Palestinian Academic Society for the Study of International Affairs

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FACTSHEET

# CLIMATE CHANGE & ITS EFFECTS ON PALESTINE

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Climate change is a global problem and will likely fuel increasing crises, if not outright wars, over land and resources. As rising temperatures, water scarcity, and extreme weather events intensify, regions already facing political instability and resource pressure will be hit especially hard. The Middle East, in particular, stands at the forefront of this challenge.

Across much of the region, climate change is already worsening chronic water shortages, threatening agriculture, undermining food security, and driving migration. In this context, Palestine faces additional challenges unique to its status as an occupied territory. The Israeli occupation restricts access to natural resources by controlling land and water sources and limiting the development of essential water and waste infrastructure through permit denials for construction, imports, and land use.[1] These constraints also hinder Palestinian adaptation and response efforts, heightening vulnerability to climate impacts. Further compounding these pressures are the demolition of "unauthorized" Palestinian structures – including agricultural projects and solar installations – and increasing settler violence that destroys crops, trees, and other cultivation. Pollution from nearby settlements adds another layer of environmental strain, collectively intensifying Palestine's climate-related risks.[2]

This factsheet will provide an overview of how Israeli policies intersect with existing Palestinian vulnerabilities and increase climate change effects on environmental, agricultural, socioeconomic, and public health conditions in Palestine. It will also outline potential adaptation strategies and highlight the vital role of the international community in ensuring a more sustainable and climate-resilient future for Palestinians.

[1] Agha, Zena, *Climate Change, the Occupation, and a Vulnerable Palestine, Al-Shabaka Policy Brief*, 2019; https://al-shabaka.org/briefs/climate-change-the-occupation-and-a-vulnerable-palestine/?generate_pdf=view; IMEU, "Fact Sheet: Israel's Environmental Apartheid in Palestine," 2022; https://imeu.org/resources/key-issues/fact-sheet-israels-environmental-apartheid-in-palestine/126.

[2] Our Environment, *This Week in Palestine,* No. 276 (April 2021); https://thisweekinpalestine.com/climate-change-in-palestine/.

**Climate Change under Occupation**

Israel's **occupation policies** – land confiscation, exploitation of natural resources, environmental destruction[3], denial of water rights and over-extraction of Palestinian water, hindrance of investments, imports and development, access and mobility restrictions, destruction of cultivated areas (mainly by settlers), and hampering Palestinians' capacities to adapt – directly and largely affect Palestinian living environments. "So pervasive are the effects of the Israeli occupation on the climate vulnerability of Palestinian communities that the occupation – in and of itself – is considered here a 'risk'."[4]

For example, **Area C** – constituting roughly 60% of the West Bank – is under full Israeli control. Israel exploits at least 80% of this area,[5] leaving it largely inaccessible to Palestinians and preventing them from using it for climate-mitigation efforts such as installing solar-power systems.

Furthermore, in 2024, Israel also extended its **settlement** activity to **Area B** of the West Bank, where at least eight settler outposts were established, and declared some 24,258 dunums "state land", making it the largest such declaration in a year since 1998.[6] To date, settlers have used shepherding outposts and expelling Palestinian farmers to seize at least 786,000 dunums of land - 14% of the West Bank's total area.[7] Between mid-2023 and mid-2024, settlers constructed about 139 new roads, totaling 116.4 km, of which 75 km passes through privately owned Palestinian land.[8]

Jewish settlers destroyed over 50,000 **trees and saplings** between January 2023 and June 2025 alone[9], while Israeli forces damaged 3.3 km of **sewage networks** and 21.4 km of **water pipes** in the first half of 2025.[10] During the 2025 olive harvest (1 October-3 November 2025) alone, over 4,200 trees and saplings were vandalized.[11]

With Israel controlling over 85% of Palestinian water, Palestinians have access to less **water per capita** than they did at the time of the Oslo Accords in 1993.[12] Thus, they are forced to purchase water from Israel, which amounts to 39% of the water available in the West Bank.[13] Climate change exacerbates the existing severe water stress.

