Climate Centre

Palestine

Climate fact sheet | 2024

This climate fact sheet summarizes the available information on the climate of Palestine and the impact of climate change on humanitarian activities in-country. Each fact sheet in the series was written using information from peer-reviewed academic papers, government publications, and other documentation from international non-governmental organizations.

1. Climate overview

Average annual temperature: Palestine has a Mediterranean climate with the middle and southern parts being semiarid while the northern regions are temperate with dry summers. The mean annual temperature is 25˚C (Ajjur & Al-Ghamdi, 2021). he warmest month is August with an average daytime temperature of 34.5°C and nighttime temperature of 23˚C; and the coldest month is January with an average daytime temperature of 18°C and nighttime temperature of 8°C. (World Data, n.d.).

Average annual rainfall: Rainfall is unevenly distributed, decreasing from north towards the south. Average annual precipitation in the West Bank is around 480mm, ranging from 166mm in the Jordan Rift Valley to 660mm in the central northern mountains (Mizyed, 2008). The Gaza Strip receives less precipitation with average rainfall of 319mm. The northern region of Gaza has around 407mm average annual precipitation, while the south is drier with an average of 259mm (Ajjur & Riffi, 2020). The majority of precipitation occurs between October and April with nearly completely dry summer months (from May to September) (Mizyed, 2008).

Short overview

The geographic location of Palestine – between the Mediterranean Sea and Jordan River – along with its diverse topography contribute to the territory's varied climate. It can be divided into three bioclimatic belts: the Inframediterranean, Thermomediterranean and Mesomediterranean (Ighbareyeh *et al.*, 2014).

Even though the Palestinian territories are traditionally characterized under a 'Mediterranean' climate, temperatures and rainfall vary with latitude and altitude. The Gaza Strip has a predominantly flat coastal terrain, but still receives varied rainfall ranging between 200 mm/year in the south to 400mm/year in the north (UNDP, 2010).

The West Bank in general is relatively arid, with about 50 per cent of the land receiving rainfall of less than 500mm/year, with a hyper-arid area with rainfall less than 100mm/year. The northern part of the West Bank receives the most rainfall, approximately 700mm/year, whereas the southern end receives only 80–100mm/year (UNDP, 2010).

1.1 Climate change in Palestine

Historical climate change	Projected climate change
Temperature	
▪ The mean annual temperature over Palestine has increased at a rate of 0.3°C/decade in 1961–2015 (Gutiérrez *et al.*, 2021). Annual mean temperatures on land and sea across the Mediterranean basin are 1.5°C higher than during pre-industrial periods (MedECC, 2020). ▪ The percentage of hot days, defined as days in which maximum temperature exceeds the 90th percentile threshold for that time of year, is projected to increase from 15 per cent to 60 per cent under a high emission scenario. If emissions decrease rapidly, this number could go down to 25 per cent. Similar increases are projected for hot nights (WHO & UNFCCC, 2022).	▪ The mean temperature over the Mediterranean region is projected to rise until 2100 by an additional 3.8–6.5°C for a high greenhouse gas concentration scenario (RCP8.5) and by 0.5–2.0°C for a low greenhouse gas concentration scenario (RCP2.6) (MedECC, 2020). ▪ In a medium-range scenario, annual mean temperature in Palestine will increase by around 1°C by 2025, by about 2°C by 2055, and by approximately 3°C by 2090 (World Bank, 2023). ▪ Cold temperatures will decrease, warm temperatures extremes will increase. In line with rising mean annual temperatures, the annual number of hot days (days with a daily maximum temperature above 35°C) is projected to rise dramatically and with high certainty (Gutiérrez *et al.*, 2021; Ranasinghe *et al.*, 2021).
Precipitation	
▪ Annual mean precipitation shows a high level of spatial variability over the Mediterranean region. Over Palestine, during the period 1980–2015, there has been downward trends in mean annual precipitation (Gutiérrez *et al.*, 2021b; MedECC, 2020). ▪ Climate change is already causing increased frequency and intensity of extreme weather events, particularly droughts and floods. In recent years, drought episodes have repeatedly caused disruption to agricultural production. Over the past 50 years, average rainfall has slightly decreased and rainfall events have become more violent causing flash floods (World Bank, 2023).	▪ Climate models project a consistent decrease in precipitation over Palestine during the 21st Century. ▪ Under a mid-range scenario, annual rainfall in Palestine decreases by around 10 per cent by 2025, by about 15 per cent by 2055, and by approximately 20 per cent by 2090 (World Bank, 2023). Under a high emissions scenario, precipitation may decrease by 30 per cent on average (WHO & UNFCCC, 2022).
Sea Level Rise	
▪ Mean sea level has risen by to 2.8mm/year during 1993–2018 across the Mediterranean basin (MedECC, 2020). ▪ Ten centimetres of sea level rise has been observed in the Mediterranean Sea over the past two decades (IMEP, 2014).	▪ Mean sea level is projected to rise and increase the frequency and intensity of coastal floods and erosion (MedECC, 2020). ▪ Total sea level rise by 2040-2050 is projected at 9.8 and 25.6m respectively for a minimum and maximum emissions scenario (Galassi & Spada, 2014). ▪ Sea level rise is likely to lead to storm surges, costal erosion, ecosystem disruption and saltwater intrusion of groundwater aquifers (WHO & UNFCCC, 2022).

