of electricity generation by the end of 2025 and 17% by 2030 (mainly by replacing coal use).[11] In October 2020, the government set a target of 30% renewable energy by 2030.[12] Following this, the Electricity Authority and the Ministry of Energy and Water presented higher targets in 2022: 20% of electricity generation from renewable sources by 2025 and 30% by 2030. Over the past decade, the installed capacity of renewable energy facilities increased substantially and reached about 6.8 GW in 2024 — roughly 27% of installed capacity (Electricity Authority, 2025). Despite this, actual consumption remains much lower — only about 14%–15% of electricity consumption.[13]

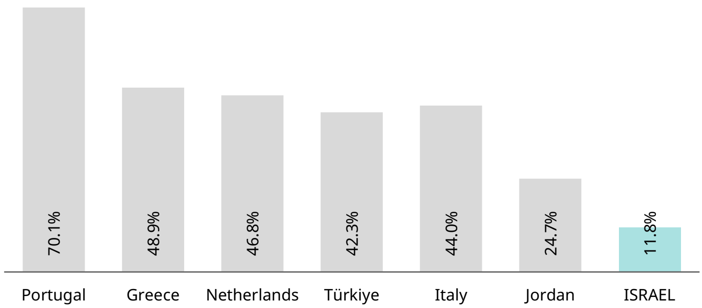
In Israel, compared to countries similar in population size and climatic conditions, the share of electricity generated from renewable sources in 2023 was the lowest. However, it should be noted that in Israel, 94% of renewable electricity is generated from solar energy, which is available only during part of the day, whereas in the other countries renewable sources also include other sources (such as wind and biomass), which are available more consistently.

11 See Government Decision 542 from September 20, 2015, Reducing Greenhouse Gas Emissions and Energy Consumption Efficiency.

12 See Government Decision 465 from October 25, 2020, Advancing Renewable Energy in the Electricity Sector and Amendments to Government Decisions.

13 According to a report by the Electrical Authority, it was 14.7%, and according to the Calcalist, it was 14% (Ashkenazi, 2025), based on an analysis by BDO.

Figure 6. Share of electricity generated from renewable energy sources out of total electricity generation, 2023



Note: The comparison countries resemble Israel in their population size and/or climatic conditions.

Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: IRENASTAT

A key issue in solar energy is the need to store the energy produced during daylight hours for use when there is little or no sunlight (at night, in winter, or on cloudy days). There are several solutions for storing energy from renewable sources, but in Israel the field is not sufficiently developed and its advancement has been slow. Existing solutions include lithium-ion batteries, pumped-storage facilities, and green hydrogen. Today, lithium-ion batteries are the main method of storing electricity generated from solar energy, and they can store energy for about four hours. During periods of surplus electricity (daylight hours), electrical energy is converted into chemical energy in the battery; during periods of shortage (nighttime), electrons are released and supply electricity to the grid. These processes are extremely fast and allow for rapid response to electricity shortages. Pumped-storage systems are based on two reservoirs at different elevations: in times of energy shortage (at night or in winter), surplus water from the upper reservoir flows to the lower reservoir through turbines, generating electricity. Israel currently has two operational facilities — one in the Gilboa, which began operating in 2020, and another at Kochav HaYarden, which began operating in 2025. Additional facilities are at various stages of development. Green hydrogen production also relies on surplus electricity used to split water; the hydrogen ions are collected and compressed in the system, and unlike batteries, they can be stored for long periods. However, the process is currently considered expensive and is not yet commercially implemented in Israel.

Over the years, several bureaucratic barriers that delayed progress in this field have been removed. Regulations were amended to require the installation of solar systems in new construction projects (August 2024),[14] relevant plans for increasing electricity generation were approved,[15] storage facilities were built, and new incentives were introduced to encourage the installation of solar rooftops. Still, the steps taken thus far appear insufficient to meet the established targets. Progress has been slow, and at this stage it does not allow for a fundamental shift that would enable the state to rely almost entirely on renewable energy. In parallel to the slow expansion of renewable energy generation, the government is advancing the construction of gas-powered power plants. As noted, the carbon tax imposed on carbon dioxide emissions from gas use in Israel is very low. Encouraging the construction of gas-fired power plants may create a *locked-in problem* — a situation in which large initial investments in infrastructure compel continued use in order to recover the investment — thereby further slowing the transition to renewables. According to the OECD's latest report on Israel, the main drawbacks of imposing a low carbon tax on electricity generation from gas include the lack of incentives and resources for building renewable-energy infrastructure and for developing carbon-capture and storage facilities, which could reduce emissions until renewable energies are fully established in Israel (OECD, 2025a). In contrast, the report noted that direct budgetary support or guaranteed feed-in tariffs for renewable energy could raise electricity prices for the public and complicate the selection of an optimal mix of technologies as well as efficient competition among them.