Furthermore, Israel is implementing large-scale renewable energy projects in the West Bank under the **pretext of climate mitigation**, thereby greenwashing its settlement projects and rights violations.[14]

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[3] E.g., Israel dumps massive quantities of hazardous toxic waste, including some 60,000 tons of electronic waste, in the West Bank. PCBS and Environment Quality Authority, *Press Release on World Environment Day,* 5 June 2025.
[4] UNDP, *Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority*, 2010; https://files.acquia.undp.org/public/migration/ps/UNDP-papp-research-climatechange.pdf, p. 18.
[5] PCBS, *Press Release on the 71st Annual Commemoration of the Palestinian Nakba*, 13 May 2019.
[6] UNGA Report of the Independent International Commission of Inquiry on the Occupied Palestinian Territory, including East Jerusalem, and Israel, A/80/337, 14 August 2025.
[7] Peace Now & Kerem Navot, *The Bad Samaritan,* Dec. 2024.
[8] Peace Now, *All Paths Lead to Annexation,* 18 May 2025.
[9] OCHA, *Impact of Settler Attacks Map*, June 2025.
[10] PCBS and Environment Quality Authority, *Press Release on World Environment Day,* 5 June 2025.
[11] OCHA, Humanitarian Situation Update #337 | West Bank, 6 November 2025; https://www.ochaopt.org/content/humanitarian-situation-update-337-west-bank.
[12] PCBS, *Press Release on World Water Day,* 20 March 2024.
[13] PWA, *Water Resources Data*, 2025; https://www.pwa.ps/ar/Article/7155/.
[14] Hughes, S. S., Velednitsky, S., & Green, A. A. (2023). "Greenwashing in Palestine/Israel: Settler colonialism and environmental injustice in the age of climate catastrophe," Environment and Planning E: Nature and Space, 2023.

In Gaza, 100,000 tons of explosives and bombs have been dumped during the 2023-25 War, and by mid-2025, ½ million tons of **waste** and 50 million tons of **rubble** (mixed with hazardous waste such as asbestos) had piled-up, contaminating soil and releasing toxic emissions that will affect the health and ecosystem for decades. In addition, over 80% of its **cropland** was destroyed[15] and 85% of its **water infrastructure**, including all six major wastewater treatment plants, have been damaged or destroyed, resulting in the spread of wastewater and its seepage into the ground.[16]

Furthermore, Israel's **ecological footprint** is 6.9 times larger than that of Palestinians, with 96.4% of its electricity production coming from fossil fuels.[17] This contributes to accelerated global warming, which disproportionately affects Palestinians. In 2023, Palestine's overall **per capita greenhouse gas emissions** were 0.8 tons of $CO_2$, while Israel's was 6.5 tons (world average: 4.7 tons).[18]

**Climate Projections for Palestine**

Palestine's typical climate is Mediterranean with hot, dry summers and wet, cool winters, whereby temperature and rainfall vary with altitude and region (West Bank hills, coastal plain, Jordan Valley, Naqab desert). However, this is gradually but steadily changing and more frequent extreme weather events are expected.

While the following climate-change projections for and impacts in Palestine arise from global environmental trends, their severity is often shaped by the aforementioned conditions created by Israeli policies – such as restrictions on land and water use or infrastructure development – that limit Palestinians' ability to adapt or implement mitigation measures and intensify its environmental vulnerability.

- Some climate models for the region predict 3-5°C mean **temperature increase** by 2050[19], others a 1.5°-3°C by the end of the century.[20] The percentage of **hot days** – i.e. maximum temperature exceeds the 90$^{th}$ percentile threshold for that time of the year – is projected to increase between 25-60%, based on the increase of emissions.[21] Heat waves will increase and intensify in duration and peak temperature and lead to prolonged droughts and dry events, such as wildfires.

- Palestine is experiencing a significant **reduction in rainfall**, with average precipitation decreasing by 10-20% compared to historical levels[22] (10% by 2020, 20% by 2050[23]) and prediction of mean annual rainfall reductions of 10-50%.[24] At the same time, rainfall events are becoming more violent, causing extreme flash floods.[25]

[15] FAO-UNOSAT, "Gaza Strip: Ceasefire opens window for rehabilitation as over a third of cropland becomes accessible", October 2025.
[16] PCBS and Environment Quality Authority, *Press Release on World Environment Day,* 5 June 2025.
[17] IMEU, "Israel's Environmental Apartheid in Palestine," *op. cit*.
[18] Some 76% of Palestine's overall Greenhouse Gas Emissions stems from carbon dioxide ($CO_2$). Transport accounted for 56% of this. PCBS, *Environment Statistics*, 2023.
[19] World Bank, *West Bank and Gaza Environment Priorities Note*, 2019.
[20] Giordano, G. and L. Rüttinger, *Climate-Fragility Risk Brief: Jordan, Palestine and Israel,* Climate Security Expert Network, 2021; https://climate-diplomacy.org/sites/default/files/2021-06/csen_risk_brief_jordan_palestine_israel.pdf.
[21] WHO & UNFCCC, Health and Climate Change Profile 2022: Occupied Palestinian Territory, 2022; https://www.un.org/unispal/wp-content/uploads/2022/03/WHO-HEP-ECH-CCH-22.01.04-eng.pdf.
[22] UNDP, *Agriculture in Area C,* UNDP/PAPP's Resilience Series, 2017; https://www.undp.org/sites/g/files/zskgke326/files/2022-11/resilience_series_-_agriculture_in_area_c_-_final.pdf.
[23] Agha, Zena, *Climate Change, op. cit.*
[24] World Bank, *West Bank and Gaza Environment Priorities Note*, 2019.
[25] West Bank and Gaza, *Country Climate and Development Report - West Bank and Gaza*, 2023.

