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# Climate Landscape Analysis for Children

IN THE STATE OF  
PALESTINE



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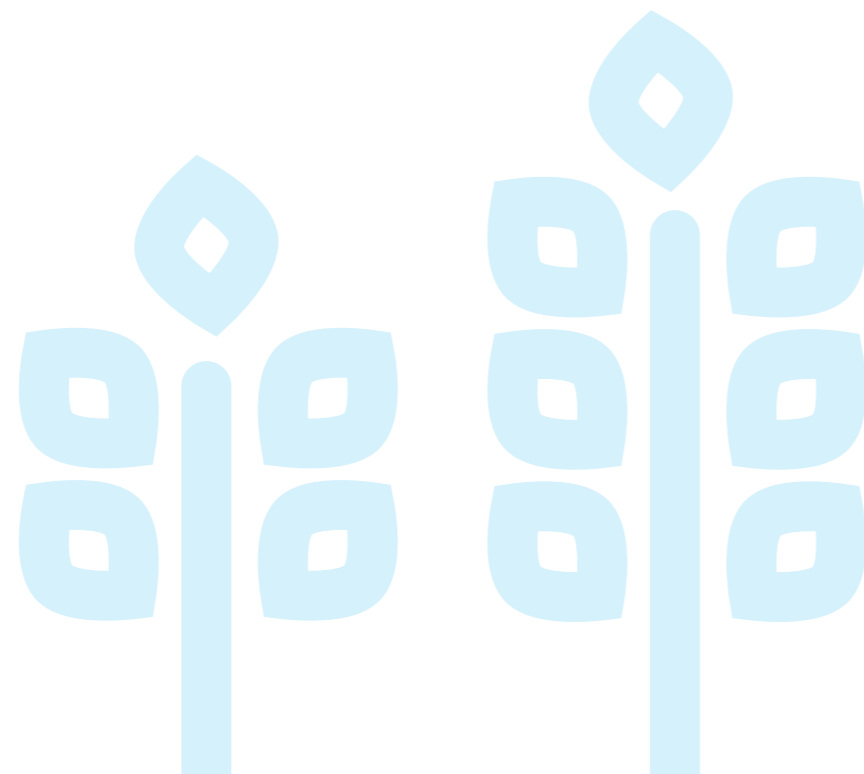
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## Disclaimer

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The author apologises for any errors or omissions that may unwittingly have been made, but deemed and is solely responsible for the opinions and conclusions expressed in the report.



## Acronyms and Abbreviations

<b>ARIJ</b>	Applied Research Institute Jerusalem	<b>MW</b>	Megawatt
<b>AFD</b>	Agence Française de Développement	<b>NAP</b>	National Adaptation Plan
<b>APD</b>	Area Programme Document	<b>NCCT</b>	National Climate Change Taskforce
<b>CEE</b>	Climate, Environment, and Energy	<b>NDC</b>	Nationally Determined Contribution
<b>CLAC</b>	Climate Landscape Analysis for Children	<b>NDP</b>	National Development Plan
<b>CBOs</b>	Community-Based Organizations	<b>NGOs</b>	Non-Governmental Organizations
<b>DRR</b>	Disaster Risk Reduction	<b>NPA</b>	National Policy Agenda
<b>EQA</b>	Environment Quality Authority	<b>PA</b>	Palestinian Authority
<b>ERS</b>	Emergency Response System	<b>PCBS</b>	Palestinian Central Bureau of Statistics
<b>EU</b>	European Union	<b>PCS</b>	Palestinian Consultative Staff for Developing NGOs
<b>E-Waste</b>	Electronic Waste	<b>PENRA</b>	Palestinian Energy and Natural Resources Authority
<b>FAO</b>	Food and Agriculture Organization	<b>PV</b>	Photo Voltaic
<b>FGDs</b>	Focus Group Discussions	<b>PWA</b>	Palestinian Water Authority
<b>GHG</b>	Green House Gases	<b>RCP</b>	Representative Concentration Pathway
<b>GNI</b>	Gross National Income	<b>SDGs</b>	Sustainable Development Goals
<b>HML ERB</b>	Health Media Lab Ethics Review Board	<b>SPPME</b>	Social Policy, Planning, Monitoring and Evaluation
<b>ICRC</b>	International Committee of the Red Cross	<b>SoP</b>	State of Palestine
<b>IEC</b>	Israel Electric Corporation	<b>SPI</b>	Standardized Precipitation Index
<b>INCR</b>	Initial National Communication Report	<b>ToR</b>	Terms of References
<b>IPCC</b>	Intergovernmental Panel on Climate Change	<b>UNFCCC</b>	UN Framework Convention on Climate Change
<b>JSCs</b>	Joint Service Councils	<b>UNICEF</b>	United Nations Children's Fund
<b>KIIs</b>	Key Informant Interviews	<b>UNICEF SoP</b>	UNICEF in the State of Palestine
<b>LGUs</b>	Local Government Units	<b>USAID</b>	United States Agency for Interna- tional Development
<b>MCM</b>	Million Cubic Meters	<b>UNDP</b>	United Nations Development Pro- gramme
<b>MENA</b>	Middle East and North Africa	<b>PAPP</b>	Programme of Assistance to the Palestinian People
<b>MICS</b>	Multiple Indicator Cluster Survey	<b>UN-Habitat</b>	United Nations Human Settlements Programme
<b>MoA</b>	Ministry of Agriculture	<b>UNRWA</b>	United Nations Relief and Work Agency
<b>MoE</b>	Ministry of Education	<b>WASH</b>	Water and Sanitation Hygiene
<b>MoF</b>	Ministry of Finance	<b>WHO</b>	World Health Organization
<b>MoH</b>	Ministry of Health	<b>WSRC</b>	Water Sector Regulatory Council
<b>MoJ</b>	Ministry of Justice	<b>WWTP</b>	Wastewater Treatment Plant
<b>MoLG</b>	Ministry of Local Government		
<b>MoNE</b>	Ministry of National Economy		
<b>MoPW</b>	Ministry of Public Works		
<b>MoSD</b>	Ministry of Social Development		
<b>MoT</b>	Ministry of Transportation		

## Executive Summary



The State of Palestine already faces the reality of climate instability, which is the long-term change in the Earth's average weather patterns. The average annual air temperature has reportedly increased over the past 20 years (2001–2020). Literature review suggests these changes will become more pronounced, leading to droughts, contaminated water supplies, and floods that overwhelm water treatment facilities. Climate change affects environmental and social standards, and the determinants of health.

In the 'The climate crisis is a child rights crisis' report published by UNICEF in August 2021, the State of Palestine ranks 111 out of 163 countries where children are most at risk. At the national level, the risks associated with climate instability for children were highlighted only recently in the executive order issued in 2020, which made the Nationally Determined Contribution (NDC) a priority for all ministries. The Environment Quality Authority was appointed as the chair of the national committee for climate change. It now leads on the implementation of the National Adaptation Plan and NDC.

However, the Palestinian Authority and other actors are challenged to act on climate change and to mobilize and allocate adequate resources. Control over natural resources, the Israeli occupation, the Palestinian internal political divide, and the financial and economic crisis also impact the process.

UNICEF's Climate Landscape Analysis for Children (CLAC) report includes an analysis of the Climate, Environment and Energy (CEE) situation in the State of Palestine and how it adversely affects children, their rights and their access to services such as health, education, water supply and sanitation, and social policy.

Projections suggest the Palestinian population will double to almost 10 million by 2050, with surface and groundwater resources expected to become scarcer due to rising temperatures and decreasing rainfall that damage ecosystems via fires and agricultural losses. Analysis of the temperatures recorded at the Nablus metrological station showed an increase of 1.8°C over 36 years.

Varied rainfall spatial distribution and increased rainfall intensities cause flooding, despite the lack of significant change in national rainfall averages. Flash floods, such as at Wadi Gaza and the Northern West Bank, cause damage to critical infrastructure, which is another effect of climate change. New patterns of pests and diseases may emerge, and food security become endangered.

Agriculture and biodiversity are also affected by climate instability, with an increasing number of hot days in the State of Palestine leading to increased potential evapotranspiration. This heat increase can lead to additional climate change risks, including droughts and desertification of the southern West Bank and Jordan Valley areas, with shortages in drinking water in the central, southern and eastern regions expected to intensify.

This critical report examines how these environmental and climate conditions harm Palestinian children, their health and nutrition, and how CEE hazards may disproportionately impact them as they depend on their parents or guardians for their well-being. In addition to the direct impact on children, such CEE hazards also affect the individual and support networks that children depend on.

The report further analyses gaps for children and child-sensitive approaches to inform ongoing and future UNICEF programming in the State of Palestine, while giving an overview of how resilience for climate change and environmental degradation can be managed to benefit all, including its children.

This report also addresses the existing data gap on the impact of climate change on Palestinian children by providing an understanding of the overall CEE landscape regarding data availability, existing related laws, policies and regulations, risks to children and potential benefits of climate action. It reconfirms the debilitating consequences on children's mortality and injury, growth and well-being highlighted by the few published reports.

**Varied rainfall spatial distribution and increased rainfall intensities cause flooding, despite the lack of significant change in national rainfall averages.**



Methods used to gather information and make subsequent recommendations include data collection and analysis, compiling and reviewing essential resources, key informants' interviews, and qualitative and quantitative analyses.

The voices of more than 80 children and youth (11-18 years old) were also heard through their participation in focus group discussions, leading to further understanding of the fragmentation of child and youth engagement in environmental and climate action programmes. Key highlights included unawareness of the climate-change concept, a school curriculum lacking relevant information, a lack of parental knowledge on climate change effects, and an increase in asthma and allergies. The report concludes by defining a set of comprehensive recommendations that include actionable opportunities to mitigate the impacts of the crisis that cut across all the physical and social environments in which children live, grow and develop. It also suggests integrating climate and environmental development issues into sectoral programmes. It further calls for a multi-level approach to addressing the risks and opportunities posed by the ongoing climate instability in the State of Palestine.

One significant recommendation relates to policy development seeking to reduce child vulnerability to climate change impacts, especially in environments that affect how children live, grow and develop. This action would include working with the Palestinian Authority and institutions to integrate climate change elements into developing legislation and policies as part of new ministerial strategies. In turn, such action would allow the development of a legal framework for climate change adaptation and mitigation. It would also call for greater allocation in the national budget for climate mitigation and adaptation to climate risks, and budgets for equitable access to social services.

Reviewing the existing legal and institutional framework for adaptation to climate change can lead to enhanced national social policy and protection, with cross-sectoral strategies upholding children's rights and complying with UN Framework Convention on Climate Change (UNFCCC) goals and targets. The report recommends an early-warning system that ensures national and local preparedness to respond to child protection needs from climate-related disasters and displacement.

Redesigned sectoral programmes can strengthen social protection and child-protection systems and improve teaching and learning outcomes for boys and girls on climate-related issues in the pre-primary, primary and secondary educational levels. Equally important is improving children's, adolescents' and families' knowledge and skills about climate change and how to tackle it, while integrating climate change adaptation in health and nutrition-related strategies.

At the institutional, community and family/household, the report calls for enhanced adaptive capacities, particularly for critical infrastructure around water, sanitation and hygiene.

A healthy environment and robust systems are the best protection from the impact of climate change. UNICEF, and all of us, have an essential role in advocating for child-sensitive and gender-responsive climate policies and actions that safeguard the citizens of today and tomorrow, while empowering children and young people to become climate and environmental advocates and reducing the environmental impact of operations and programmes to promote a greener, more sustainable environment for children.

Let's work together to foster a green and hopeful future in the State of Palestine, where children and youth are climate champions and stewards of the environment.