A 2021 report shows that it is feasible for renewable energy to account for 50% of electricity consumption by 2030, and for reliance on green energy to reach 95% by 2050 (NZO, 2021). Achieving this requires defining the transition to renewable energy as a national objective and formulating a comprehensive, long-term national plan for the energy sector, in cooperation with government ministries, local authorities, and other relevant stakeholders.

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14 See the Ministry of Environmental Protection website.

15 For instance, Government Decision 465 as noted in footnote 12 previously.

Economic feasibility

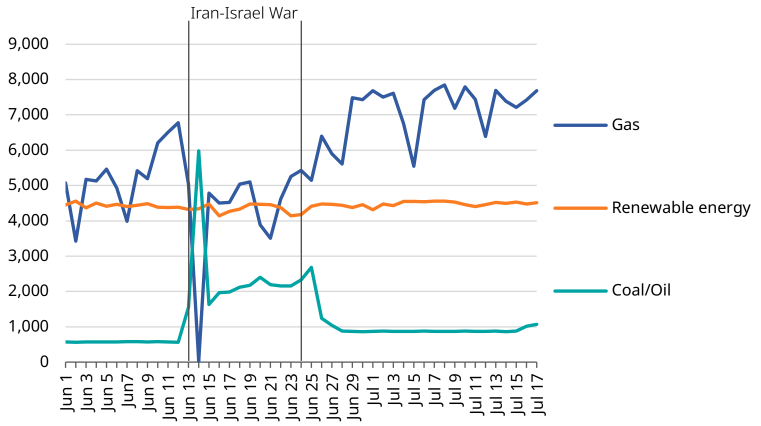
Some argue that a broad transition to renewable energy may raise energy prices and exacerbate energy poverty (OECD, 2025a). However, a long-term view suggests that a comprehensive shift to electricity generation based on renewable energy is expected to save the economy billions of shekels. A (conservative) economic analysis conducted by the Ministry of Energy and infrastructure in June 2025 found that the production cost of gas-based electricity is 43.1 agorot per kWh, compared with 26.7–35.5 agorot per kWh for electricity produced using solar systems (depending on the system type) (Yarmovsky et al., 2025). The report's unequivocal conclusion was that renewable energy would yield substantial net benefits to the economy, exceeding the cost of establishing new facilities, and that there is clear economic justification for continuing to promote and expand renewable energy.

Moreover, global experience shows that expanding the use of renewable energy contributes to job creation, increases labor productivity, and raises local economic growth rates (IRENA, 2019; REN21, 2021).

Energy security: An example of electricity production in an emergency

During the Iran–Israel War (*Am Kelavi* — Operation Rising Lion) in June 2025, there was a dramatic shift in the electricity generation mix. Offshore gas production was almost entirely halted, and Israel was forced to substantially increase generation from polluting sources — coal-fired power plants and diesel generators. The share of coal and diesel in electricity production rose from under 10% to an average of about 20% (and at the start of the war it peaked at 60%). This event illustrates the crucial importance of using small, decentralized renewable-energy systems, which can provide energy security during times of crisis. Figure 7 shows the stability of electricity generation from renewable sources throughout the war and the shifts from gas-based production to production from coal and diesel.

Figure 7. Sources of electricity production during the Iran-Israel War
12:00 in the afternoon, MW



Note: The share of electricity generated from renewable sources shown in the figure reflects all energy sources at 12:00 noon in June, and is therefore higher than the share presented above.

Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: NOGA — the Israel Independent System Operator, Ltd.