2. Priorities of the Red Cross Red Crescent Movement under climate change

2.1 Scale up climate-smart disaster risk reduction (DRR), early action and preparedness

Palestine is ranked among the 15 countries with highest crisis severity by the Inform Severity Risk Index. It is within the very high severity category with the crisis caused by conflict (DRMKC, 2024).

Existing hazard	Projected risks
Heatwaves	
Extreme weather events have been increasing in the Mediterranean region in general, including within Palestine. For example, heatwaves have increased in intensity, frequency and duration (Perkins-Kirkpatrick & Lewis, 2020).	Projected climate changes indicate increases in temperature and extremes. With increases in global warming levels (e.g., at 2°C), these changes will be more widespread and more intense (MedECC, 2020; Seneviratne *et al.*, 2021). Heatwaves will intensify in duration and peak temperatures for every increase in global warming levels above the pre-industrial values.
Droughts	**Droughts (and wildfires)**
Droughts have notably increased in some parts of the West Bank where agricultural production is mostly rainfed (Abdo, n.d.).	Projected climate changes indicate increases in prolonged dry and drought events (MedECC, 2020; Seneviratne *et al.*, 2021). Droughts are projected to intensify as a result of climate change over the Mediterranean region. With projected increases in drying and heat combined, in Mediterranean areas an increase in fire weather conditions is projected to increase under RCP4.5 and RCP8.5 scenarios (Ranasinghe *et al.*, 2021).
Floods	
In Gaza, fluctuations and variance in rainfall have led to extreme flooding events since 2008 (WASH Cluster, 2021). In contrast, when rainstorms occur in the wet season, they are projected to be more intense as a result of the warmer atmosphere (Gutiérrez *et al.*, 2021; MedECC, 2020; Ranasinghe *et al.*, 2021; Seneviratne *et al.*, 2021). According to climate change numerical simulation models, extreme flooding events are expected to worsen in the coming years, and the number of people affected by flooding will increase (WASH Cluster, 2021).	Projected climate changes indicate increases in heavy precipitation events, leading to extreme flooding. (MedECC, 2020; Seneviratne *et al.*, 2021)

It is important to note that many of these hazards are interrelated and produce compound risks in the same areas and communities. In addition, risk must be understood as the interplay between hazard, exposure and vulnerability which makes certain individuals, communities and sectors more impacted by the hazards. All project design should take such compounding risks into account.

2.2 Reduce health impacts of climate change

Climate change poses direct and indirect health risks in Palestine. Some of the direct health effects of climate change in the Mediterranean region (including Palestine) are heat stress due to extreme heatwaves and drought, along with an increase in vector-borne diseases. Indirect health risks due to climate change are caused by the adverse impacts on water availability, food provision and quality, and air pollution (Linares *et al.*, 2020; WHO & UNFCCC, 2022).

Temperature rises are expected to lead to 60 per cent of days in Palestine becoming 'hot days' (days with a daily maximum temperature above 35°C) by the end of the century, thereby increasing the number of people exposed to heatwaves (WHO & UNFCCC, 2022). Heat stress results in heat-related illnesses such as dehydration, rash, cramps, heat stroke, heat exhaustion and death (WHO & UNFCCC, 2022). Older people, especially those above 65 years of age, people with pre-existing health conditions, young children, and people who are homeless or have inadequate housing are at the greatest risk of these threats (IFRC, 2019). In Palestine, urban heat islands could pose significant risks due to climate change since 92.6 per cent of the total population lives in urban areas as of 2020 (Linares *et al.*, 2020).