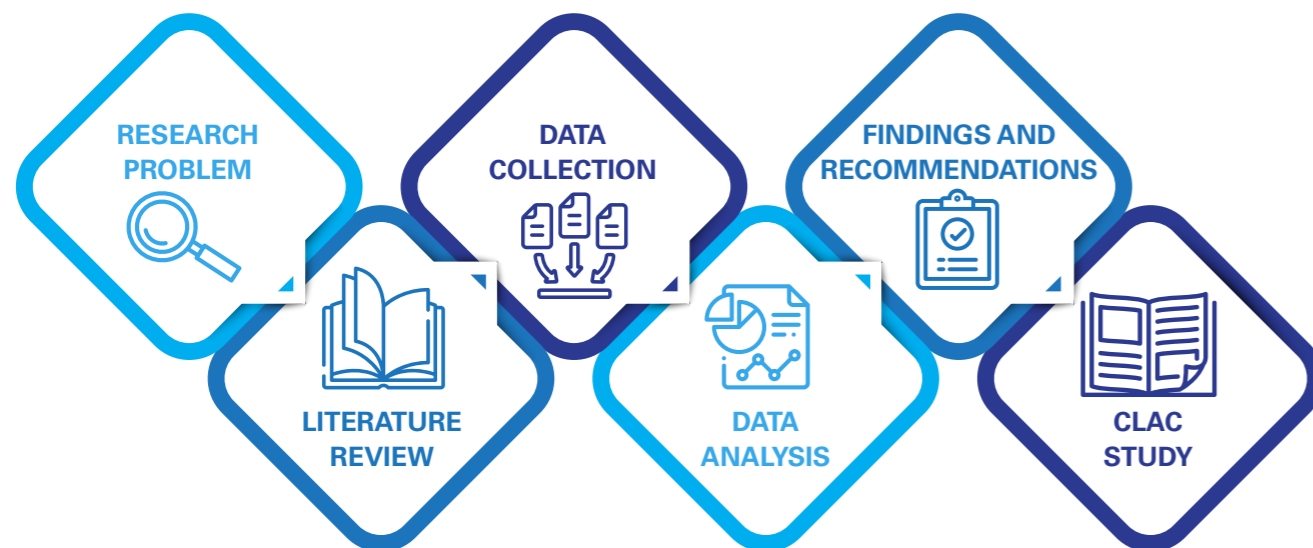
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**UNICEF, and all of us, have an essential role in advocating for child-sensitive and gender-responsive climate policies and actions that safeguard the citizens of today and tomorrow.**

## Methodology

The study plan that was applied to conduct the Climate Landscape Analysis for Children in the State of Palestine (SoP) in line with UNICEF guidelines is illustrated by the following chart (Figure 1):

**FIGURE 1: THE CLAC STUDY FLOWCHART**



The methodology was based on the reviewed literature on climate change, environmental pollution, energy accessibility, and potential risks to children's health, social development, and wellbeing, as well as findings verified during the KIIs and consultation with stakeholders and the FGDs with children.

The methodology was participatory as it has involved more than 30 stakeholders from different local and international institutions working in Climate, Environment, and Energy (CEE) in the SoP and more than 80 children, who have participated in the Focus Group Discussions (FGDs). Reviewed literatures on climate change, environmental pollution, energy accessibility, and potential risks to children's health, social development, and wellbeing were the main source of the secondary data on CEE.

Interviews have targeted several stakeholders that were selected and approved during the inception phase. The Palestinian organizations included the Environment Quality Authority (EQA), Palestinian Water Authority (PWA), Ministry of Education (MoE), Ministry of Agriculture (MoA), Ministry of Local Government (MoLG) and the Metrological Office at the Ministry of Transportation (MoT).

The international organizations, included in addition to UNICEF, the European Union (EU), the Agence Française de Développement (AFD), the United Nations Development Programme (UNDP), the United Nations Human Settlements Programme (UN-Habitat), the German International Cooperation, the Office of the Quartet, the International Committee of the Red Cross (ICRC), and EcoPeace. Moreover, key experts from local academic institutions were also interviewed.

Ten FGDs for children and adolescents in the West Bank including East Jerusalem and the Gaza Strip were conducted, covering more than 80 children aging between 11 and 18. The FGDs were with children of different ages, sex, and socioeconomic levels. The FGDs aimed to assess the children's level of knowledge related to CEE and to reflect the concerns and needs while developing the CLAC. These have been analysed and the results were employed towards formulating the recommendations to be addressed by UNICEF SoP for their consideration in the upcoming programme and initiatives and in the Area Programme Document (APD).

The State of Palestine ranks **111 out of 163** countries where **children are most at risk.**

Projections suggest the Palestinian population will double to almost **10 million** by 2050



## Purpose and Objectives

The Climate Landscape Analysis for Children (CLAC) report includes an analysis of the Climate, Environment, and Energy (CEE) situation in relation to the following areas: Health and Nutrition; Water, Sanitation and Hygiene (WASH); Education and Adolescents; Child Protection; and Social Policy. **The CLAC aims to:**

- Understand the overall CEE landscape in the State of Palestine (SoP) in terms of data availability, existing related laws, policies and regulations, risks to children and potential benefits of climate action.
- Analyse the gaps in its consideration for children and child-sensitive approaches, in order to inform ongoing and future programming in the SoP.
- Cover data collection and analysis, compiling and reviewing key resources including a thorough literature review, stakeholder interviews, and qualitative and quantitative analysis.
- Provide recommendations especially but not limited to Environment and Climate Action, in the identification of actionable opportunities to integrate CEE development issues into sectoral programmes in cooperation with Palestinian government agencies.

The data collection for this report was undertaken after completing the Health Media Lab Ethics Review Board (HML ERB) through which ethical approval was obtained.



# 1.

## Climate, Environment and Energy in the State of Palestine



## 1.1 Demographic and Socio-Economic Situation

According to the Palestinian Central Bureau of Statistics (PCBS, 2022), the population of the SoP in 2022 was 5.35 million, of whom 3.19 million reside in the West Bank and 2.17 million in the Gaza Strip. In 2022, the population growth rate was 2.4%, 2.8% in the Gaza Strip and 2.1% in the West Bank. The population has almost doubled over the past 50 years and is projected to double again to roughly 9.8 million by 2050. Almost three-quarters of the Palestinian population live in urban areas, compared to 17% in rural areas and 9% in refugee camps (PCBS, 2022).

**TABLE 1: POPULATION DENSITY IN THE WEST BANK AND THE GAZA STRIP (2022)<sup>1</sup>**

Area	Area (km <sup>2</sup> )	Population (Million)	Density (Person/km <sup>2</sup> )
Gaza Strip	360	3.19	8,861
West Bank	5,680	2.17	382
State of Palestine	6,040	5.36	887

By mid-2022, the estimated number of children (under age 18) in the SoP is 2.35 million, with 1.20 million males and 1.15 million females, accounting for 43.9% of the total population (PCBS, 2022).

The industrial sector in the SoP comprises mainly small family-owned businesses. Large enterprises are still very limited in number. The stone and marble sector is one of the largest and most active industries in the SoP. Other relevant industries in the country are the food manufacturing and agricultural industries.

## 1.2 Environmental Conditions

### Trends in precipitation, solar radiation and humidity

About 70 percent of the average rainfall in the country falls between November and March; June through August are often rainless. Rainfall is unevenly distributed, decreasing sharply as one moves Southward. In the extreme South, rainfall averages less than 100 mm annually; in the extreme North average annual rainfall exceeds 1000 mm.

Rainfall varies from season to season and from year to year, Precipitation is often concentrated in violent storms, causing erosion and flooding. During January and February, it may take the form of snow at the higher elevations of the central highlands, including Jerusalem. The areas of the country most cultivated are those that receive more than 300 mm of rainfall annually about one-third of the area is cultivable. However, the inconsistency of rainfall throughout the months and years requires that most vegetable cultivation be supplemented with irrigation to ensure normal growth.

The SoP receives an average of seven hours of sunshine a day during the winter and thirteen hours during the summer. As a consequence, rooftop solar collectors are extensively used to capture solar energy and to replace limited and expensive available energy resources.

Climate change has already influenced drought in the SoP as a result of precipitation changes, increased temperatures, and increased evapotranspiration.

### Forests and land degradation

In the West Bank, the total area of forests was about 7,830 hectares in 2012 (only 1% of the total area of the West Bank), of which 4,200 hectares were annexed behind the West Bank Barriers, and 150 hectares are located East of the West Bank Barrier. Most of the forests were planted during the British Mandate, and during the Jordanian administration, and a very small percentage consisted of the remnants of natural forests.

<sup>1</sup> (Palestinian Central Bureau of Statistics, Indicators, 2022)



The Food and Agriculture Organization (FAO) has estimated the area of land under different cover types for the SoP. During the period 1992 – 2015, a dramatic increase in the area under artificial surfaces<sup>2</sup> was recorded, while there was a recorded decline of vegetation cover (FAO, 2022) (Table 2).

**TABLE 2: LAND COVER AREA (1,000 HA.) AND PERCENTAGE OF THE OCCUPIED TOTAL AREA**

Land Cover	1992		2015		Change Value	Annual Change Value
	Value	%	Value	%		
Artificial surfaces (including urban and associated areas)	8.14	1.4	25.77	4.3	+17.63	+0.77
Grassland	41.32	6.9	42.46	7.1	+1.14	+0.05
Herbaceous crops	108.69	18.1	94.64	15.7	-14.05	-0.61
Shrub-covered areas	39.50	6.6	38.46	6.4	-1.04	0
Sparsely natural vegetated areas	121.27	20.1	117.20	19.5	-4.07	-0.05
Terrestrial barren land	121.82	20.2	116.66	19.4	-5.16	-0.22
Tree-covered areas	40.03	6.6	42.59	7.1	+2.56	+0.11
Woody crops	121.23	20.1	124.21	20.6	+2.98	+0.13
Total land area	~ 602					

Source: [www.fao.org/in-action/water-efficiency-ena/countries/palestine/background-and-sites/en](http://www.fao.org/in-action/water-efficiency-ena/countries/palestine/background-and-sites/en)

Around 17% of the land area in the West Bank is planted with olive trees, providing critical jobs and income from the processing of olives (The World Bank, 2020). The slight increase in grassland and tree-covered areas in the SoP can be ascribed to the Greening Palestine Programme, which has been carried out by the Ministry of Agriculture (MoA), in cooperation with other actors. The Programme includes distributing and planting hundreds of thousands of trees annually, mainly fruit trees, forestation and drought-tolerant grazing shrubs throughout the West Bank. From 1992 to 2015, the area of agricultural lands decreased from 61.5% to 49%, while other land uses increased. Forestland, comprising a relatively small area, has remained almost unchanged.

<sup>2</sup> Artificial surfaces are those where landscape has been changed by or is under influence of human construction activities by replacing natural surfaces with artificial abiotic constructions or artificial materials.



### Water Resources

The water sector is considered one of the most vulnerable to climate change impacts, especially in terms of water availability, quality, and prices. Both surface and groundwater resources are expected to become scarcer due to raising temperatures and decreasing rainfall. In addition, the combination of environmental, social, and political pressures is expected to make replenishing water aquifers harder and access to water supply more limited.

The SoP experiences medium water stress and is the 28<sup>th</sup> most water-stressed country in the world. Projections to 2040 suggest increasing stress levels. The SoP has a total of renewable water resources per capita of the equivalent of 472 litres per capita per day, which is 40% lower than the Middle East and North Africa (MENA) median, and 18 times lower than the global median (FAO, 2018). Only 3% of the 190.5 Million Cubic Meters (MCM) of water, extracted yearly from the coastal aquifer, can be considered potable, according to World Health Organization (WHO) standards (PCBS, 2022).

Freshwater resources in the SoP include groundwater (aquifers) and surface water resources (rivers, streams, lakes and springs). For the West Bank, the Mountain Aquifer covers about 4,000 m<sup>2</sup> and is underlain by the main three hydrological basins, which are: the Western Basin, the North-eastern Basin and the Eastern Basin, with a combined annual sustainable yield of nearly 675 MCM. The Gaza Strip is part of the coastal aquifer. The replenishment of the coastal aquifer is 55 MCM/yr., of which 40% is ensured by local precipitation, while irrigation and leakage from faulty distribution networks and wastewater contribute to about 60% of it.

The West Bank contains aquifers and spring water from which Palestinians have a limited annual allocation, and for which approval by the Israeli authorities is required for Palestinians to dig new wells, rehabilitate old wells, or build wastewater treatment facilities.