Environmental and health impacts

The use of fossil fuels for electricity production directly affects both the global environment and the health of Israel's residents. Burning fossil fuels — coal, diesel, and gas — produces greenhouse gas emissions, which in turn contribute to the worsening of the global climate crisis. Coal- and oil-fired power plants emit hazardous air pollutants — fine particulate matter (PM2.5), nitrogen oxides, sulfur oxides, and others. These pollutants cause respiratory and cardiovascular diseases and increase the risk of mortality. In contrast, electricity generated from renewable sources emits virtually no air pollutants. Expanding the use of renewable energy in Israel would, therefore, generate numerous benefits: improve public health, reduce pressure on healthcare systems, boost environmental protection, enhance energy security — crucial in times of emergency — and serve to preserve natural resources for future generations, all alongside a substantial reduction in greenhouse-gas emissions.

Conclusions and recommendations

Israel is currently at a turning point in the development of its energy sector. In recent years, important foundations have been laid for expanding the use of renewable energy, but additional effort is required to meet national targets — and perhaps to set even more ambitious ones — in order to ensure improved environmental and health outcomes. The 2025 Iran–Israel War underscored the country's continued dependence on fossil fuels and highlighted the need to strengthen energy resilience through clean, locally available sources. In light of these findings, it is recommended that Israel accelerate the development of renewable energy sources: expedite the deployment of solar installations in the built environment, encourage the development of additional renewable sources, and improve storage and transmission systems. These measures will diversify the energy mix and reduce dependence on polluting fuels. In addition, to enable a just and well-designed transition to renewable energy, it is advisable to evaluate their broader economic implications. A thorough, parallel assessment of the economic significance of shifting to renewable energy may provide the necessary impetus for advancing this transition.

Israel's water sector in 2025: The hidden water crisis

Background

Safe and healthy drinking water is not a given in this era of climate change and geopolitical instability. Israel is located in a water-scarce region, and in recent years, water shortages have increased not only in neighboring countries but also in places traditionally considered water-abundant, such as Spain, and even in extremely rainy countries like England. Water scarcity results from a combination of poor planning and management of water resources, high water consumption driven by population growth, water waste, and the climate crisis (Ben-Ari, 2025; Horton, 2025; Kaduri & Noy-Freifeld, 2023; Lerech Zilberberg, 2023).

Israel's natural water sources include surface water (rainfall, streams, and bodies of water) and groundwater. In addition, since the 1990s, Israel's water supply has included reclaimed wastewater (used mainly in agriculture), and since the 2000s, desalinated seawater in increasing volumes (desalination plants now provide roughly one-quarter of Israel's total water supply and about

60% of its drinking water[16]). Israel's natural waters are hard water, meaning they contain high concentrations of minerals essential to human health, but large segments of the population do not consume such water — either because of the high share of desalinated water in the supply or because of the widespread use of home filtration systems, which also remove minerals. The cost of desalinated water is relatively high due to the substantial energy consumption required for the desalination process (Avgar, 2018). Beyond the economic cost, desalination increases greenhouse gas emissions and causes additional environmental harm — due to the construction of plants and their accompanying pipelines; the ongoing operation of facilities, which involves storing and using chemicals and other hazardous materials; and the discharge of brine into the sea, affecting marine life and the broader marine environment (Avgar, 2018). In addition, desalination plants are sensitive sites in terms of security (for example, in the event of missile attacks). Therefore, despite the clear advantages of desalination, it is important to remember that conserving Israel's natural water sources and reducing water consumption are vital national interests.

Trends in water consumption in Israel

In 2023, water consumption in Israel totaled 2.4 billion cubic meters. More than 50% was used for agriculture, with the remainder going to household, public, and industrial use (Figure 8).[17] Household and public water consumption in Israel[18] rose from about 670 to over 1,000 million cubic meters between 1998 and 2023, due in part to population growth, and its share of total use increased from 31% to 43%.[19]