- **Sea levels** are predicted to rise by 10 mm/year[26] and by 30-100 cm by 2100.[27] Predictions by the Israeli Environment Ministry warned of a one-meter rise as early as 2050.[28] Such rises lead to coastal floods, erosions, and saltwater intrusion.

- **Warming waters** and **ocean acidification** will change the marine ecosystem[29] and negatively affect the fishing industry in Gaza.

**Climate Change Challenges Affecting Occupied Palestine**

1. Environmental Impacts:

- Coastal erosion and saltwater intrusion in Gaza.[30]
- Seepage of raw sewage. In 2022, a daily average of 3.3 million liters of wastewater was discharged into the sea in Gaza,[31] and in the West Bank, thousands of households are not connected to any sewer system, therefore discharging their sewage in adjacent streams and open areas.[32]
- Increased soil erosion and desertification, with 72% of Palestinian territory at risk.[33]
- Destruction of natural habitats by clearing land for settlements and roads.[34]
- High vulnerability to climate change-related droughts and wildfires.

2. Impact on Agriculture:

- Water scarcity is leading to increased reliance on groundwater irrigation[35] and has forced farmers to purchase expensive water delivered in tanks due to reduced water availability.
- Lower water retention in soil, affecting pasture production.[36]
- Changes in crop viability[37] – reduced agricultural productivity with lower overall crop yields and quality.[38]
- Damage to heat-sensitive crops and trees and increased difficulties in cultivating certain crops like plums, peaches, and almonds.[39]

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[26] Giordano, G. and L. Rüttinger, *op. cit.*; GUPAP-ICRC, *Impact of Climate Change on Agriculture Sector in the Gaza Strip,* 2022; https://assets.fsnforum.fao.org/public/contributions/2023/Study_Impact%20of%20climate%20change%20on%20agriculture%20Sector%20in%20Gaza_July2022%20(GUPAP-ICRC).pdf.

[27] World Bank, *West Bank and Gaza Environment Priorities Note*, 2019.

[28] "Facing Rapid Rise in Sea Levels, Israel Could Lose Large Parts of Its Coastline by 2050," *Haaretz,* 20 September 2022.

[29] Bentley, R., B. Hugh & R. Schoonover, *Weathering Risk - Scenario-based Analysis: Levant,* 2022; https://climateandsecurity.org/wp-content/uploads/2022/05/Scenario-based-Analysis-Levant-Weathering-Risk.pdf.

[30] "The Not-So-Hidden Climate Risks for Gaza's Displaced," 11 January 2011; https://www.climate-refugees.org/spotlight/2023/1/11/gaza.

[31] Wash Cluster Palestine, *Gaza Strip: Critical Humanitarian Indicators*, June 2022.

[32] UN OCHA, *Humanitarian Needs Overview 2022.*

[33] UNDP, *Agriculture in Area C, op. cit.*

[34] IMEU, "Fact Sheet: Israel's Environmental Apartheid in Palestine," *op. cit*.

[35] Alabadla, Zaher & Sayed, El & Abdel Magdy, "The Effects of Climate Change on Agriculture over Gaza," *International Journal of Agriculture and Forestry*, 5, 2021. 8-14; https://www.researchgate.net/publication/361817608_The_Effects_of_Climate_Change_on_Agriculture_over_Gaza_Palestine.

[36] UNDP, *Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority*, 2010; *op. cit*.

[37] Freij, Lena, "Climate Change and the Vulnerable Occupied Palestinian Territories," 2021; https://research.fit.edu/media/site-specific/researchfitedu/coast-climate-adaptation-library/middle-east/israel-lebanon-syria-amp-jordan/Freij.--2021.--Climate-Change-and-the-Vulnerable-Occupied-Palestinian-Territories.pdf.

[38] Our Environment, *This Week in Palestine*, *op. cit*.

[39] GUPAP-ICRC, *Impact of Climate Change on Agriculture Sector in the Gaza Strip, op. cit*.