Warmer days in the region are expected to cause higher exposure to vector-borne diseases, especially dengue and West Nile virus (Linares *et al.*, 2020). As temperatures increase, a combination of shifts in, and changing intensity of, seasons as well as different human and animal migration patterns may also cause a change in the geographical distribution of diseases and their seasonal patterns (UNDP, 2010). Higher temperatures and water scarcity due to low rainfall will also increase Palestine's diarrhoeal disease burden (Hajat *et al.*, 2022). Over one million diarrhoea cases in Gaza alone were linked to temperature and rainfall deficiencies between 2009–2020 (Hajat *et al.*, 2022). Lack of safe and adequate water, especially in Gaza (Ives *et al.*, 2019), has led to a high burden of diarrhoeal disease. In addition, high flooding probability increases the risk of contamination of water sources with pathogens (WHO & UNFCCC, 2022).

Overall, Palestine is vulnerable to adverse health impacts of climate change. Over 20 per cent of the population is older than 55 – a group most susceptible to direct and indirect health risks caused by climate change (Linares *et al.*, 2020). Palestine's fragile healthcare system is likely to face increased challenges in access to its services as the health impacts of climate change affect a greater subset of the population (Keelan, 2016).

2.3 Ensure sustainable water supplies

Water, Sanitation and Hygiene (WASH)

Average monthly precipitation in Palestine will decrease by 8–10mm by the end of the century, and seasonal rainfall patterns may change, leading to greater aridity (UNEP, 2020). In addition, rising temperatures, scarcity of water resources, desertification, droughts and sea-level rise will compromise water access in the country (Al-Hindi *et al.*, 2022). Climate change will likely worsen existing water stress challenges in Palestine and may lead to competition and tension with neighbouring countries which share the transboundary river basins, such as along the Jordan and Yarmuk Rivers (Teotónio *et al.*, 2020). The absence of a resolution on natural water allocations between Israel and Palestine, where the former controls access to water in the latter, adds additional complexities to the situation.

The conflict context in Palestine contributes to overall vulnerability to climate stressors. For example, the 2021 airstrikes in Gaza damaged the north Gaza seawater desalination plant, affecting the sanitation, water supply and hygiene of around 600,000 people (Amnesty International, 2021).

Frequent droughts are expected to increase water shortages; and, with increasing temperatures and population, the demand for limited water resources will increase (USAID, 2017). Reducing rainfall and increasing droughts will also likely reduce groundwater infiltration (Netherlands Ministry of Foreign Affairs, 2019). The increased demand for water resources is leading to over-abstraction rates of coastal aquifers by almost three times the sustainable rate (World Bank, 2018). Over-abstraction combined with sea level rise drives seawater intrusion leading to deteriorating water quality (Abd-Elhamid *et al.*, 2015; Melloul & Collin, 2009). Also, flash floods that are expected to increase due to climate change will impact water quality and disrupt water distribution facilities (WHO & UNFCCC, 2022). Finally, the increased frequency of storms, combined with limited water and sanitation infrastructure in the Gaza Strip, are expected to increase the risk of sewage contamination in the water supply (Ives *et al.*, 2019).

Moreover, there is clear evidence that reduced precipitation and increased temperatures are enhancing the desiccation and mortality of shrubs and trees. The projected climate change impacts will likely lead to further desiccation of woody plants, especially the Mediterranean Oak. Consequently, this will also exacerbate extreme heatwave impacts and affect inland biodiversity (Sternberg *et al.* 2015).

Infrastructure and electricity

Hydrological drought and the stress on water resources will have a direct impact on energy generation, as hydropower is a significant source of power generation in the Mediterranean region. Thus, it is expected to have adverse effects on the region's economy, too (Teotónio *et al.* 2020).

Sea level rise drives seawater intrusion and deteriorating groundwater quality in Palestine, especially in the coastal aquifer (Melloul & Collin 2009). Sea-level rise is likely to cause wave overtopping, which affects marine structures and coastal infrastructure (Zviely *et al.* 2015).