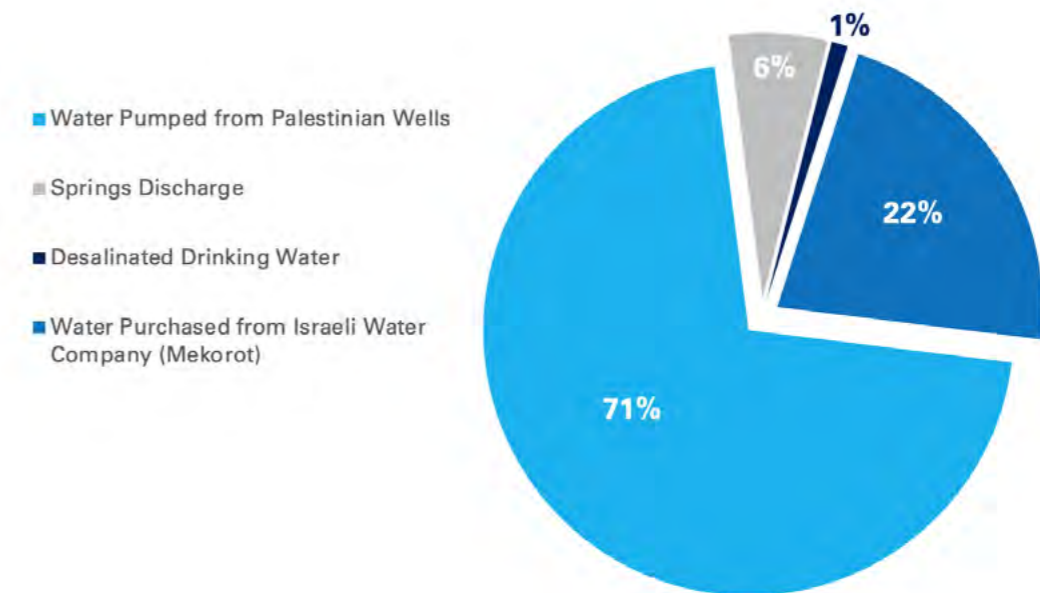
Surface water resources in the West Bank consist of the Jordan River and the ephemeral valleys, flowing towards the Mediterranean, the Jordan Valley and the Dead Sea. Concerning the Gaza Strip, the only significant surface water is Wadi Gaza, which is now mostly dry, other than periods of heavy rainfall and the resulting flash floods.

More than 99% of the Palestinian communities/municipalities are served by water supply networks, where 20% of the available water is purchased from the Israeli Water Company "Mekorot". Figure 1 presents the annual available water quantities in the SoP by source and region (PCBS, 2022).

THE WATER SECTOR IS CONSIDERED ONE OF THE MOST VULNERABLE TO CLIMATE CHANGE IMPACTS, ESPECIALLY IN TERMS OF WATER AVAILABILITY, QUALITY, AND PRICES.



FIGURE 1: ANNUAL AVAILABLE WATER QUANTITY IN THE SOP BY SOURCE AND REGION



There has been a 50% increase in the number of residents connected to a potable water supply in the West Bank since 1995, with 81% of communities connected and only 7% of households remaining unconnected (Thawaba et al., 2017). However, about 25% of households in the West Bank use water tankers and domestic wells to supplement the water provided by networks (ARIJ, 2015).

Access to safe potable water in the Gaza Strip, through the public water network, decreased from 98.3% in 2000 to only 10.5% in 2014, compared to 97% in the West Bank. Consequently, reliance on water tanks, containers and bottled water increased from 1.4% to 89.6% during the same period (UNCT, 2017). Regardless of these source issues, only 30% of households in the Gaza Strip have a daily network water supply (PCBS, 2022 and (UNICEF, May 2022)).

### Wastewater

Most wastewater (sewage) in the SoP is discharged without prior treatment. Industrial wastewater is rarely treated. It is estimated that less than 60% of households have a sewage system connection, and the rest use on-site septic tanks.

According to the World Bank, only 30% of the 69 MCM of wastewater generated in the West Bank is collected and only 9.5 MCM is treated. The result is that 25 MCM of untreated wastewater is discharged into the environment each year from 350 sites. About 21.4 MCM of this flow reaches Israel, which charges the cost of the necessary treatment (The World Bank, 2020).

In comparison with the connection to water supply networks, wastewater networks are much less developed. Commonly, connections to sewage systems are limited to major urban areas with high population density. More than 70% of the Gaza Strip's households are connected to sewer pipes. On the contrary, the connection rate in the West Bank does not exceed 15% (PCBS, 2022). Unserved areas dispose of their wastewater through cesspits or directly into the environment (PCBS, 2022).

Several major wastewater treatment plants were built in recent years in the West Bank, among these are Al-Bireh Wastewater Treatment Plant (WWTP), Nablus West WWTP, Jericho WWTP, and Hebron Regional WWTP (under construction). In the Gaza Strip, regional WWTPs have been constructed in Northern Gaza, Middle Gaza and Khan Younis. Moreover, three new large WWTPs have been put into operation in Gaza. The plants are located in the East

of the Refugee camp of Al Burij, middle of the Gaza Strip, with a treatment capacity of 60,000 cubic meters of sewage for the first stage and went into operation at the start of April 2021 (Asad, 2021).

There are other smaller/local WWTPs. However, some of them are not operating efficiently due to the lack of financing or technical capacities of the municipalities or Local Government Units (LGUs). The reuse of treated wastewater for agriculture has been introduced in the Nablus-West WWTP, under implementation to reuse the 10 thousand cubic meters of treated wastewater.

#### Solid Waste Management

The Ministry of Local Government (MoLG) supports the Joint Service Councils (JSCs) in the collection and treatment of solid waste in the West Bank and the Gaza Strip. The 12 JSCs service 83% of the total number of Local Government Units in the West Bank, and 74% of the total population (Thöni & Matar, 2019).

The daily quantity of municipal solid waste generation in the West Bank is 2,622 tons, where the per capita generated weight is 0.91 kg/day. About 65% of such waste is collected by the JSCs, while the LGUs and the United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) bear the responsibility for the remainder. On the other hand, the Gaza Strip generates about 1,330 tons of solid waste daily, with an average per capita production rate of 0.7 kg/day. Only one JSC operates in the Gaza Strip, mainly in the southern part of the strip, collecting about 12% of the Gaza Strip's solid waste.

Organic matter represents 50% of the solid waste components, along with cardboard, glass, metal, paper and plastic. Many categories of hazardous and industrial waste are commonly mixed, and subsequently treated with municipal solid waste, along with untreated waste from Israeli settlements (PCBS, 2022).

Hazardous waste poses challenges to public health and the environment. Due to limitations of funds and experience, few actions are carried out to tackle this. Used batteries also pose environmental and public health risks, in the West Bank and particularly in the Gaza Strip (The World Bank, 2020).

The electronic waste (E-waste) sector in the SoP is characterized by its informality. The main locations, where E-waste is traded and treated are Beit Awwa, Idhna, Deir Samit, Al Kum and Beit Maqdam in Hebron Governorate. Every year, about 70,000 to 80,000 tons of E-materials are sent to these villages (90% coming from Israel) (Arcobaleno, 2018). The collected items are sold to recyclers and workshops in Beit Awwa Bazar market and then treated in other places. Some appliances are repaired and sold as second-hand products, others are dismantled to recover spare parts, and the remaining is smashed to recover the raw materials.

The treatment of the E-material consists of dismantling, cable processing and clean metal assembly, through a primitive process with negative impacts on the environment and human health. By-products are either sent to Tarqumya Transfer Station and/or Al Minya Sanitary Landfill, or burnt or illegally dumped. However, the Green Police created by the Environmental Quality Agency (EQA) managed to reduce illegal burning and dumping by 70-80% (Arcobaleno, 2018). As to the Palestine Environment Law 1999, the EQA has the judicial police and can use them to enforce compliance with environmental standards. This is supported by related bylaws, regulations, and guidelines like the Hazardous Waste Management bylaw of 2018 and the Cabinet Resolution No.3 2019 on Solid Waste Management Systems.

Only around 1% of waste generated within the West Bank and the Gaza Strip is recovered and recycled today, although this is planned to increase to 30% in 2022 with the implementation of the National Strategy for Solid Waste Management in the SoP (MoLG, 2019).

Energy recovery through incineration is planned to be implemented at the Zharat Al-Finjan landfill in the West Bank. A contract between MoLG/PA and a solid waste contractor from the Netherlands has been signed recently to construct a Build Operate and Transfer incinerator to generate power. However, open dumpsite burning is common in the SoP, with the associated generation of smoke, carcinogenic dioxins, and sulfur dioxide.

#### Coastal Environment and Sea Level in the Gaza Strip

The Coastal groundwater table in the Gaza Strip has fallen to more than 10 meters below mean sea level. The safe annual yield of the aquifer is 55–60 MCM. However, nearly 160–200 MCM are extracted annually.

The extensive use of agricultural pesticides, along with the influx of sewage into the coastal aquifer, has resulted in a nitrate concentration of 300 mg/L, i.e. six times higher than the recommendations of the WHO. Chloride concentrations are also high. These pollutants pose particular risks to children and pregnant women. Water-related diseases cause about 26% of childhood illnesses in the Gaza Strip and are a major cause of childhood morbidity.

The marine ecosystem, human health and desalination processes are affected by the large-scale discharge of raw wastewater from the Gaza Strip. The amount of raw or partially treated wastewater, flowing daily from the Gaza Strip into the Mediterranean Sea, increased from 90,000 m<sup>3</sup>/day in 2012 to 100,000 m<sup>3</sup>/day in 2016 and 110,000 m<sup>3</sup>/day in 2018.

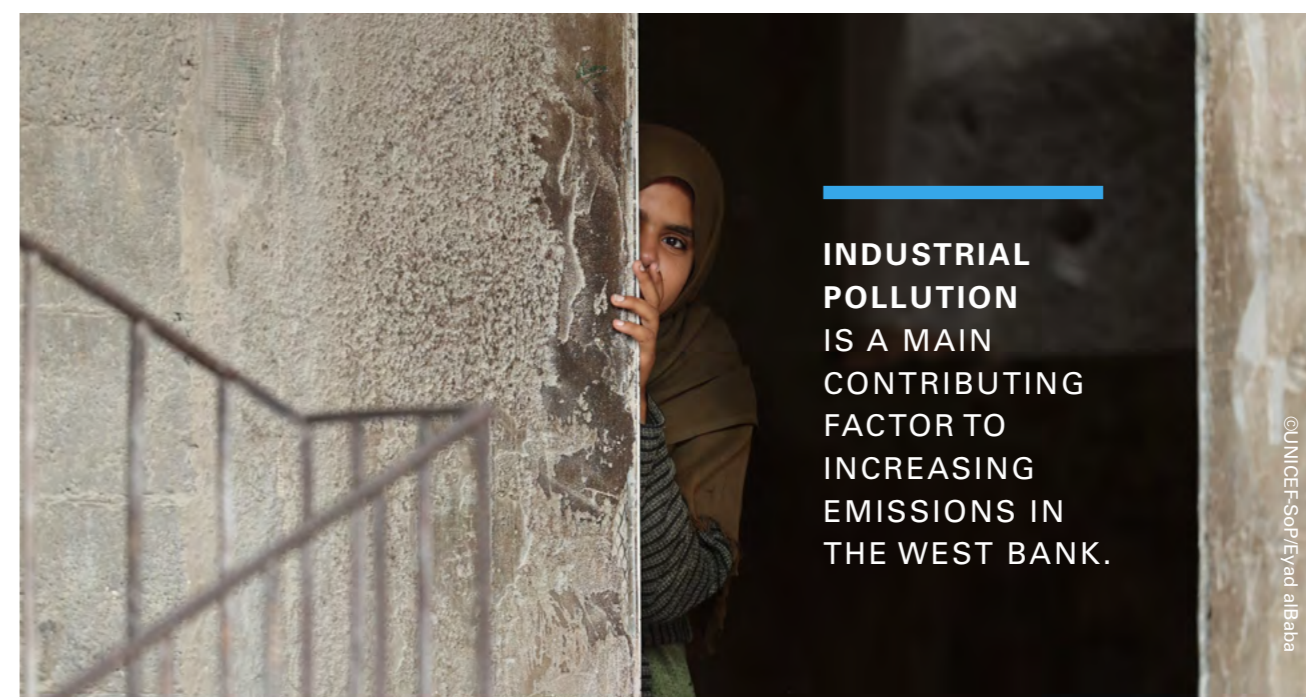
#### Air Quality

Climate change and global warming are impacted by the amount of GHG emissions in the air. Table 3 lists the overall GHG emissions from energy, agriculture, and waste sectors by the emission type, 2016–2020, according to PCBS.