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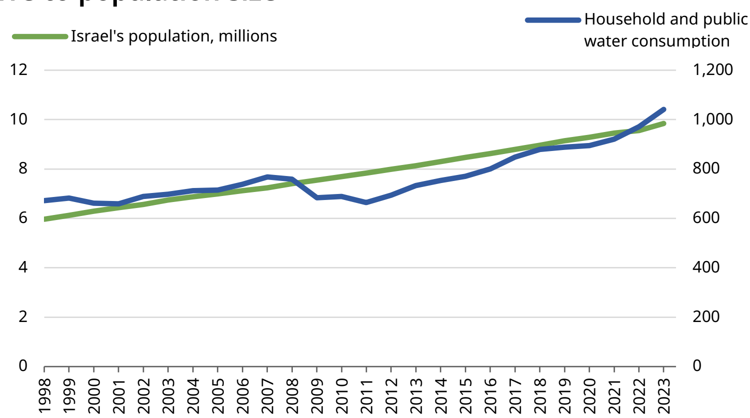
16 The volume of desalinated water supplied for drinking fluctuates, since Israel's drinking water comes from multiple sources that vary over time. It is also known that reclaimed wastewater — an important water source in Israel — is not used for drinking. In 2022, 596 million cubic meters of desalinated water were produced, accounting for about 60% of household and public water consumption (State Comptroller, 2024b).

17 A small amount of the total use (1.8%) is designated for return to nature (for example, rehabilitation of rivers).

18 Public consumption includes gardening and water use in public facilities such as schools, public swimming pools, and the like. Private and public consumption do not include industrial or agricultural use.

19 See Water Consumption by Goals, 1998–2021, Water Authority; Total Water Consumption in 2022 by Goals (in MK thousands), Water Authority, August 31, 2023; Water Consumption for 2023 at the Consumer Level, Water Authority (estimate is net of industrial consumption).

Figure 8. Household and public water consumption in Israel relative to population size



Note: Public consumption includes gardening and water use in public facilities.

Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: Water Authority; World Bank

As shown in the figure, between 2008 and 2011, there was a marked decline in household and public water consumption. This decrease is particularly noteworthy, as it followed a decade of steady growth that corresponded to population growth. It can be explained by the large public awareness campaign during that period encouraging water conservation and reduced consumption, as well as by increases in water tariffs. In addition, steps were taken to reduce water loss through investment in infrastructure (Avgar, 2018; CBS, 2025). After 2011, household water consumption resumed its previous upward trend — and even more strongly.

Against the backdrop of the overall rise in water consumption in Israel, it is important to note that agricultural water consumption has not changed substantially over the past decade and generally remains around 1,200 million cubic meters. However, its share of total water consumption fell from 58% in 2013 to 52% in 2022. The total volume of agricultural production (excluding seeds, ornamentals, and forestry) also declined (by about 9% over the period), despite population growth during these years (Orlev-Sharon & Katz, 2024).

The natural water crisis in Israel

As noted previously, the State of Israel has always faced a shortage of natural water resources. Yet despite the increasing use of desalinated water since the 2000s, data on natural water withdrawal versus natural water potential in Israel between 2000 and 2022 indicate that natural water consumption exceeds the volume available in natural sources almost every year (for example, in 2022 consumption exceeded the quantities in natural reservoirs by 30%).[20] In other words, natural water sources remain in deficit even with the growing reliance on desalinated water. Overuse of natural water depletes key natural sources: streams, which are essential for maintaining vegetation and wildlife; aquifers, the main source of natural water; reservoirs, which are critical for water security in times of crisis and war; and bodies of water such as Lake Kinneret, which in addition to serving as an important drinking water reservoir also provide recreational and public welfare benefits.

Between 2024 and 2025, the Ashdod desalination plant — one of Israel's five operational desalination plants — did not operate at full capacity, and the Sorek B plant, which was expected to begin operating in 2023, began partial operation only in March 2025, leading to over-pumping from Lake Kinneret (Binyamin, 2025). The level of the Kinneret, which stood at roughly 3.7 meters above the red line in May 2024, fell by more than two meters over the following year, reaching 1.5 meters above the red line in May 2025. More concerning, from May to November 2025, the level dropped by nearly two additional meters, reaching 0.35 meters below the red line. A warning from the Water Authority about an exceptionally dry winter — in which streams nearly dried up and the Kinneret level failed to rise — led the Minister of Finance to issue a drought order on July 28, 2025, enabling farmers to receive compensation for weather-related damages (Curiel, 2025).

Beyond low rainfall, Israel's groundwater and surface water suffer from contamination originating from multiple sources: fuel leaks, infiltration of industrial chemicals such as the PFAS pollutant,[21] fertilizer seepage from agricultural activity, pollution of streams, and more. The groundwater reservoir is also at risk due to extensive construction on aquifer recharge areas (Israel National Academy of Sciences, 2024; Katz, 2024; State Comptroller, 2021).