2.4 Enable climate-resilient livelihoods and economic security

Over 80 per cent of agriculture in Palestine is rainfed, while 19 per cent is irrigated (WHO & UNFCCC, 2022). Agriculture is an essential sector in Palestine, formally employing 13.4 per cent of the labour force and making up 90 per cent of all informal employment (Anera, 2020). In addition, it contributes about 5 per cent to the heavily aid-dominated GDP (USAID, 2017). Due to a high reliance on rainfed agriculture in the West Bank, depleting amounts of water available overall, and the dire water situation in Gaza, Palestinians are disproportionately vulnerable to the livelihood impacts of climate change (Feitelson *et al.*, 2012).

Increased temperatures and frequent droughts are reducing crop yields, diminishing soil quality and reducing the water available for irrigation (USAID, 2017). In addition, dry conditions and higher temperatures increase crop water demands (Netherlands Ministry of Foreign Affairs, 2019). Furthermore, floods are becoming more frequent, leading to soil erosion and crop damage (USAID, 2017).

Impacts and hazards such as floods, erosion and land degradation may decrease the availability of arable land for agricultural production, compounding risks associated with conflict. Research indicates that, in 2017, there was an 80 per cent extension of agricultural drought in the Middle East region. In 2009, the hydrological drought extent reached 50 per cent in the region (Hameed *et al.*, 2020). Both the extent and frequency of drought are likely to rise in the future. Consequently, drought events will negatively impact crop yield and threaten food security across the Middle East, including Palestine (Hameed *et al.*, 2020). Frequent drought events will also likely lead to significant losses in agricultural land and desertification, especially in Palestine (USAID, 2017).

Finally, climate change impacts in the region will result in less vegetation in pasturelands, increased animal disease and scarcity of drinking water for animals, which will affect livestock in the area (Hameed *et al.*, 2020).

2.5 Address climate displacement and protection

Current and future displacement challenges

- Internal displacement in Palestine is mainly driven by conflict and violence. Most internal displacement in the Gaza Strip is caused by hostilities between Israeli armed forces and Palestinian armed groups. The conflict has been escalating since 7 October 2023, when Hamas attack on southern Israeli communities resulted in Israel's security cabinet declaring war situation and a large scale military campaign was launched from air, land and sea. Around 3.4 million displacements were recorded in the last quarter of 2023. Displaced people are facing increased protection risk, food insecurity and reduced access to water and sanitation (IDMC, 2024). Indirect health effects arising from food insecurity, air pollution, conflict and migration are rising significantly in Palestine and climate change impacts will exacerbate the present situation (Green *et al.* 2013). The warmer days in the region will lead to a higher exposure to vector-borne diseases, especially dengue and West Nile virus (Linares *et al.* 2020). The shifts in, and changing intensity of, seasons combined with different human and animal migration may cause a change in the geographical distribution of diseases and their seasonal patterns (UNDP, 2010).
- Flooding will affect thousands of people residing in coastal districts (such as Gaza City and Deir al-Balah) with a likely increase in displacement (IMEP, 2014). Modelling of both flooding and tsunamis on Palestine's coastline finds varying levels of projected displacement, ranging from 10,000 people for 1-in-50 year flooding and over 100,000 in the case of a 4-foot tsunami (Lichter & Felsenstein, 2012).
- The immobility of Palestinians increases their climate vulnerability. They will likely experience increasing water stress (due to both climate change and Israel's control over water resources) as well as ongoing soil degradation due, in part, to over-farming because of limited agricultural land (Freij, 2021). This also links to the compounding effects of conflict and climate hazards.

Potential needs of migrants and displaced people

Palestinians are particularly vulnerable to the impacts of climate change due to the interplay of conflict and hazards (Freij, 2021). Sub-standard housing increases the dangers of extreme heat, which is projected to rise and poses a particular risk to the elderly as well as children, the latter of whom currently represents around 44 per cent of the Palestinian population (Palestinian Central Bureau of Statistics, 2023).

Migration law and policies

- 1951 Refugee Convention and its 1967 Protocol, 1976. Israel is party to the 1951 Convention and its 1967 Protocol, but has no national refugee legislation.
- Not a signatory: Global Compact for Safe, Orderly and Regular Migration (GCM), 2018. Israel was one of only five countries in the UN General Assembly which voted against the GCM, which is the world's current framework for addressing migration.
- Settlement Policy in the West Bank, 1967. Israel has used a set of policy tools over decades, such as the declaration of 'state land' and incentives for Israeli settlers, to displace Palestinians in the West Bank and Gaza Strip.