**TABLE 3: OVERALL GHG EMISSIONS (1000 TON/CO<sub>2</sub>) FROM ENERGY, AGRICULTURE, AND WASTE SECTORS**

Year	Overall GHG emissions (1000 tons)			
	Emissions from CO <sub>2</sub>	Emissions from CH <sub>4</sub>	Emissions from N <sub>2</sub> O	Overall GHG emissions (1000-ton CO <sub>2</sub> )
2016	3254.49	44.17	1.5	4,645.45
2020	3348.76	48.86	1.47	4,829.45

1 ton of CH<sub>4</sub> is equivalent to 21 ton of CO<sub>2</sub> and 1 ton of N<sub>2</sub>O is equivalent to 310 ton of CO<sub>2</sub>



According to the Palestinian Environmental Law of 1999, air pollution is “any change in the characteristics or components of the natural air, which may cause harm to the environment.” The major sources of air pollutants in the SoP are the various means of transportation, the smoke rising from the chimneys of factories, the heavy dust from quarries, the open incineration of solid wastes, and the effects of waste treatment projects (Birzeit University, 2022). Treatment facilities contribute to the presence of high levels of greenhouse gases (GHG), volatile organic compounds, nitrogen oxides and sulfur oxides. In addition, the airborne microbial count increases in the air near the area where the waste treatment and disposal facilities are present, resulting in bad odours dominating the air. An increase in dust storms has been observed in the SoP, which is linked to climate change.

Industrial pollution is a main contributing factor to increasing emissions in the West Bank. A study of 600 industrial factories in the West Bank showed that the emission of Total Suspended Solids, the most prevalent pollutant, was 6,341 tons/year. Other pollutants include PM<sub>10</sub> at 3,749 tons/year, NO<sub>x</sub> at 317 tons/year, SO<sub>2</sub> at 18 tons/year, and Volatile Organic Compounds at 2,395 tons/year (EQA, 2015).

Quarries and stone-cutting facilities generate significant air pollution effects in several areas, particularly in Hebron (The World Bank, 2020). Of 15 quarries currently operating in Area C in the West Bank, seven are owned by Palestinians and eight are owned by Israelis (Gol, 2019).

The total emissions from the transportation sector constitute more than 50% of the total national emissions. Exhaust fumes from over 170,000 motor vehicles are a main driver, with many vehicles outdated or using inefficient fuels and thus producing nitrogen oxides, carbon monoxide and other pollutants (PCBS, 2022). The SoP has a very limited national public transport network. The population relies on privately-owned vehicles for transportation with limited public transport available.

In 2019, the average value of GHG per capita from the energy sector was 0.86 tons of CO<sub>2</sub>, with a gross domestic product estimated at US\$ 3,212/ton of CO<sub>2</sub>. The low level of GHG emissions partially explains why the PA has been prioritizing adaptation over mitigation measures. Fuels represented most of the total amount of the national GHG emissions from the energy sector in 2018. The transport sub-sector dominated the national GHG emissions from the entire energy sector by 58%, followed by the household sub-sector, which contributed 32% of emissions (Naidoo, et al., 2021).



PEOPLE IN THE  
GAZA STRIP  
USE DIESEL  
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TO PRODUCE  
ELECTRICITY FOR  
HOUSEHOLDS  
AND PRIVATE  
BUSINESSES.

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### 1.3 Energy Situation in the State of Palestine

The West Bank and the Gaza Strip depend mainly on Israeli imports to meet their electricity needs. In 2022, the Israel Electric Corporation (IEC)<sup>3</sup> supplied about 90% of the SoP's electricity (PCBS, 2022) accounting for 99% of consumption in the West Bank, and 64% in the Gaza Strip. Despite their control over the energy infrastructure in the SoP, Israel views increased Palestinian electricity production capability as de-risking and a way to avoid carrying the burden through the IEC.

Modest amounts of electricity are also imported from Jordan to the West Bank. In the Gaza Strip, the electricity is partially generated by the Gaza Power Generating Company, whose power supply (diesel) is imported and is controlled by the Israeli Authorities. The grid in the Southern areas of the Gaza Strip is connected with the Egyptian grid. Due to the shortage of supply and to overcome the continuous interruptions in power, people in the Gaza Strip use diesel generators and solar panels to produce electricity for households and private businesses. Close to 99.7% of the communities in the SoP are connected to the electricity network. However, service tends to be intermittent in almost all communities in the Gaza Strip and for about a quarter of those in the West Bank.

There is a growing demand for electricity in the West Bank, which is expected to increase by over 270 MW between 2021 and 2030 (Naidoo, et al., 2021). Recently, energy and fuel costs are among the highest in the region, given the almost complete dependence on Israel as the supplier, at an estimated cost of \$0.15 per kWh, making energy increasingly unaffordable for many Palestinians (PCBS, 2022).

Concerned authorities are currently moving towards increasing renewable energy solutions to meet the increasing energy demand, benefiting from the fact that the SoP receives about 3,000 hours of sunlight annually. Nearly 56% of the buildings have solar water heating systems (PCBS, 2017). The SoP benefits from a Mediterranean climate with an average of 300 sunny days per year (Global Horizontal Irradiation above 2000 kWh/m<sup>2</sup>/year). Solar energy is a priority in renewable energy development.

In 2017, seven solar energy projects were identified in the West Bank covering small to medium solar parks, of which capacities included between 1 and 8 Megawatt (MW). Projects were also in the pipeline in Tulkarem, Nablus and Hebron regions in the West Bank.

In the Gaza Strip, two large-scale Photo Voltaic (PV) projects were implemented to produce 9 MW and 10 MW respectively in addition to many rooftop systems to operate households, health clinics, schools, water wells, and many other facilities. This is in addition to the largest photovoltaic solar field in Gaza constructed by UNICEF, providing 0.5 MW of electricity per day to fuel the Southern Gaza Desalination Plant, (European Union, 2018). An additional 0.1 MW was installed to efficiently operate Rafah WWTP by the Photo Voltaic Solar System project. Another 0.1 MW will be installed to operate the pumping station to transfer treated wastewater to the targeted farming areas for irrigation purposes (UNDP, 2022).

In terms of wind energy, there are no wind turbines in the SoP. Studies have shown that the potential of the SoP is exploitable even if the area is of moderate wind speeds. The hybrid photovoltaic (PV) wind system seems to be the right balance while minimizing the cost of each system used separately. Still, there is a height limit on wind turbines (50 meters), as restricted by the Israeli Authorities, which can be challenging as well as other barriers regarding logistics in the development of the SoP.

Development cooperation and global climate financing are available for climate-related projects, and renewable energy would support meeting mitigation targets. It is also to note that there is potential private sector financing for investment in renewable energy in the SoP.

<sup>3</sup> IEC is the largest supplier of electrical power in Israel. It builds, maintains, and operates power generation stations, sub-stations, as well as transmission and distribution networks. IEC provides power to the Palestinian territories. It is one of three sources of power for the Gaza Strip and the West Bank.

# 2.

## Climate Change



### 2.1 Climate Change in the State of Palestine

Climate change is a long-term change in the average weather patterns that have come to define Earth's local, regional and global climates. It creates additional threats such as droughts that can diminish surface water bodies, algal blooms and salt-water intrusions that can contaminate water supplies and floods that overwhelm water treatment facilities. Climate change affects most environmental and social standards and the determinants of health. The literature review on climate change shows that the SoP is already facing climate change which will become more pronounced over time.

Natural meteorological phenomena are the most dangerous manifestations of climate instability, the most common are higher temperatures and drought events. These can result in agricultural losses, changes in agricultural and crop patterns and fires that impact ecosystems. Over the past twenty years (2001–2020), the average annual air temperature is reported to have increased by about 1°C. The analysis of the temperatures recorded at the Nablus metrological station has resulted in an increase of 1.8°C over 36 years (Shadeed, 2013).

There has been no significant change in national rainfall averages, however, rainfall spatial distribution seems to have varied and rainfall intensities have increased in some areas causing flash floods like the flash flood of 2013 in the Northern West Bank and that of Wadi Gaza in 2020 in the Gaza Strip.

The number of hot days in the SoP is projected to rise. Increased heat will lead to increased potential evapotranspiration<sup>4</sup> resulting in a change in the rainfall patterns and intensities and directly impacting agriculture, and biodiversity.

Other climate change risks include droughts and desertification of the southern West Bank and the Jordan Valley regions. Shortages in drinking water in the central, southern and eastern regions are expected to intensify.

### 2.2 Green House Gas Emissions

According to the EQA, neither regular nor occasional measurements for GHGs emissions are conducted in the SoP, these happen only occasionally for specific projects. The increase in the atmospheric concentrations of GHGs produces a climate warming effect.

The SoP's on-road transport sector is the greatest emitter of carbon monoxide (CO), non-methane volatile organic compounds, and nitrogen oxides (NO<sub>x</sub>). Emissions from road transport represent around 30% of SoP's total GHG emissions. Older vehicles used in the SoP emit much more carbon dioxide, particulate matter, and nitrogen oxides than newer vehicles.

Carbon dioxide (CO<sub>2</sub>) is the main gas emitted from the energy sector. The energy and transport sectors together represent the largest source of GHG emissions in the SoP (62% of overall emissions).

The SoP's forests were assessed in 2011 as the only sector representing a net carbon sink. They occupy approximately 91 km<sup>2</sup> (1.5% of the country) and were estimated to absorb 32,000 tons of CO<sub>2</sub> per year. According to the 2020 National GHG Inventory, forests currently absorb 7.2% of the country's emissions.

The waste sector's GHG emissions mainly originate from wastewater handling and solid waste disposal on land. In the 2018 National GHG Inventory, the emissions in the waste sector (wastewater and solid waste) reached 931.89 ktCO<sub>2</sub>, equivalent to 20.6% of national emissions. Wastewater treatment and discharge contributed to 60.9% of the sectoral emissions, i.e. 12.5% of the national emissions, while solid waste disposal represents 39.1% of the sectoral emissions (8% of the national emissions).

Methane (CH<sub>4</sub>) is a powerful GHG with warming potential 28-34 times more than CO<sub>2</sub> during a 100-year period. Measured over a 20-year period, the ratio is 84-86 times. It is estimated that methane emissions from the waste sector accounts for more than 75% of the total CH<sub>4</sub> emissions in the SoP.

<sup>4</sup> Evapotranspiration is the process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces and by transpiration from plants. (<https://climate.nasa.gov/global-warming-vs-climate-change/>)

### 2.3 Modelling of Climate Change

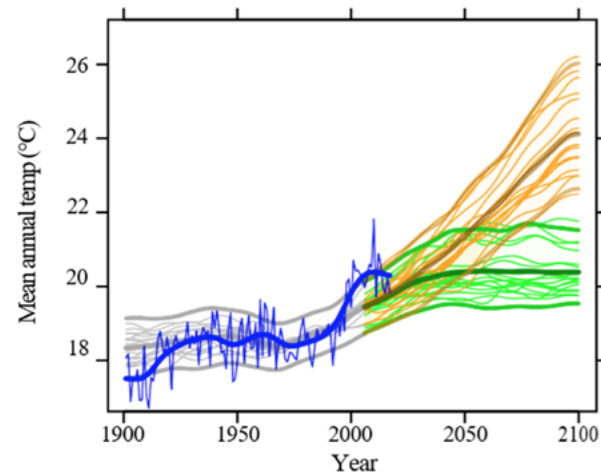
The following are projections of how GHGs emissions will adversely impact temperature and rainfall under high and low emission scenarios. These projections are based on the Coupled Model Inter-comparison Project (CMIP5) simulation models. It produced predictions for the recent past and assessed the accuracy of results to actual data and the climate change projections for the near term (to 2035) and long-term (2035 to 2100 and beyond) (Program for Climate Model Diagnosis and Intercompari, 2022). Emission scenarios were developed to assess changes in wet and dry seasons. Radiative forcing is represented by the Representative Concentration Pathway (RCP), where the RCP 2.6 represents a scenario with low emissions and low radiative forcing. The RCP 8.5 represents a larger radiative forcing and is similar to a high emission scenario. The RCP 4.5 scenario represents a medium emission scenario (Marengo, et al., 2014).

**Temperature:** The model predicts that the average yearly temperature will rise by about 4.4°C in the long-term from 2071 to 2100 when compared to past term of 1981–2010. However, the average yearly temperature will increase by about 1.3°C if emissions decrease (World Health Organization and United Nations, 2022).