- Higher mortality rates in livestock, particularly poultry.[40]
- Increased risk of pests and crop diseases.[41]

3. Socioeconomic Consequences:

- Disproportionate impact on vulnerable populations due to decreased economic productivity[42] and reduced income and profits for farmers and herders.[43]
- Threat to traditional agrarian lifestyles.
- Women are particularly affected as they tend to work in agriculture and as they cannot really adapt their traditional dress codes to rising temperatures.
- Higher food prices and increased food insecurity for overall population.[44]
- Increased energy demands to cope with more temperature extremes will raise consumption costs.

4. Health risks:

- Health risks from waterborne diseases due to contamination[45] – specifically in Gaza due to rising sea levels, saltwater intrusion,[46] and seepage of untreated wastewater.
- Public health costs are anticipated to rise with increasing cases of heat-related illnesses and malnutrition

**Adaptation Strategies**

Palestinians are well aware of the risks of climate change and have taken action to mitigate the effects of it, including the following, but their scope of action is severely restricted by Israeli policies:

- **2013** – the PA's Environment Quality Authority (EQA) developed Palestine's first "National Climate Change Adaptation Strategy," which identified measures related to flood preparedness, efficient irrigation, rainfall interception, and ensuring equitable utilization of transboundary water resources.[47]
- **December 2015** – Palestine joined the UN Framework Convention on Climate Change (UNFCCC).
- **March 2016** – Palestine became an official party to the United Nations Framework Convention on Climate Change (UNFCCC).
- **April 2016** – Palestine signed and ratified the Paris Agreement on climate change, pledging to take action to mitigate and adapt to the effects of climate change, with the aim of reducing 17.5% of its greenhouse gas emissions by 2040 under the *status quo*, and 26.6% if the Israeli occupation ends.

[40] *Ibid*.
[41] UNDP, *Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority*, 2010; *op. cit*.
[42] World Bank, *West Bank and Gaza - Country Climate and Development Report*, September 2023.
[43] Agha, Zena, *Climate Change, op.cit*..
[44] Freij, Lena, "Climate Change and the Vulnerable Occupied Palestinian Territories," 2021; *op. cit*.
[45] World Bank, *West Bank and Gaza - Country Climate and Development Report*, September 2023.
[46] Agha, Zena, *Climate Change, op.cit*.; https://oxfamilibrary.openrepository.com/bitstream/handle/10546/621024/rr-climate-agriculture-gender-gaza-140720-en.pdf%3Bjsessionid=35AAF4B61EADCBD726D85DA99CA9B9AA?sequence=7.
[47] UNDP, *Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority*, 2010; *op. cit*.

- **2016** – Palestine prepared its first National Adaptation Plan (NAP) to Climate Change.[48]
- **August 2017** – Palestine submitted its first Nationally Determined Contribution (NDC).
- **September 2019** – Palestine became a member of the NDC Partnership.
- **October 2021** – Palestine submitted its updated NDC to the UN Framework Convention on Climate Change (UNFCCC) and had developed 14 investment-ready NDC implementation action plans for adaptation measures in the agriculture, energy, health, transport, waste, and water sectors.[49]
- **2025**: Palestine currently works on its NDC 3.0 which is expected to be completed by September 2026.[50]

Besides integrating **climate change adaptation** into national development planning, intended **mitigation activities** listed in the 2021 NDC included:

- Adoption of climate-smart agriculture practices and irrigation techniques.[51]
- Reduction of greenhouse gas emissions by 12.8% by 2040 under the status quo or by 24.4% by 2040 under an independence (end of occupation) scenario.[52]
- Promoting solar water heating technologies in service and industrial sectors.[53]
- Enhancing renewable energy.[54]
- Measures to improve energy efficiency, preserve water, replace older vehicles, collect rainwater at a large scale and treat 70% of wastewater for reuse by 2030.[55]

However, all of these activities suffered a setback due to the war on Gaza since 2023 and Israeli settlement expansion and settler violence in the West Bank. Palestine can continue to advocate for its rights (e.g., more equitable utilization of transboundary water resources[56]) based on principles of international law[57], and strengthen its institutional and human resource capacities in renewable energy, but the ability to adapt to climate change and successfully implement mitigation measures requires an end to the occupation with its restrictive policies, which also hamper enhancing regional cooperation with neighboring countries.[58]