Protection

According to the United Nations Development Programme (UNDP), the Israeli occupation "fosters a wide range of maladaptive policies and practices (e.g. the destruction of Palestinian/Arab olive groves) that frustrate the development of Palestinian resilience to climate hazards. In both the West Bank and especially the Gaza Strip, the enforced coping strategies of Palestinians as a result of access and movement restrictions are incompatible with the effective delivery of human development goals" (UNDP, 2010).

People in detention frequently have heightened vulnerability to natural disasters due to spatial marginalization resulting from prison locations on hazard-prone land and/or isolation from emergency evacuation services; limited to no connections to social networks, which are crucial aspects to hazard resilience; and political marginalization, including lack of policies and services to prevent disaster impacts on imprisoned populations (Gaillard & Navizet, 2012). These vulnerabilities, coupled with more frequent and intense disasters due to climate change, may leave prison populations in especially precarious positions to hazards such as extreme heat and floods.

2.5 Policy

Relevant information from the Nationally Determined Contribution (NDC) (2021)

The State of Palestine ratified the Paris Agreement in 2016.

Emission target: Committed to reducing its greenhouse gas emissions by 17.5 per cent by 2040 relative to business as usual, and by '26.6 per cent by 2040 under a scenario where the Israeli occupation ends.'

Area of focus on adaptation: Agriculture, energy, health, transport, waste, water, coastal and marine, food, industry, terrestrial ecosystem, tourism, urban and infrastructure. Adaptation and mitigation activities represent a budget of 5.7 billion US dollars.

Inclusion of DRR: The only mention of DRR encourages seeking the support of the private-sector in business plans. Climate risks and vulnerabilities are mentioned in the adaptation sections.

National designated entity: Environment Quality Authority

Key stakeholders: World Bank, Islamic Development Bank, Ricardo, Enabel, Bilateral cooperation with Belgium, France, United Kingdom and Germany

Relevant information from the National Adaptation Plan (NAP) (2016)

Area of focus on adaptation: Agriculture, energy, gender, health, transport, waste, water, coastal and marine, food, industry, terrestrial ecosystem, tourism, urban and infrastructure.

Inclusion of DRR: Yes, as an adaptation measure on agriculture, waste and health management. Flood and drought risk have also been highlighted throughout the document.

Climate finance

In addition to Green Climate Fund (GCF) readiness activities, the project 'Water Banking and Adaptation of Agriculture to Climate Change in Northern Gaza' is taking place in Palestine as a cross-cutting activity on mitigation and adaptation (GCF, 2022). National Societies cannot apply directly for climate finance from the GCF, but they can be an implementing partner for an accredited entity (Climate Centre, 2022a).

National Societies can explore options for accessing climate funds through smaller funds, such as the GEF's Small Grants Programme or the FFEM's Small Scale Initiatives Program. These grants range from 20,000–50,000 US dollars and are intended to support community-level initiatives. The Global Environment Facility (GEF) Small Grants Programme sits under the UNDP and has a National Coordinator in each country. Some countries have National Climate Funds, which may be accessible to the National Society. Other funding from bilateral donors or multilateral climate funds like the Adaptation Fund, CREWS, or GCCA+ could be explored (Climate Centre, 2022a).

Engaging in national climate adaptation planning is vital for accessing climate finance.

Additional resources

Climate Centre. (2022a). *Fact sheet on climate finance.* Red Cross Red Crescent Climate Centre. https://www.climatecentre.org/wp-content/uploads/Fact-Sheet-on-Climate-Finance.pdf

Climate Centre. (2022b). *Entry points for National Societies on climate finance partnerships.* Red Cross Red Crescent Climate Centre. https://www.climatecentre.org/wp-content/uploads/Entry-Points-for-Climate-Finance-Partnerships.pdf

References

Abd-Elhamid, H.F., Javadi, A.A., & Qahman, K.M. (2015). 'Impact of over-pumping and sea level rise on seawater intrusion in Gaza aquifer (Palestine)', *Journal of Water and Climate Change,* 6(4), 891–902. https://doi.org/10.2166/wcc.2015.055

Abdo, K.M. (n.d.). *Drought conditions and management strategies in Palestine*. https://www.droughtmanagement.info/literature/UNW-DPC_NDMP_Country_Report_Palestine_2014.pdf