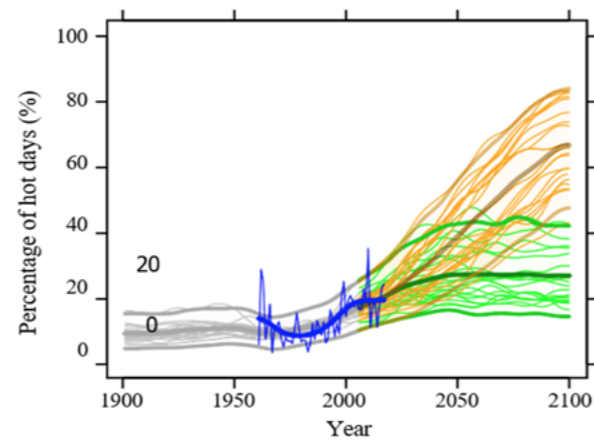
**Figure 2** shows the mean annual temperature under a high and low emissions scenario. The projected changes averaged for about 20 global climate models in thick lines. In addition, the orange lines are representative of the concentration pathway of RCP 8.5; the green lines are for RCP 2.6, and the blue lines are annual and smoothed observed records. The range of uncertainty is shown by the range of values from the mean.

**Figure 3**, shows the mean percentage of hot days under a high and low emissions scenario. A hot day is a day when the maximum or minimum temperature exceeds the 90<sup>th</sup> percentile threshold for that time of the year. The model predicts that the average percentage of hot days could reach 60% by end-of-century (i.e., 30-year average for 2071–2100). However, the average rate of hot days will be about 25%.

**FIGURE 2: MEAN ANNUAL TEMPERATURE PROJECTIONS**

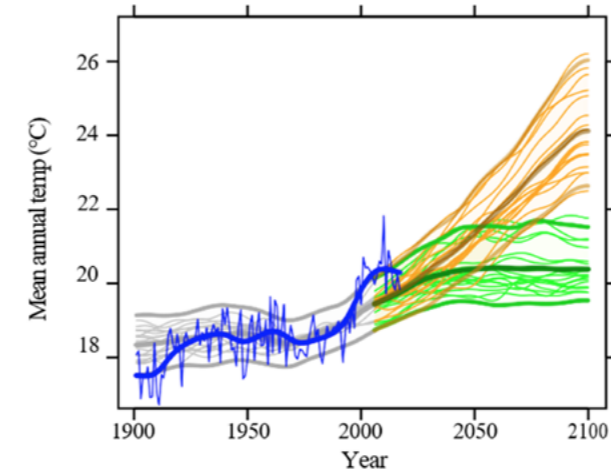


**FIGURE 3: PERCENTAGE OF HOT DAYS ('HEAT STRESS')**

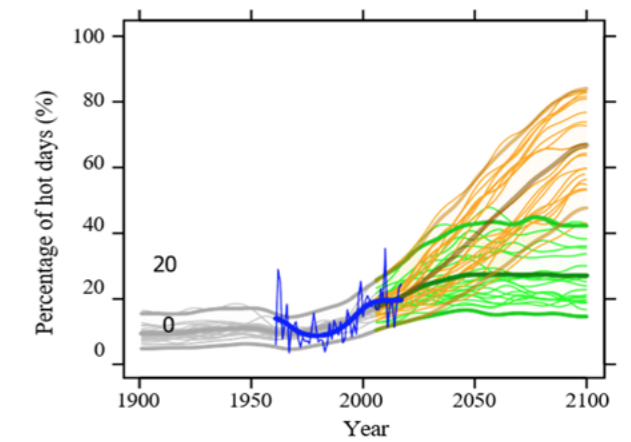


**Precipitation:** **Figure 4**, shows the total annual perception under a high and low emissions scenario. The model predicts that total annual perception will decrease by about 30% with uncertainty. However, the yearly total perception will observe a slight decrease of 6% with moderate uncertainty (World Health Organization and United Nations, 2022).

**FIGURE 4: DECREASE IN TOTAL PRECIPITATION**



**FIGURE 5: CONTRIBUTION OF VERY WET DAYS TO TOTAL ANNUAL RAINFALL**



**Figure 5**, shows the mean proportion of total annual rainfall from very wet days (extreme rainfall and flood risk) under a high and low emissions scenario. Wet days are defined as the number of days that are at least as wet as the historically 5% wettest of all days. The model predicts that total annual rainfall from very wet days could increase to an average of about 22% by the end of the century with an uncertainty of about 4-4.5%. However, the average change will be much less if emissions decrease rapidly. It also shows the mean proportion of total annual rainfall from very wet days under a high (RCP 8.5) and low emissions scenario (RCP 2.6) (World Health Organization and United Nations, 2022).

The Standardized Precipitation Index (SPI) is used to measure drought, with ranges from 1 to 36 months and represents the change of intensity and frequency of dry arid and wet conditions relative to the average local conditions. The values of SPI are: i) +0.5 to -0.5 near-normal conditions; ii) -0.5 to -1.0 slight drought; iii) -1.0 to -1.5 moderate drought; iv) -1.5 to -2.0 severe drought; and v) Below -2.0 extreme drought. Droughts result in declining water levels not only because of a reduction in rainfall but also due to increased evaporation and a reduction in infiltration that may accompany the development of dry top soils. The SoP is facing and has faced severe droughts during some years when the annual rainfall was less than 50% of the average annual rainfall.



**CLIMATE CHANGE AFFECTS MOST ENVIRONMENTAL AND SOCIAL STANDARDS AND THE DETERMINANTS OF HEALTH.**

## 2.4 Climate Change Impacts

While the SoP's contribution to global emissions is considered negligible, it is one of the most vulnerable countries to climate change effects, considering its location in the Mediterranean region, a hot spot for climate change and its impact. The impact can be both in the short-term resulting from more frequent and more intense extreme weather events, or long-term caused by changing temperatures and precipitation patterns. Although there is not sufficient scientific data addressing climate change in the SoP and its effects, local environment and climate change experts agree that extreme weather events such as heat waves, drought, less precipitation, less recharge to aquifers, more runoff, cyclones, sand and dust storms and a series of biodiversity alterations are expected to be caused by global warming in the area.

Climate change in the SoP may lead to a decrease in rainfall and a lack of recharge to the aquifers, which are the main sources of water. In addition, the increase in the intensity of rainfall will lead to an increase in floods and winter runoff, while the shift in rainfall distribution will change rainfall timing. Extreme precipitation events (e.g., heavy rainfall and storms) may lead to less recharge to groundwater because much of the precipitation is lost as runoff. This situation is common on the eastern slopes (watersheds) of the West Bank, where flash floods occur. This is significantly exacerbated as there is no hydraulic infrastructure to harvest the runoff.

Climate change is already having major impacts on human health, livelihoods and human rights, in addition to its impact on the basic needs of human beings including water supply, agriculture and food security. Climate Changes impacts on the different resources are described in the following paragraphs:

**Air:** Air pollution is a threat to the natural environment as well as to human health. Acidification and acid rain are the results of air pollution and higher CO<sub>2</sub> concentrations. These can damage vegetation, and cause crop and biodiversity losses.

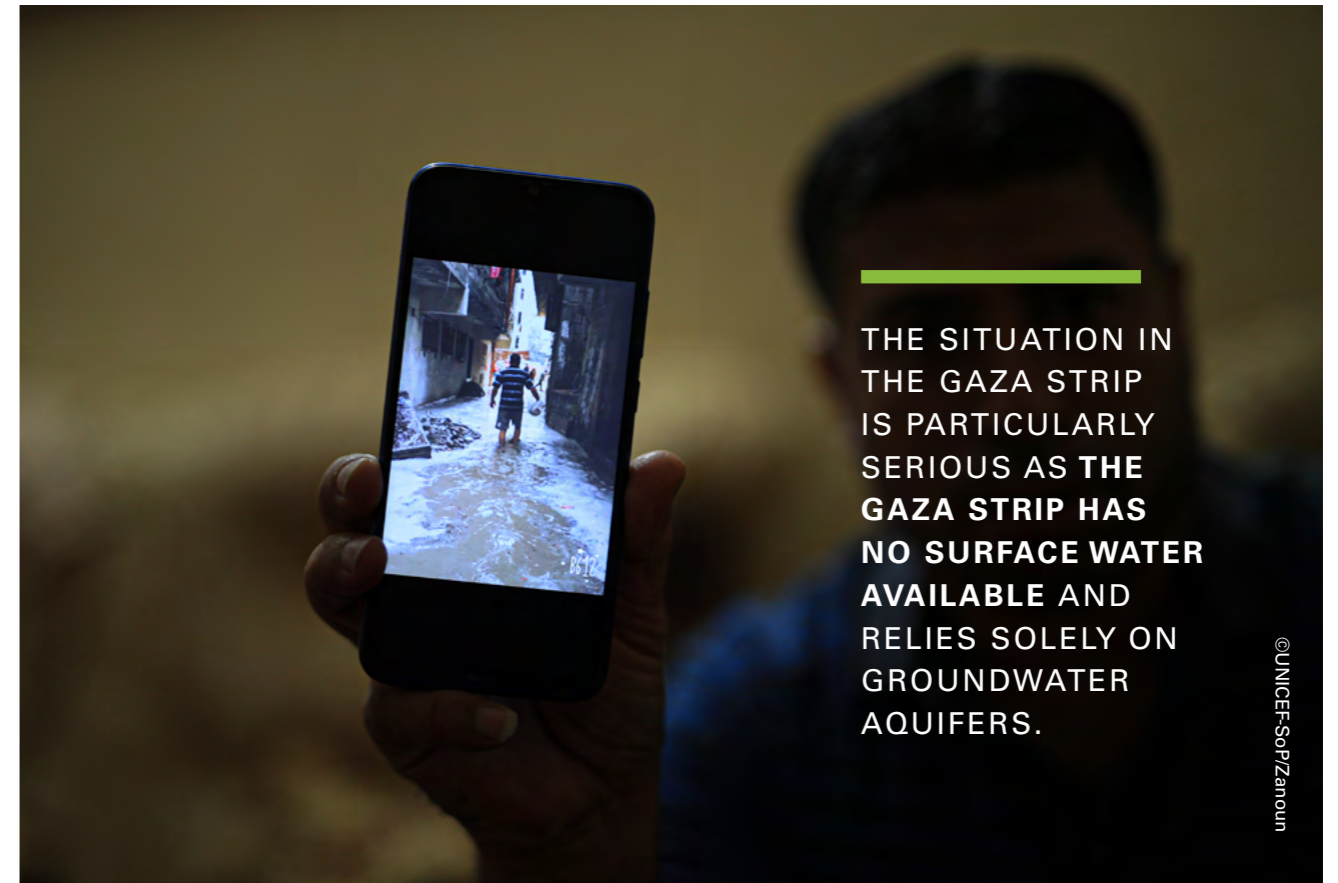
**Health:** Climate change could cause new patterns of pests and diseases to emerge, affecting plants, animals and humans, and posing new risks to food security, food safety and human health. This could also affect the nutritional status of people and expose crops, livestock, fish and humans to new risks to which they have not yet adapted, and challenge health care institutions to respond to new parameters. Diseases may spread in the SoP, because of the change in the rainfall distribution and intensity. The effects of this phenomenon are expected to be most severe in the Gaza Strip reflected in Pressure on public health and increased occurrence of diseases; Increased heat stress from high-temperature extreme events; Spatial and temporal alteration of diseases, such as malaria; and Increase in incidents of violence, particularly for women and children.

**Agriculture:** The agricultural sector is essential for food security and climate change-related drought and frost has reduced crop and pasture productivity over recent years. The impacts of climate change on agriculture in the SoP are More frequent droughts and increased desertification; Changes in the economic viability of crops (e.g. shorter growing seasons); Increased crop water requirements; Decline in grazing ranges and stocks; Higher food prices; Soil degradation and desertification.

**Food Security:** climate change and its consequences on the environment could affect all three dimensions of food security: food availability, food accessibility, and food utilization. It has an impact on human health, livelihood assets, food production and distribution channels, as well as changing purchasing power and market flows.