20 See the CBS website, Clean Water and Sanitation (Goal 6).

21 A hazardous pollutant found in 13% of Israel's drinking water wells.

Despite these troubling data, it appears that much of the public is unaware of the water crisis we are facing. A survey published by the Zalul Association in July 2025 found that 40% of the public believes there is no water crisis in Israel, 40% believes there is, and 20% don't know. The survey also shows that while the public adopts some water-saving practices, it does not employ all available measures (Degani, 2025).

SPOTLIGHT

Hardwater and Health

Water hardness is determined primarily by the presence of two minerals: calcium (Ca) and magnesium (Mg) (WHO, 2010).[22] The higher the concentration of these minerals, the harder the water.[23] Water hardness is sometimes perceived as undesirable: hard water can damage household appliances that use water (kettles, washing machines, etc.) and leave deposits in pipes. However, from a health perspective, drinking hard water is actually considered beneficial due to its mineral content (WHO, 2010). Magnesium is essential for the proper functioning of the cardiovascular, nerve and muscular systems; it helps convert sugar into energy and reduces the risk of heart disease, diabetes,

22 Additional contributors to water hardness include trivalent iron ions, manganese, sulfur, and bicarbonate.

23 Water hardness is classified as follows: soft water (up to 60 mg/L calcium carbonate [$CaCO_3$]); moderately hard water (60–120 mg/L calcium carbonate); hard water (120–180 mg/L calcium carbonate); and very hard water (over 180 mg/L calcium carbonate).

and more (Momeni et al., 2014; Sadeh, 2024; Sengupta, 2013). Calcium deficiency has been linked to an increased risk of osteoporosis, colon cancer, kidney stones, hypertension, stroke, and obesity (Bykowska-Derda et al., 2023; Momeni et al., 2014; Rapant et al., 2024; Sengupta, 2013; Yang et al., 2024). During the desalination process, all minerals are removed from the water (rendering it soft), and calcium is added back at the desalination plants to stabilize the water at 80–120 mg/L $CaCO_3$ (according to the Public Health Regulations [The Sanitary Quality of Drinking Water and Drinking Water Facilities], 2013). The desalination process also removes fluoride — important for dental health — and iodine, essential for early cognitive development, hormonal balance, and more. Natural fluoride levels in Israel are considered relatively low, except in groundwater in the south, where they are higher. Drinking water in Israel provides about 10% of iodine intake (most iodine intake comes from food), and levels vary across regions depending on groundwater composition (Kafri et al., 1989).

In a 2022 report, the World Health Organization stated that there are insufficient data to set recommended levels of minerals such as calcium and magnesium in drinking water, and therefore no official threshold values were established (WHO, 2022). Nonetheless, the WHO notes that water can be an important source of calcium and magnesium — especially for populations with low dietary intake of these minerals — and therefore the public should be provided with information on the mineral composition of drinking water, particularly when changes are made to water sources or treatment methods (such as desalination). In Israel, the Ministry of Health publishes data on water quality and mineral composition, but the information is not sufficiently accessible or clear to the private consumer. Since the publication of the WHO report, several studies have supported the possibility that drinking hard water is associated with reduced disease risk: a systematic review found a link between hard-water consumption and lower mortality from cardiovascular disease (Bykowska-Derda et al., 2023). Several studies using a cohort of about 500,000 individuals in the UK show that populations consuming hard water (calcium concentrations of 120–180 mg/L) have a lower risk of several types of cancer — including common cancers such as breast and lung cancer, as well as all cancers combined (except bladder cancer, for which hard-water consumption was found to increase risk). Similar associations were found for heart disease, dementia, and Alzheimer's disease (Bao et al., 2025; Tian et al., 2025; Yang et al., 2024).[24]