Al-Hindi, A., Aker, A., & Al-Delaimy, W.K. (2022). 'The destruction of Gaza's infrastructure is exacerbating environmental health impacts', *Environmental Epidemiology,* 6(1), e186. https://doi.org/10.1097/EE9.0000000000000186

Amnesty International. (2021). *Israel/Palestine: Pattern of Israeli attacks on residential homes in Gaza must be investigated as war crimes.* https://www.amnesty.org/en/latest/news/2021/05/israelPalestine-pattern-of-israeli-attacks-on-residential-homes-in-gaza-must-be-investigated-as-war-crimes/

Anera. (2020). 'Understanding agriculture in Palestine and how aid can help', *The Olive Press Blog*. https://www.anera.org/blog/how-aid-can-help-agriculture-in-palestine/

Ajjur, S.B. & Al-Ghamdi, S.G. (2021). Variation in Seasonal Precipitation over Gaza (Palestine) and Its Sensitivity to Teleconnection Patterns. *Water*, 13(5), p.667. doi:https://doi.org/10.3390/w13050667.

Ajjur S.B. & Riffi M.I. (2020). Analysis of the observed trends in daily extreme precipitation indices in Gaza Strip during 1974–2016. *International Journal of Climatology.* 40, pp.6189–6200. https://doi.org/10.1002/joc.6576

DRMKC. (2024). *INFROM Report 2024.* The European Commission Disaster Risk Management Knowledge Centre. https://drmkc.jrc.ec.europa.eu/inform-index

Feitelson, E., Tamimi, A., & Rosenthal, G. (2012). 'Climate change and security in the Israeli–Palestinian context', *Journal of Peace Research*, 49(1), 241–257. https://doi.org/10.1177/0022343311427575

Freij, L. (2021). 'Climate change and the vulnerable Occupied Palestinian Territories', *UCLA Journal of Environmental Law and Policy*, 39, 65. https://escholarship.org/content/qt5tf728m4/qt5tf728m4.pdf?t=qq7quq

Gaillard, J.C & Navizet, F. (2012). 'Prisons, prisoners and disaster', *International Journal of Disaster Risk Reduction*, 1(1), 33–43. https://www.sciencedirect.com/science/article/pii/S2212420912000039?via%3Dihub

Galassi, G. & Spada, G. (2014). Sea-level rise in the Mediterranean Sea by 2050: Roles of terrestrial ice melt, steric effects and glacial isostatic adjustment. *Global and Planetary Change,* 123, pp.55–66. doi:https://doi.org/10.1016/j.gloplacha.2014.10.007.

GCF. (2022). *State of Palestine.* Green Climate Fund. https://www.greenclimate.fund/countries/state-palestine

Green, M.S., Groag Pri-or, N., Capeluto, G., Epstein, Y. & Paz, S. 'Climate change and health in Israel: Adaptation policies for extreme weather events', *Israel Journal of Health Policy Research*, Vol. 2(230), pp. 1–11, 2013. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3707789/

Gutiérrez, J.M., Jones, R.G., Narisma, G.T., Alves, L.M., Amjad, M., Gorodetskaya, I.V, Grose, M., Klutse, N.A.B., Krakovska, S., Li, J., Martínez-Castro, D., Mearns, L.O., Mernild, S.H., Ngo-Duc, T., van den Hurk, B., & Yoon, J.-H. (2021). 'Interactive atlas' in *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. V. Masson-Delmotte, P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, & B. Zhou (eds.), Cambridge University Press. https://interactive-atlas.ipcc.ch/

Hajat, S., Gampe, D., Sarsour, A., & Abuzerr, S. (2022). 'Climate change and diarrhoeal disease burdens in the Gaza Strip, Palestine: Health impacts of 1.5°C and 2°C global warming scenarios', *International Journal of Environmental Research and Public Health*, 19(8), 4898. https://doi.org/10.3390/ijerph19084898

Hameed, M., Ahmadalipour, A., & Moradkhani, H. (2020). 'Drought and food security in the Middle East: An analytical framework', *Agricultural and Forest Meteorology*, 281, 107816. https://doi.org/10.1016/j.agrformet.2019.107816

IDMC. (2024). *Country profile: State of Palestine*. https://www.internal-displacement.org/countries/palestine/ Internal Displacement