**Water resources:** The impacts of climate change on water resources in the SoP are: Increased water shortages from lower rainfall and higher evaporation; Increased flash floods from greater rainfall variability; Insufficient rain to recharge groundwater aquifers, with lower precipitation affecting groundwater aquifer replenishment and surface runoff, and storage in the coastal aquifer; and Reduced surface and groundwater quality: due to the salinization of fresh water sources, and reduced availability of potable water.

The situation in the Gaza Strip is particularly serious as the Gaza Strip has no surface water available and relies solely on groundwater aquifers. It is estimated that 96% of Gaza's aquifer is not safe for drinking without



treatment (due to salinization and contamination). Further, the permeable soil is susceptible to leakage of surface contamination and pollution. The drying up of Wadi Gaza is significant as this is the main source of Gaza's aquifer region and catchment (Tal, 2019).

Furthermore, there is the impact of the Israeli National Water Carrier, which resulted in water shortages in the Jordan Valley. It is one of the main man-made climate change issues in the SoP (Tal, 2019). The carrier is a pipeline diverting water from lake Tiberius to the Negev desert. This has reduced the water flowing into the Jordan River and the Dead Sea causing a reduction in evaporation. In the Jordan Valley, wells are located in a very sensitive area in terms of geological formation resulting in a drawdown of the water levels and drying up of springs and wells in addition to water quality deterioration.

**Energy:** Although the energy sector is one of the major contributors to GHG emissions, it is also vulnerable to the impacts of climate change. An increase of 1-3°C in temperature by 2040 is expected to lead to an annual increase of up to 6% in electricity consumption for cooling purposes. The higher cooling demand in summer will drive the peak load higher, along with an increase in population growth, consumption rates, and oil prices. Climate change has indirect impacts on energy including Increased energy demands to cope with more temperature extremes; Impacting availability of conventional energy reflected in the lack of efficiency of power production from many existing fossil fuel plants; and Rising fuel demands to cope with water shortages (fuel and associated transport costs).

**Coastal areas:** Climate change has an impact on coastal areas including Land use impacts from sea-level rise and coastal erosion: The Mediterranean coast is expected to lose kilometres of beaches alongside cliff erosion; Soil degradation; and Loss of biodiversity: Northwest migration of ecological systems, and loss of sensitive ecosystems.

## 2.5 Climate Change Mitigation and Adaptation Measures

By mitigation, we mean measures that reduce the amount and speed of future climate change by either reducing emissions of carbon dioxide, methane, and other heat-trapping gases or removing carbon dioxide from the atmosphere. It includes changes in building codes, politics, pro-business in the clean economy, low-carbon economy, carbon neutral, carbon equitability, accelerated de-carbonization, and carbon sinks. Adaptations are adjustments in natural systems, infrastructure or human behaviours in response to actual or expected climatic changes or their effects.

The National Climate Change Adaptation Strategy and Programme of Action for the SoP were developed by UNDP in partnership with the EQA (UNDP, 2010). It identified the high adaptive capacity and technical feasibility to include:

- Increased water use efficiency from infrastructure investment;
- Development of 'new water' sources, including new major (150 MCM/year) desalination capacity (which is under construction); and
- New coastal protection structures for the Gaza Strip (e.g. wave breaks and offshore protection structures).

Other adaptation measures were suggested as Development of flood contingency plans; Local increases in rainfall interception capacity; Introduction of more efficient irrigation techniques; Review of drinking water quality management systems to incorporate climate risks; Increased use of treated wastewater; and Equitable and reasonable utilization of transboundary water resources between Israel and the SoP (implying a fairer reallocation of groundwater and freshwater). Some of these adaptation measures have been implemented through programmes with international support. The SoP is eligible and accessible to international funds for adaptation and mitigation to climate change, under the UN Framework Convention on Climate Change (UNFCCC), Paris agreement and Kyoto Protocol.

The SoP could face serious impacts from climate change with the absence of event-based national hazard planning making the potential impact of such events severe especially on vulnerable groups. The EQA, through the National Adaptation Plan (NAP) and Nationally Determined Contribution (NDC), is making a significant investment and climate change is considered a priority on the national agenda and gradually mainstreamed in the sector strategies. EQA is already leading the national community of climate change that contains 27 members from ministries academia, NGOs and private sector.



In 2017, the PA submitted its NDC to the UNFCCC with a corresponding implementation roadmap. The NDC outlines all proposed mitigation and adaptation actions for the 12 highly vulnerable sectors to reduce the impact of climate change and achieve the Sustainable Development Goals (SDGs), split between conditional and unconditional measures. Under the NDC, the PA confirms its roles to ambitious climate change action under the UNFCCC and reaffirms its belief in the principles of equity and climate justice, recognizing the importance of common but differentiated responsibilities in line with responses commensurate to mitigation requirements and in line with states' capabilities (Naidoo, et al., 2021).

While some aspects of the mitigation commitments were unconditional, conditional mitigation was planned under the two scenarios: (i) the SoP achieving independence, and (ii) status quo, with planned GHG reductions of 24.4% and 12.8% by 2040 under the independence and status quo scenarios, respectively. Conditional mitigation means that the ability of the SoP to implement the plan and meet the global requirements relies heavily on securing international support. This is specifically in the form of addressing substantive needs for technology transfer, training, capacity building and finance.

The Climate Change Adaptation Strategy and Programme of Action for the SoP have identified water and food security as the most vulnerable issues to climate change with implications for all sectors.

# 3.

## Climate Change Impacts on Children



The effects of climate change in the State of Palestine are a reality and are being already felt by the population. The effects are further exacerbated by the fact that, for the most part, the State of Palestine is not in control over its natural resources, further impacting the fulfilment of children's basic rights and putting them at greater risk of disasters induced by natural hazards and/or diseases induced by human pollution.

### 3.1 Climate Impacts on Children in the State of Palestine

Children are expected to be disproportionately impacted by CEE hazards, as they are more sensitive to environmental and climate conditions, as well as extreme events. Their bodies are developing making them more susceptible to illnesses or inadequate nutrition resulting from CEE hazards. Children also depend on others for their wellbeing, such as their parents, guardians and/or other caregivers. The impacts of CEE hazards on children can be divided into two types:

- Direct impacts at the child level, and
- Secondary effects from the household, community, or society level, through which children's health and protective environment are impacted as a result of effects on the individual's and support networks that children depend on.

Examples of these impacts are classified as direct at the child level and as secondary effects from the household, community or society (Table 4) (Ministry of Environmental Protection, 2021).

**TABLE 4: ILLUSTRATION OF DIRECT AND SECONDARY IMPACTS OF CEE HAZARDS ON CHILDREN**

Direct impact at the child level	Secondary effects
<b>Acute health impacts</b> <ol style="list-style-type: none"> <li>Injury/mortality</li> <li>Disease contraction</li> <li>Weather-related illnesses</li> </ol>	<b>Economic and financial implications</b> <ol style="list-style-type: none"> <li>Loss of informal social protection network</li> <li>Mental distress and/or social unrest</li> </ol>
<b>Chronic health impacts</b> <ol style="list-style-type: none"> <li>Impaired cognitive and physical Development</li> <li>Respiratory illness</li> <li>Other health conditions</li> <li>Mental health</li> </ol>	<b>Protection risks</b> <ol style="list-style-type: none"> <li>Family separation</li> <li>Exploitative practices</li> <li>Neglect, abuse and violence</li> </ol>
<b>Access to basic services</b> <ol style="list-style-type: none"> <li>Access to education</li> <li>Access to healthcare</li> </ol>	<ol style="list-style-type: none"> <li>Adequate nutrition</li> </ol>

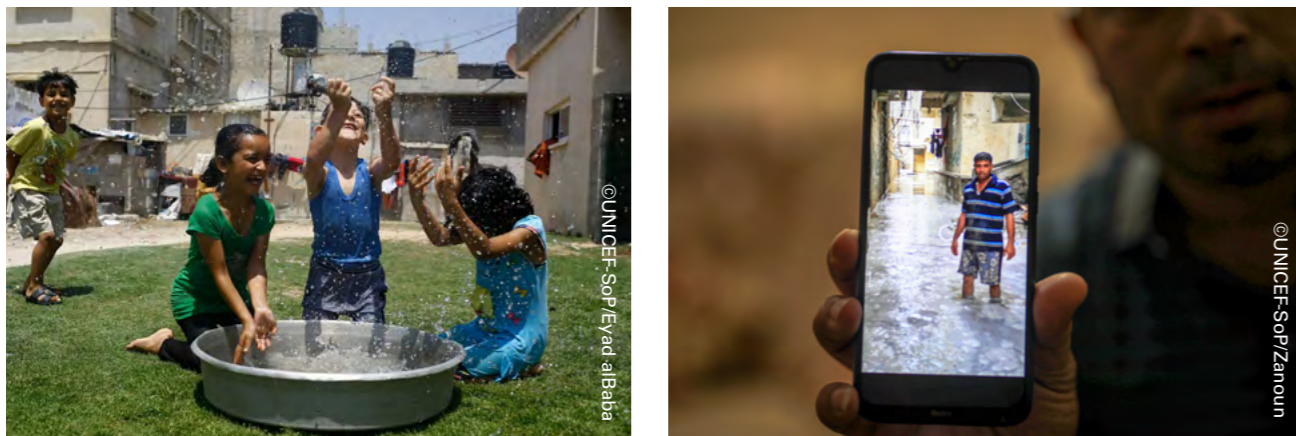
The EQA, and other institutions such as FAO, Save the Children, and the Applied Research Institute Jerusalem (ARIJ) confirmed a lack of studies on the impact of climate change on children in the SoP. Children may be affected by acute or chronic impacts of a changing climate, but relatively little is known about whether and how this could happen.

A limited number of studies provide evidence of such effects, highlighting the consequences on children's mortality and injury, growth and well-being. Extreme weather events can also obstruct access to basic services, including healthcare and education. There can also be acute and chronic health consequences (WASH-related, air, waste, chemicals, and malnutrition) with infectious disease incidence already prominent in the SoP, and the quality of services remains a challenge. As such the impact of climate change could accelerate the deterioration of children's growth and wellbeing caused by the deterioration of food, water, and the limited availability of quality health care services.



The highest impact by far is the potential impact on human health such as increased vulnerability due to higher temperatures and hyperthermia. Morbidity and mortality risks due to malnutrition and diarrhoea could affect children, while infectious diseases affect infants and babies.

**FIGURE 6: EXTREME WEATHER EVENTS IN THE GAZA STRIP, 2022**



The following are some of the possible direct and policy impacts of climate change which, according to the current climate change predictions, Palestinian children could face:

- Increased flood frequency and intensity will further reduce children's access to services, particularly to schools, sanitation systems, and health care facilities, due to flooding and infrastructure damage. Although school disruption, long-term absenteeism, dropout and illness are all likely to rise, climate risks are not adequately addressed in current policy, legislation, and programs.
- The current infrastructure in the SoP is not designed to cope with climate change and extreme weather conditions. This impacts children's health and facilities for service provision. For example, water shortages and highly saline water (as in the Gaza Strip) can lead to kidney dysfunction or failure. This situation is exacerbated in summer and the accompanying high temperatures.
- Children's health is harmed by air pollution and disease. Air pollution is exacerbated by the use of generators during hot weather. The lack of clean and affordable energy will exacerbate these challenges. Climate change increases the prevalence of water-borne diseases, such as diarrhoea, worm infections, and amoebic dysentery; and vector-borne diseases including malaria. Mental health issues, related to children as a consequence of climate change, are caused by stress. Children experience short- and long-term trauma-related symptoms including in response to environmental disasters, droughts, food, and water scarcity.
- Climate change in the SoP has caused the drying out of semi-arid and arid regions like the Jordan Valley. This led to the migration of Bedouin communities, including children, from their places of existence in search of water and food for their livestock. As a result, some children drop out of school affecting their learning outcomes.
- Weak infrastructure and poorly equipped classrooms force schools to close during extreme weather as opening may jeopardize children's safety. Children are also deprived of their right to play under exceptional climate conditions such as high or low temperatures or heavy rain.
- Increased risks of floods and droughts will exacerbate food insecurity and malnutrition, reduce access to safe drinking water, and jeopardize sanitation systems.
- Due to the decline in household income caused by socio-economic and political situations, worsened by climate change, vulnerable children would be at a higher risk of malnutrition, abuse, and violence.