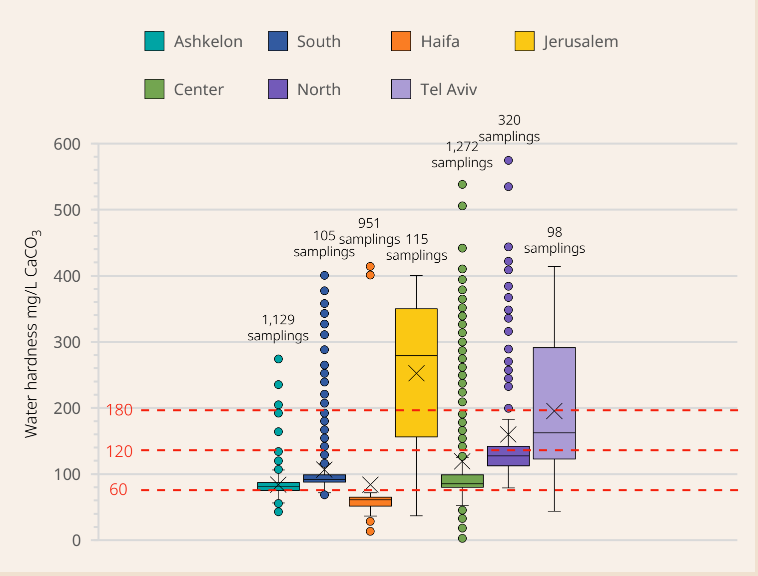
Water samples collected by the Ministry of Health from the distribution system show substantial differences in water hardness (Figure 9).[25] Between 2014 and 2025, in the Ashkelon, Haifa, and Central Districts — where sampling occurred relatively frequently — the median hardness levels fell within the medium-hardness range, between 60 and 120 mg/L. In the Jerusalem District (sampled 2016–2023), average hardness levels were the highest, likely due to relatively limited use of desalinated water and extensive reliance on National Water Carrier supplies and groundwater from the Mountain Aquifer. These waters are harder than those in other districts (Gihon, 2023). It is important to remember that water composition changes over time, so differences may appear between samples taken at different points in time.

24 For more on the relationship between magnesium deficiency and disease, see Sadeh et al., 2024.

25 According to the Ministry of Health website, "The results reflect the mineral concentrations at the time of sampling only. At a different time, concentrations may vary depending on the water sources supplying the area. There are not enough data for each sampling point or locality to determine the concentrations supplied throughout the entire year — only at the time of sampling." In areas with desalination plants, more samples are taken due to the requirement to measure hardness at the plant's water outlet.

In December 2025, an amendment to the Public Health Regulations was approved, allowing magnesium to be added to desalinated water. This is an important step, reflecting institutional recognition that drinking water is an important source of minerals for the population.

Figure 9. Water hardness in Israel by district, 2014–2025



Note: The figure shows the distribution of the sample data. The box represents the values between the first and third quartiles; the horizontal line inside the box indicates the median water-hardness value; and the "X" marks the sample mean.

Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: Ministry of Health

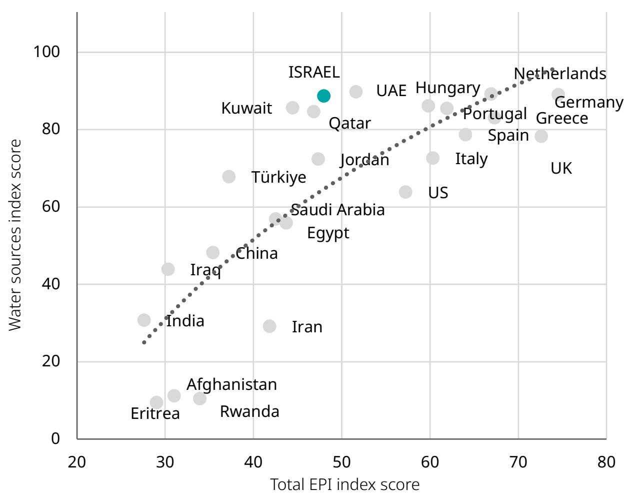
Water and environmental resource management

The State of Israel recognized the challenges it faced and, several decades ago, began taking action to conserve water and ensure a safe water supply for its residents — initially through wastewater treatment and the use of reclaimed effluent in agriculture, an area in which Israel is a global leader, and, later, through the production of drinking water through seawater desalination (State Comptroller, 2024a).

In the EPI's water resources indicator, countries are assessed on how well they conserve their water resources through water savings and proper wastewater management. Israel's weighted score on this measure is high — 88.7 out of 100 — and it ranks sixth in the world (out of 180 countries).

Figure 10 shows Israel's standing in the water resources area compared with other countries in the region (Middle East, Greece, Gulf states), with countries similar in land area or population size (the Netherlands, Portugal), and with advanced high-income economies (the United States, Germany).