IFRC. (2023). *Palestine: climate fact sheet.* International Federation of Red Cross and Red Crescent Societies. https://prddsgofilestorage.blob.core.windows.net/api/documents/Palestine_-_Climate_Fact_Sheet/PALESTINE_Climate_Fact_Sheet_EN.pdf

IFRC. (2019). *Heatwaves: urgent action needed to tackle climate change's "silent killer".* International Federation of Red Cross and Red Crescent Societies. https://www.ifrc.org/press-release/heatwaves-urgent-action-needed-tackle-climate-changes-silent-killer

Ighbareyeh, J.M.H., Cano-Ortiz, A. & Cano, E. (2014). Case Study: Analysis of the Physical Factors of Palestinian Bioclimate. *American Journal of Climate Change*, 03 (2), pp.223–231. doi:https://doi.org/10.4236/ajcc.2014.32021.

IMEP. (2014). 'Adaptation to climate change in Israel', Israel Environment Bulletin, 40:14–19. https://din-online.info/pdf/ieb40.pdf

Ives, M.C., Hickford, A.J., Adshead, D., Thacker, S., Hall, J.W., Nicholls, R.J., Sway, T., Abu Ayyash, M., Jones, R., & O'Regan, N. (2019). 'A systems-based assessment of Palestine's current and future infrastructure requirements', *Journal of Environmental Management*, 234, 200–213. https://doi.org/10.1016/j.jenvman.2018.12.058

Keelan, E. (2016). 'Medical care in Palestine: Working in a conflict zone', *The Ulster Medical Journal*, 85(1), 3–7. https://pubmed.ncbi.nlm.nih.gov/27158157

Lichter, M., & Felsenstein, D. (2012). 'Assessing the costs of sea-level rise and extreme flooding at the local level: A GIS-based approach', *Ocean & Coastal Management*, 59, 47-62. https://pluto.huji.ac.il/~msdfels/pdf/Assessing%20the%20costs%20of%20SLR.pdf

Linares, C., Díaz, J., Negev, M., Martínez, G.S., Debono, R., & Paz, S. (2020). 'Impacts of climate change on the public health of the Mediterranean basin population – Current situation, projections, preparedness and adaptation', *Environmental Research*, 182, 109107. https://doi.org/10.1016/j.envres.2019.109107

MedECC. (2020). *'Climate and environmental change in the Mediterranean basin – Current situation and risks for the future', First Mediterranean Assessment Report*. Cramer, W., Guiot, J., Marini, K. (eds.). Mediterranean Experts on Climate and Environmental Change. https://doi.org/10.5281/zenodo.4768833

Melloul, A., & Collin, M. (2009). 'Key natural and anthropogenic parameters enhancing the effect of sea level rise: The case of Israel's Mediterranean coast', *Ocean & Coastal Management*, 52(1), 39–46. https://doi.org/10.1016/j.ocecoaman.2008.10.010

Mizyed, N. (2008). Impacts of Climate Change on Water Resources Availability and Agricultural Water Demand in the West Bank. *Water Resources Management,* 23(10), pp.2015–2029. doi:https://doi.org/10.1007/s11269-008-9367-0.

Netherlands Ministry of Foreign Affairs. (2019). *Climate change profile: Palestinian territories*. https://reliefweb.int/report/occupied-palestinian-territory/climate-change-profile-palestinian-territories

Palestinian Central Bureau of Statistics. (2023). *Dr. Awad, highlights the Palestinian children's situation on the occasion of the Palestinian Child Day,* 05/04/2023. https://www.pcbs.gov.ps/site/512/default.aspx?tabID=512&lang=en&ItemID=4484&mid=3171&wversion=Staging

Perkins-Kirkpatrick, S.E., & Lewis, S.C. (2020). 'Increasing trends in regional heatwaves', *Nature Communications,* 11(1), 1–8. https://doi.org/10.1038/s41467-020-16970-7

Ranasinghe, R., Ruane, A.C., Vautard, R., Arnell, N., Coppola, E., Cruz, F.A., Dessai, S., Islam, A.S., Rahimi, M., Ruiz Carrascal, D., Sillmann, J., Sylla, M.B., Tebaldi, C., Wang, W., & Zaaboul, R. (2021). 'Climate change information for regional impact and for risk assessment' in *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. V. Masson-Delmotte, P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, & B. Zhou (eds.). Cambridge University Press. https://www.ipcc.ch/report/ar6/wg1/chapter/chapter-12/