- Loss of livelihood opportunities in rural areas resulting from climate change can increase the migration of poor households and the risk of child labour. Therefore, children's rights and social protection should be recognized and given special focus as a result of climate change impacts.

### 3.2 Children's Participation in the Focus Group Discussions

Child and youth participation in environmental and climate action programmes is still fragmented and disconnected, with activities limited to individual initiatives or under donor project requirements. These are the key issues raised in Focus Group Discussions with children aged between 11 and 18 years old:

1. Children are not aware of the climate change concept, with very few having heard the term "Climate Change" or understanding that it is related to temperature variations.
2. The school curriculum lacks the required information about climate change, as it talks about climate change as part of weather conditions.
3. Climate-related activities are limited to international and national events such as World Water Day, World Environmental Day, and National Land Day. Schools lack regular, organized and country-related activities related to CEE.
4. Children feel the impacts of climate change, although they cannot directly link it to the climate itself. Most of them mentioned severe weather events but they were unable to identify how these events were created or how they will affect other sectors.
5. Children agreed on various climate change impacts. First, on their health since there are many suffering from asthma and allergies, and secondly that the road conditions are not suitable for going to school in hot and cold weather.
6. Children could give different ideas on how to adapt to these effects such as covering playgrounds or improving infrastructure.
7. Children see that their rights to play have been impacted due to climate change. Their parents do not allow them to play outside in hot or cold conditions. They see that in the cities they are more vulnerable to changes than in rural areas.
8. Parents lack knowledge of the effects of climate change. So increasing parents' awareness of these effects and adaptation measures will provide more protection for children.

The impact of children and youth participation in climate mitigation and adaptation policies, as well as the extent to which it translates into concrete results for children, remains unknown. Only very few children reported having been involved in such kinds of activities at least once in their lives.

**Climate change increases the prevalence of water-borne diseases, such as diarrhoea, worm infections, and amoebic dysentery; and vector-borne diseases including malaria.**

# 4.

## Climate Landscape for Children: Policies, Responses and Priorities



This CLAC report presents an overview of how the SoP is positioned to address and build resilience for climate change and environmental degradation. It is important to note at the outset that there are three major challenges: as a result of the protracted conflict, Israel controls a large part of the Palestinian natural resources; the Palestinian internal political divide; and the financial and economic crisis shaping life in the SoP. These challenges influence stakeholders' ability to take action on climate change, and to mobilize resources.

### 4.1 National Plans under International Conventions

In 2015, the SoP acceded to the UN Convention on Biological Diversity. The PA submitted its formal instrument of accession to the UNFCCC and was granted a formal 'party' status in 2016. Being a formal party enables active participation in international climate-related discussions and decisions and gives access to international climate-related finance such as the Green Climate Fund. Since becoming a party to the UNFCCC, the SoP has signed and ratified the Paris Agreement in 2016. The SoP, after being a party to the UNFCCC, has submitted the Initial National Communication Report (INCR) (EQA, 2016) and the National Adaptation Plan (NAP) (EQA, 2016), which addressed the most vulnerable sectors to climate change and the adaptation options.

The SoP and EQA have submitted their NDC, the SoP Partnership Plan Narrative and an implementation roadmap highlighting the importance of climate change within the Palestinian National Agenda. The NDC reports were submitted in 2017 and 2021. In the NDC, the PA has prepared 14 implementation plans in different sectors and has set the budget for each. The implementation of climate plans in the SoP is conditional on financing. Unfortunately, the NDC progress report acknowledges the lack of financial resources to implement projects and interventions aimed at adapting to climate change and promoting good practices in all sectors and areas of development.

The NDC is consistent with the INCR and the NAP, which were reviewed and approved by the stakeholders in 2016. The NDC is also consistent with the sectoral strategies. This means that the actions put forward, have been discussed and agreed upon with stakeholders at the ministerial and sectoral levels (United Nations Framework Convention on Climate Change, 2017). Due to political uncertainty in the SoP, the NDC sets out GHG conditional mitigation actions, and the associated GHG emission reductions under the following scenarios<sup>5</sup>: Independence scenario<sup>6</sup>: 24.4% emissions reductions; and the Status quo scenario<sup>7</sup>: 12.8% emission reductions by 2040 relative to business as usual. This is conditional on international support in the form of finance, technology transfer, and capacity building (United Nations Framework Convention on Climate Change, 2017).

The NDC presents all mitigation actions that were prioritized within the INCR (both the 'realistic' mitigation actions and 'all' mitigation actions). These actions, arranged in priority order, are: i) Building energy efficiency; ii) Reduction of methane from landfill; iii) Energy from waste for cement; iv) Solar photovoltaic; v) Energy from waste for electricity generation; vi) Lighting efficiency; vii) Use of natural gas for vehicles; viii) Hybrid electric vehicles; ix) Transport modal shift; x) Afforestation. Issues of youth, gender and children are not addressed in any of the NDC documents.

The NAP is based on the UNDP report "Climate Change Adaptation Strategy and Programme of Action for the Palestinian Authority" (UNDP, 2010) and identifies key adaptation actions for agriculture, coast and marine, energy, food, children and gender, industry, terrestrial ecosystems, tourism, infrastructure, waste management, and water with a detailed implementation plan (for ten years).

This high degree of engagement in climate change is recent. Before 2008, climate change was not considered a policy priority by the PA. For example, climate change was not mentioned in the Palestinian Reform and Development Plan 2008-2010. In 2020, the Prime Minister signed an executive order, making the NDC a priority for all ministries (State of Palestine, 2016). The EQA chairs the national committee for climate change and is the main actor in implementing the NAP and NDC.

<sup>5</sup> Based on the energy and emissions modelling in the INCR

<sup>6</sup> Independence scenario represents the ending of the occupation; Government of the SoP achieves independence and is able to exercise full control over its resources.

<sup>7</sup> Status quo scenario reflects the continuation of the occupation for the SoP.



## 4.2 Environment Sector Strategy

The Palestinian EQA leads the work and coordinates many files related to the environment. In the sector strategy of the environment, the EQA addresses important issues that intersect with other sectors with climate change one of them. The sector strategy lists climate change with the necessary adaptation measures as one of its main goals. However, there is still a gap at the national level in the integration of climate change adaptation in other sectors like youth, education, economy, and health.

It is not just about plans, but also about creating and updating national and local climate change databases for all sectors. This should be part of the SoP's commitment to the 2030 Agenda through the 17 Global Goals addressing the social, economic and environmental dimensions of sustainable development. The SoP should develop a tool that supports the measurement of climate change impacts and the work undertaken under the national strategies to address these defining targets and monitor progress.

## 4.3 National Policies related to Climate, Environment and Energy

As part of SoP's continuous commitment to the Agenda for Sustainable Development, the Palestinian government lists climate change as one of the main challenges to the implementation of the SDGs. In the 2020 progress report on the implementation of the SDGs, the PA addressed climate change and its negative impacts on natural resources such as the scarcity of water. The importance of climate change adaptation is also reflected in the NDP (2021-2023) within the national policy aiming at ensuring the sustainability of the environment and adapting to climate change. The mitigation module involves long-term mitigation strategies, aiming at reducing greenhouse gas emissions, through national and sectoral plans aligned with development priorities, using the appropriate tools to minimize costs and deliver transformative changes. Among the other CEE-related policies and strategies are:

1. The amendment of the Environment Law in 2021 that included adaptation and mitigation definitions.
2. The Agricultural Sector Strategy "Resilience and Development". Strategic objectives related to climate change are:
  - » Efficient and sustainable management of natural resources;
  - » Enhanced agricultural production, productivity and competitiveness, as well as the enhanced contribution of agriculture to food security.
3. The Agriculture Law No. (2) of 2003 includes several articles related to environmental protection such as (i) Article (9), MoA in cooperation with other agencies develops management plans for protected areas and preserves natural species in these areas. (ii) Article (13), No human activities allowed within forestry lands without approvals. (iii) Article (14), the following activities are not allowed on forestry lands; cutting trees, collecting forest plants, and making fire within forestry lands. (iv) Article (21), it is not allowed to do any development activity in the rangelands, such as removal of wild plants, construction inside rangelands,

dumping waste, and establishing quarries.

4. Water sector strategy and water sector reform plan: (i) groundwater supply development (drilling wells and rehabilitation of existing springs and wells); (ii) impact assessment of climate change; (iii) demand management and strategic planning (physical water loss, water use reduction, changing crop patterns and water use restrictions); (iv) water harvesting (including storm water); and (v) mapping of alternative resources (purchased water, desalinization, reuse of wastewater).
5. The Water Law No. (14) of 2014 contains several articles related to preserving the environment: (i) Article (50), preservation of water resources from pollution. (ii) Article (52), any area that contains a water resource is declared as a protected area.
6. The National Strategy, Action Programme and Integrated Financing Strategy to Combat Desertification in the Occupied Palestinian Territory.
7. Drought conditions and management strategies in the SoP, measures to alleviate water scarcity include (i) reallocation management of water resources; (ii) actions to increase water availability and (iii) water demand management.
8. The Energy and Natural Resources sector strategy: the PA has indicated three main environmental indicators, with one important indicator on the atmosphere, which mainly addresses climate change as a key sub-indicator. Additionally, the SoP contributes as a member of many international federations related to climate change like the Union for Climate Change.
9. Renewable Energy and Energy Efficiency Law No. 14 of 2015 has been passed. To provide sustainable sources of electricity that support efforts for preserving the environment, and to enable the authority to enhance power supply for urban and commercial use. This law includes several articles related to project execution: (i) Article 2, aims to preserve the environment and promote sustainable development; (ii) Article 4, aims to develop mechanisms for energy saving and energy efficiency practices; and (iii) Article 8, aims to increase public awareness of energy saving and energy best practices. In addition, Article 28 of the General Electricity Law, No. 13 of 2009, encourages the search for alternative energy sources and regulates their use.
10. In the education sector strategy, adapting to climate change is listed as one of the indirect national policies related to the sector. It is also listed in many other aspects, especially when reporting on SDGs 4, 7 and 13. The education sector strategy calls on among other issues - the need to develop a common framework to enhance climate response through education and advocate for education as an untapped strategic resource for building resilient and sustainable societies.

## 4.4 Main Climate, Environment and Energy Actors in the State of Palestine

The EQA is the authority in-charge of the protection and management of the environment. The Law of Environment of 1999 regulates the environmental aspects and defines the mandates of the EQA. In addition, EQA is the national focal point for climate change in Palestine, and the national designated authority (NDA) for the green climate fund (GCF), EQA leads the national committee for climate change which has 27 members from ministries academia, NGOs and private sector.

To the Water Law 2014, the PWA is the responsible authority responsible for water policies and resources. It is a member of the climate change committee. The PWA is responsible for water resources and water policies and regulations as specified by the Water Law 2014. Wastewater is considered a water resource and WWTPs are supposed to be controlled by the PWA. The water reform project and roadmap, which have been financed by different donors, including the World Bank, intended to have regional water utilities and enhance the control of the PWA on the water resources.

The fact on the ground is that different and many Local Government Units own and operate water resources. These and some JSCs, who are recognized as water service providers, own and operate wells.



AS A RESULT OF  
THE PROTRACTED  
CONFLICT, ISRAEL  
CONTROLS A  
LARGE PART OF  
THE PALESTINIAN  
NATURAL  
RESOURCES

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The PWA is unable to conduct an integrated water management scheme in the West Bank within the current governance framework. The governance system established by Article 40 of the Oslo Agreement<sup>8</sup> requires the approval of Israeli authorities of any proposed PWA management measure or infrastructure project within the West Bank. This arrangement and its implementation give Israeli authorities control over the allocation and management of the West Bank's water resources.

To regulate the water sector, the Water Sector Regulatory Council (WSRC) was established and supported by different donors including the German International Cooperation and the Netherlands. The Water Law (2014) has specified the mandate of the WSRC and its responsibilities.

Several electricity distribution companies have been established to act as service providers of electricity and power. The Power Sector Regulatory Council is in charge of regulating these companies. The Palestinian Energy and Natural Resources Authority (PENRA) is in-charge of the natural resources and the power and energy in the SoP. Similar to the water sector, a regulatory council for power was formed named the Palestinian Electricity Regulatory Council (PERC).