[48] State of Palestine – Environment Quality Authority, *National Adaptation Plan to Climate Change,* 2016; https://unfccc.int/files/national_reports/non-annex_i_parties/application/pdf/national_adaptation_plan__state_of_palestine.pdf.
[49] NDC Partnership, *Palestine,* https://ndcpartnership.org/country/pse.
[50] *Ibid.*
[51] Our Environment, *This Week in Palestine*, *op.cit*.
[52] *Ibid.*
[53] *Ibid.*
[54] In 2022, it was estimated that around 15% of total energy consumption in Palestine was from renewable energy sources. ILO, *State of Palestine – The Employment, Environment, Climate Nexus Factsheet,* August 2025; https://www.ilo.org/sites/default/files/2025-10/State_of_Palestine_Employment_Environment_Factsheet_v5.pdf.
[55] *Ibid.*
[56] PWA, *Water Sector Strategy, 2025-2027*; https://www.pwa.ps/ar/File/15e96ay1436010Y15e96a/2025-2027.
[57] https://www.stimson.org/2023/water-a-matter-of-cooperation-or-conflict-among-jordan-israel-and-palestine/.
[58] E.g., by establishing joint committees to study aquifer characteristics, developing data banks for water resource management and monitoring, https://pwa.ps/userfiles/file/rwan/TransboundaryStrategy_final%20draft.pdf.

***Potential Effective Renewable Energy Initiatives***

- Solar photovoltaic (PV) energy development: Palestine aims to generate 20-33% of electricity using solar PV systems by 2040 and achieve 630 MW of solar PV in the West Bank and 70 MW in Gaza. In addition, an upgrade to the electricity grid to enable more renewable energy integration by 2030 is planned with the aim to enhance overall energy efficiency across all sectors by 20% by 2035.[59]
- Waste-to-energy projects: There are plans to use municipal solid waste as a 20% substitute for coal in cement production, deploy a 1 MW waste incineration unit for electricity generation, and capture 14,000 tons of landfill gases annually for power generation.[60]
- Energy efficiency measures: Palestine intends to implement building standards for thermal efficiency and to deploy energy-efficient lighting. In addition, it promotes green buildings.[61]
- Natural gas: While not a renewable source, transitioning to natural gas (replacing diesel) as an intermediary step can help reduce carbon intensity. The Gaza Marine gas field must thus be developed to enhance energy independence and generate revenue.[62]
- Wind energy, particularly in the West Bank, has [63]potential, with wind power densities reaching 600 W/m² in mountainous regions.

**Role of the International Community**

The international community must acknowledge that environmental and climate challenges in the region are deeply intertwined with the political realities of Israeli occupation. Palestinians experience a form of climate apartheid that hinders their ability to build sustainable infrastructure, advance renewable energy projects, and adopt climate-resilient strategies due to limitations on land use, water access, and essential services. In addition, the political conditions imposed by the ongoing illegal occupation obstruct the creation of coherent climate policies and coordination efforts within Palestine. Consequently, meaningful action on climate change and sustainable development in the region requires recognizing and addressing these underlying political factors. This includes ending Israel's apartheid practices and illegal occupation, and upholding Palestinians' inherent rights to self-determination, sovereignty, and control over their natural resources.

In order to assist Palestine in adapting to the projected climate challenges, international resources also play a crucial role in Palestine's climate adaptation efforts, by providing financial support as Palestine relies heavily on international donors,[64] technical expertise with regard to data collection and technologies,[65] and institutional and human resource capacity building.

[59] Shabab, Asma, "Water: A Matter of Cooperation or Conflict Among Jordan, Israel, and Palestine," *Stimson Commentary*, 29 September 2023; Office of the Quartet, "Energy," https://www.quartetoffice.org/page.php?id=5e1e7ay6168186Y5e1e7a; UNDP, "Renewable Energy – Saving Lives and Livelihoods in Gaza," July 2019: https://www.undp.org/papp/blog/renewable-energy-saving-lives-and-livelihoods-gaza.

[60] State of Palestine, *Nationally Determined Contributions – UNFCCC*, 2022; https://unfccc.int/sites/default/files/NDC/2022-06/State%20of%20Palestine%20First%20NDC.pdf; Office of the Quartet, "Energy," *op. cit*.

[61] *Ibid*.

[62] Office of the Quartet, "Energy," *op. cit*.

[63] Nassar, Y. F., Hala J. El-Khozondar, Mohamed Elnaggar, Fady F. El-Batta, Rifa J. El-Khozondar, Samer Y. Alsadi, "Renewable energy potential in the State of Palestine: Proposals for sustainability," *Renewable Energy Focus,* Vol. 49, June 2024.

[64] The National Adaptation Plan estimated a need for over $3.5 billion in the next decade for agriculture and water adaptation options alone. Agha, Zena, *Climate Change, op. cit.*

[65] Such as the UNDP, *Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority*, 2010; *op. cit*.