Seneviratne, S.I., Zhang, X., Adnan, M., Badi, W., Dereczynski, C., Di Luca, A., Ghosh, S., Iskandar, I., Kossin, J., Lewis, S., Otto, F., Pinto, I., Satoh, M., Vicente-Serrano, S.M., Wehner, M., & Zhou, B. (2021). 'Weather and climate extreme events in a changing climate'in *Climate Change 2021: The Physical Science Basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*. V. Masson-Delmotte, P. Zhai, A. Pirani, S.L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M.I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T.K. Maycock, T. Waterfield, O. Yelekçi, R. Yu, & B. Zhou (eds.). Cambridge University Press. https://www.ipcc.ch/report/ar6/wg1/chapter/chapter-11/

State of Palestine. (2021). *The State of Palestine's First Nationally Determined Contributions* (NDCs) (updated submission). https://unfccc.int/sites/default/files/NDC/2022-06/Updated%20NDC_%20State%20of%20Palestine_2021_FINAL.pdf

State of Palestine. (2016). *National Adaptation Plan (NAP) to climate change.* Environment Quality Authority. https://unfccc.int/sites/default/files/NDC/2022-06/Updated%20NDC_%20State%20of%20Palestine_2021_FINAL.pdf

Sternberg, M., Gabay, O., Angel, D., Barneah, O., Gafny, S., Gasith, A., Grünzweig, J.M., Hershkovitz, Y., Israel, A., Milstein, D, Rilov, G., Steinberger, Y. & Zohary, T. (2015). 'Impacts of climate change on biodiversity in Israel: An expert assessment approach', *Regional Environmental Change*, 15(5), 895–906. https://link.springer.com/article/10.1007/s10113-014-0675-z

Teotónio, C., Rodríguez, M., Roebeling, P., & Fortes, P. (2020). 'Water competition through the 'water-energy' nexus: Assessing the economic impacts of climate change in a Mediterranean context', *Energy Economics*, 85, 104539. https://doi.org/10.1016/j.eneco.2019.104539

UNDP. (2010). *Climate change adaptation strategy and programme of action for the Palestinian Authority.* United Nations Development Programme. http://eprints.lse.ac.uk/30777/1/PA-UNDP_climate_change.pdf

UNEP. (2020). *State of environment and outlook report for the occupied Palestinian territory 2020.* United Nations Environment Programme. https://www.unep.org/resources/report/state-environment-and-outlook-report-occupied-palestinian-territory-2020

USAID. (2017). *Climate change risk profile: West Bank and Gaza.* United States Agency for International Development. https://www.climatelinks.org/sites/default/files/asset/document/2017Mar06_GEMS_Climate%20Risk%20Profile%20West%20Bank%2BGaza.pdf

WASH Cluster. (2021). *Access to flooding mitigation and prevention measures in light of climate change impact in Gaza.* https://reliefweb.int/sites/reliefweb.int/files/resources/access_to_flooding_mitigation_and_prevention_measures_in_light_of_climate_change_impact_in_gaza.pdf

WHO & UNFCCC. (2022). *Health and climate change profile 2022: Occupied Palestinian Territory.* World Health Organization & United Nations Framework Convention on Climate Change. https://apps.who.int/iris/rest/bitstreams/1415286/retrieve

World Bank. (2023). *West Bank and Gaza: Country Climate and Development Report*. https://reliefweb.int/attachments/37132798-7136-4f34-a55f-e18ad0e56176/WB%20West%20Bank%20and%20Gaza%20Country%20Climate%20and%20Development%20Report.pdf

World Bank. (2018). *Securing water for development in West Bank and Gaza: Sector note*. https://documents1.worldbank.org/curated/en/736571530044615402/Securing-water-for-development-in-West-Bank-and-Gaza-sector-note.pdf

World Data. (n.d.). *The climate in Palestine.* https://www.worlddata.info/asia/palestine/climate.php

Zviely, D., Bitan, M. & DiSegni, D.M. (2015). 'The effect of sea-level rise in the 21st Century on marine structures along the Mediterranean coast of Israel: An evaluation of physical damage and adaptation cost', *Applied Geography*, 57, 154–162. https://www.sciencedirect.com/science/article/abs/pii/S0143622814002914