Figure 10. Score for water sources versus the total EPI index score, international comparison, 2024



Source: Siman-Tov, Yavin, Kaidar, and Sadeh, Taub Center | Data: EPI

Indeed, Israel excels on three performance indicators relating to wastewater treatment and effluent reuse, with scores above 92 and rankings between 11 and 19. By contrast, Israel's score for wastewater generation per capita is low — 32.9, ranking 127th. However, this measure may not fully account for the mounting difficulty faced by the water sector in managing growing volumes of wastewater due to rapid population growth and insufficient development of wastewater treatment plants. According to the most recent State Comptroller's report on the topic, in 2022 there were 1,544 malfunctions in sewage and effluent systems — an increase of 135% since 2017. Some of these failures result in excess, insufficiently treated effluent being discharged into the environment, potentially contaminating soil, streams, and groundwater. In the West Bank, improperly treated effluent and high rates of raw sewage (68% in 2022) are discharged into streams and the surrounding environment (State Comptroller, 2024a).

Wastewater treatment plants can treat only a certain volume of sewage. When the amount entering a plant exceeds its capacity, treatment becomes less effective, the quality of the effluent it produces declines, and untreated sewage may overflow into the sea, streams, and other water sources, causing contamination. According to a report by the Ministry of Environmental Protection, in 2023, nearly 20% of wastewater treatment plants — including the Shafdan site — operated above their designed capacity (Ministry of Environmental Protection, 2025). The report also notes that in the same year, only about 67% of all wastewater produced received the tertiary treatment required by law, which allows irrigation of crops intended for human consumption — although this share has increased since 2020, when it stood at only 56%. The remainder received only secondary treatment, which permits limited irrigation and use for gardens and lawns. An expert committee report published in December 2025 analyzes the health impacts of irrigation with inadequately treated wastewater, as well as the risks associated with irrigation using wastewater that has undergone tertiary treatment. The report warns that such effluent may still contain various contaminants, including disease-causing bacteria, which can harm public health (Dor et al., 2025). The outbreak of West Nile fever in June 2024 was a stark reminder of the consequences of inadequate wastewater treatment and sewage overflows. Hundreds of people became ill and dozens died, and the outbreak was likely caused by a combination of poor treatment at the Ramat HaSharon treatment plant, exceptionally high temperatures, and sewage overflows (Rinat, 2024; Sadeh, 2024).

Summary

In this chapter we examined several environmental and health related issues and assessed their current status. We showed that government and public expenditure on environmental protection in Israel is low also relative to previous years. Most of this spending is allocated to waste management, while only a very small share is directed toward areas such as air pollution prevention or environmental research and development. Israel's waste crisis has severe health and environmental implications,[26] and its economic burden is extremely high. Israel's low overall score on the EPI suggests that heavy expenditure on solid waste treatment may be coming at the expense of meaningful progress in other critical domains, such as reducing air pollution, whose economic cost is estimated at 2.5%–3.3% of GDP (Ashkenazi, 2021).

Regarding renewable energy, we showed that expanding its share would allow for a reduction in the use of polluting fossil fuels that harm human health. Renewable energy is also essential for the country's energy security, both in emergencies and in general. Policy changes and defining the transition to renewable energy as a national goal could help Israel meet its commitments under international agreements and enable the economy to rely on green energy. Economic analysis likewise shows clear net benefits from expanding renewable energy at the expense of fossil fuels. However, the transition must be carried out judiciously so as not to harm vulnerable populations who may be prone to energy poverty.

In the section on the water sector, we found that thanks to public campaigns promoting water conservation about 15 years ago, household consumption declined for several years, but since around 2012 water consumption has increased more than would be expected from population growth alone. It is plausible that the rise in desalination over the past decade has reduced public awareness of the challenges facing Israel's water sector. Increased water consumption also leads to greater wastewater production, which poses potential public health risks due to the strain on wastewater treatment facilities, as illustrated by the West Nile fever outbreak in June 2024.

26 This issue was discussed more fully in the chapter on environment and health in the State of the Nation Report 2024. See Sadeh and Siman-Tov, 2024.

It is crucial to protect Israel's natural water sources, and therefore public outreach on this issue and encouragement of water conservation are recommended. Preserving natural water resources is vital for water security and will also allow for the allocation of water to nature, whose contribution to public health is significant in its own right.

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