The meteorological department of the Ministry of Transport (MoT) leads climate data in the SoP, it takes continuous measurements and issues regular reports about rainfall and other data. As part of the efforts in assessing the climate change in the SoP, the department conducted an analysis in 2012 on recorded readings for 30 years in Jericho. The analysis showed an increase in the temperature at ~1.5°C.

#### 4.5 Local Responsibilities towards Climate, Environment and Energy

When the National Climate Change Committee was formed in 2016, a sub-committee related to education was established, but it did not continue its activities due to lack of funding. The MoE has expressed firm interest and is facing international pressure to integrate climate change into the education system. The MoE has a strategic interest to integrate climate issues into the education system targeting schools, universities, and other educational and research institutions. However, this requires financial resources and experience (financial resources, technology, capacity building). An analysis of the integration of environment in the curriculum has been made with Health and Environment subjects in the curriculum for many grades but more attention to climate change topics are required in the curriculum.

<sup>8</sup> Oslo Agreement is an Israeli-Palestinian Interim Agreement on the West Bank and the Gaza Strip signed in September 1995. Article 40 speaks about Water Rights and Water Allocations. Article 40 opens with: "Israel recognizes the Palestinian water rights in the West Bank" .  
<https://www.un.org/unispal/document/auto-insert-185434/>

The MoE confirmed that it has an annual environmental plan and that there are (400) environmental clubs, representing the nucleus through which work is carried out on environmental issues and what is being developed on climate change issues. Each club consists of (25) students, with support including a national system, work methodologies, theory and practice, agriculture, gardens, and water. Additionally, environmental committees are commonly in primary schools, while environmental clubs are found in schools with higher educational levels. However, the environment committees are generally inactive with a focus on other priorities, especially in the Gaza Strip where emergency preparedness is a higher priority than environmental activities.

The MoA is currently implementing a project on Green Climate, funded by FAO on the management of natural resources in Marj Sanur, to reduce carbon emissions in the olive sector. As part of the project, a campaign targeted children to raise their awareness to conserve water and reduce "food waste". The campaign adopts the concept that everything costs water, even a sandwich.

A commitment by the Ministry of Social Development (MoSD) is to provide social protection to poor and marginalized groups and disabled children, including in response to shocks, by providing:

- Cash transfers to severely impoverished families
- Food packages to families among the poorest 60% of families
- Health insurance for people living below the extreme poverty line
- Social care, rehabilitation and protection to physically disabled citizens and children and the elderly living below the extreme poverty line.

EcoPeace is an NGO working in the SoP for over 26 years, with work including political dimensions related to the Oslo and the Wadi Araba peace agreements. Its work has been developed to cover trans-boundary environmental issues, including CEE projects in the SoP, some of which are related to climate change. Projects include capacity building on water rights and water diplomacy; wastewater reuse; grey water systems; water conservation and management; storm water collection systems; renewable energy and PV panels. The projects target schools, young children between 15 and 17 years old and vulnerable entities like the farmers in the Jordan Valley and the Gaza Strip. One of its projects is Green-Social Entrepreneurship and climate resilience businesses targeting young children and graduates. It includes mapping potential businesses in agriculture, solid waste and water sectors.

In its publication, A Green Blue Deal for the Middle East, Eco-Peace (Eco-Peace Middle East, 2020) stated that the "climate crisis is often described as a threat multiplier, where the weak adaptive capacity of a state or a region to deal with the negative implications of climate change can threaten the stability and national security interests." It also added that "Climate change can equally be seen as a multiplier of opportunities, where a nation or a region could see the threats posed by climate change as a chance to reconsider existing policies".

The MoE has a strategic interest to integrate climate issues into the education system targeting schools, universities, and other educational and research institutions.

# 5.

## Recommendations



**BUILD CAPACITY  
TO CONTINUE  
EDUCATION DURING  
CLIMATE RISKS**

### 5.1 Cross-cutting Recommendations

- Influence policy development to regulate actions that impede the physical and social environments in which children live, grow, and develop.
- Protect children from climate impacts by designing programmes which reduce child vulnerability to climate change impacts in their sectors and identify implementation mechanisms.
- Prevent violence or conflict as it affects children and relates to social, economic and political stressors aggravated by climate change.

### 5.2 Child Protection

- Strengthen child protection systems to respond to the needs of the most vulnerable children and families, whose vulnerability and protection needs will be exacerbated by climate change.
- Reduce harmful social and cultural practices caused by climate risks including violence, abuse and exploitation against children: i) Develop integrated child protection and justice systems; ii) Develop a multi-stakeholder mechanism for family reunification in emergencies.
- Ensure child protection humanitarian needs assessment and response planning take into account climate-related vulnerabilities.
- Explore how child protection programme infrastructure (physical spaces and programmes) can be used to sensitize children and caregivers to climate change.
- Consider evidence and research on the impact of climate change and child protection issues including inform programme prioritisation and advocacy.

### 5.3 Education and Adolescent Development

- Improve children and adolescents' knowledge and skills about climate change and how to tackle it: i) Develop the school curriculum to include climate change-related subjects; ii) Conduct a study on harnessing children and adolescents' potential to tackle climate change; and iii) Support life-skills training for children on environment and climate change risks.
- Build capacity to continue education during climate risks: i) Integrate climate change resilience into school construction codes and standards; ii) Promote school WASH infrastructure to make them climate resilient, accessible and suitable for children with disabilities; and iii) Integrate child-friendly disaster preparedness training in schools and communities.
- Put mechanisms in place for the participation of children, adolescents and youth in climate action design, decision-making, planning and implementation: i) Empower children and adolescents as agents of change by fostering participation and engagement for a safe and protective environment, and ii) strengthen their channels for influencing CEE policy making, and boost their employability.

### 5.4 Health and Nutrition

- Integrate climate change adaptation in health and nutrition-related strategies.
- Assess the multidimensional nature of the impact of CEE on children's health, nutrition and wellbeing: i) Support research to reduce child vulnerability; ii) Support development and implementation of appropriate legislation, policies, strategic plans, and budgets for maternal, adolescent, new-born and child health and nutrition integrating response to climate risks.
- Support greater data/ information capture on the links between environmental and human health: i) Collect data on health outcomes such as intrauterine growth retardation in newborns, child morbidity and mortality due to acute respiratory infections, and the prevalence of chronic respiratory diseases; and ii) Support studies and data collection on environmental and air pollution.
- Strengthen mental health resilience skills among mothers and children, through health care services and facilities including through investment in community-based mental and psychosocial services with an emphasis on emergencies.
- Health and nutrition interventions in areas affected by climate change and environmental risks.
- Medical waste management for public health safety to enhance child health and safety.



### 5.5 Water, Sanitation and Hygiene (WASH)

- Enhance adaptive capacities to mitigate WASH vulnerability caused by climate change:
  - a. At institutional level support: i) Forming a Climate, Energy and Environment stakeholders' forum; Climate change integration in WASH sector coordination groups; ii) PWA stakeholder capacity to mainstream climate change in the WASH sector; iii) PWA and EQA to enforce policies and implement effective climate mitigation and adaptation strategies in the WASH sector; iv) Institutions (schools, health care facilities and hospitals) to have the standards meeting the climate resilient WASH; and v) WASH cluster/ sector partners and donors to increase financing for the sector and implement wastewater treatment and reuse projects.
  - b. At the community level: i) Engage community institutions and leaders; ii) Enhance resilience and mitigate the impacts of climate change, e.g. water and energy conservation and depollution projects; and iii) Improve community awareness on WASH-related good practices to reduce climate change risks.
  - c. At the family/household level: i) Raise awareness including change the habits and behaviour of the children towards WASH including solid waste management, recycling and reuse; and ii) Support the reuse of reclaimed wastewater for irrigation.
- Enhance WASH services in institutions (schools and health care facilities (HCF)): i) Support schools and HCF management to upgrade WASH systems to meet climate resilient WASH standards, including through recycling, renewable energy, and reuse; ii) Support schools and HCF that are not yet connected to a water supply; iii) Build awareness and capacity of health coordinators, school councillors, and teachers on climate change; and iv) Support CEE activities like environmental clubs, global handwashing days, and summer camps.
- Improve the rate of carbon stock and biomass towards reduction of Greenhouse Gas (GHG) emissions and enhancement of climate resilient WASH: i) Child/youth-led initiative for tree planting and programmes tackling energy savings; ii) Support initiatives that reduce the GHG emissions, improve the air quality, reduce the energy costs, and mitigate green climate harm; iii) Support energy efficiency improvements on buildings; iv) Renewable energy sources and modernization of the energy supply systems including wind and solar, including through solar panels on schools and health care facilities roofs and renewable energy solutions for WASH facilities (e.g. water pumping and wastewater treatment stations); and v) Benefit from the potential of private sector financing for investment in renewable energy using public-private partnership models.
- Reduce the vulnerability of WASH infrastructure to potential climate shocks (foster climate resilient WASH): i) Promote WASH infrastructure adaption to floods, droughts and severe weather conditions; and ii) Support PWA and WASH service providers to develop and implement climate change-informed Water Safety Plans.
- Cooperate with research institutions to generate evidence related to the impact of climate change in the WASH sector including studying the climatic factors that intersect and are becoming a multiplier threat and stretch resilience and adaptive capacities.
- Promote youth engagement through WASH platforms and interventions around climate change.

### 5.6 Social Policy/Social Protection

- Establish, develop and/or review the existing legal and institutional framework for adaptation to climate change: i) Develop appropriate policies and strategic plans; ii) Support national social adaptation strategies; iii) Develop cross-sectoral strategies; iv) Develop and/or enhance existing standards to uphold children's rights; and v) Support SoP to take action to comply with UNFCCC goals and targets.
- Lobby for greater allocation in the national budget for climate mitigation and adaptation: i) Influence national budgeting; ii) Promote the concept of budgeting for climate risk mitigation, adaptation and response; iii) Support national budgeting for environmental projects; and iv) Build stakeholder capacities to implement needs-based and disaster-responsive budgeting.
- Integrate climate adaptation in the SoP policies and strategies: i) Promote mainstreaming of children's issues into the CEE strategy development and decision-making and ii) Increase understanding of CEE issues and climate impacts on children.

- Develop a national child-friendly social protection system: i) Develop a functioning Shock Responsive Social Protection system including climate targeting, and ii) Increase community/family resilience in the face of severe economic conditions or natural disasters.
- Advocate to link the promotion of resilient and sustainable practices with wider socio-economic objectives: i) Develop actionable tasks and mechanisms for the participation of children, adolescents and youth in climate action design, decision-making, planning and implementation; and ii) Cooperate with educational and research institutes on CEE topics linked to social protection, adaptation and mitigation.
- Promote climate change and DRR to reduce family vulnerability enhancing children's rights and social protection: i) Work with related institutions to identify vulnerable families with children as early as possible; ii) Develop child-sensitive social resilience standards.
- Promote policy-oriented research on the nexus between CEE and children in areas such as emergencies and disaster risk reduction, and the impact on child protection, education and early childhood development, and health.

#### 5.7 Emergency Preparedness and Response to Natural Disasters

- Support the readiness of the SoP to develop early warning systems to enhance adaptation to climate change impacts.
- Make sure that contingency plans are in place to respond to child protection, education, health and nutrition, social protection and WASH needs from climate-related disasters including climate-related displacement.
- Promote child-centred Disaster Risk Reduction (DRR): i) Improve access to schools in a safe learning environment during climate risks; ii) Promote the use of individual family emergency plans against environmental and climate change risks; iii) Work with the child protection programme to enhance that contingency plans are in place to respond to child protection needs from climate-related disasters, climate-related displacement etc; iv) Strengthen social capital for resilience among Palestinians to strengthen relationships and institutions that build shock responsiveness.

#### 5.8 Social and Behaviour Change

- Raise awareness among Palestinian children, adolescents and families about climate change, environmental degradation, the link to disasters and public health emergencies, and promote climate change adaptation practices and behaviours: i) Develop child-friendly communication materials on climate change including through TV and other media; ii) Support school initiatives and extracurricular programs; iii) Promote children's engagement and participation.
- Enhance engagement with communities to adopt climate change resilient behaviours: i) Collaborate on livelihoods; ii) Engage communities in WASH and climate change good practices; iii) Develop community-level strategies to address harmful social and cultural practices exacerbated by climate risks.

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**Promote youth engagement through WASH platforms and interventions around climate change.**

# 6.

## Conclusion: A Vision for the State of Palestine





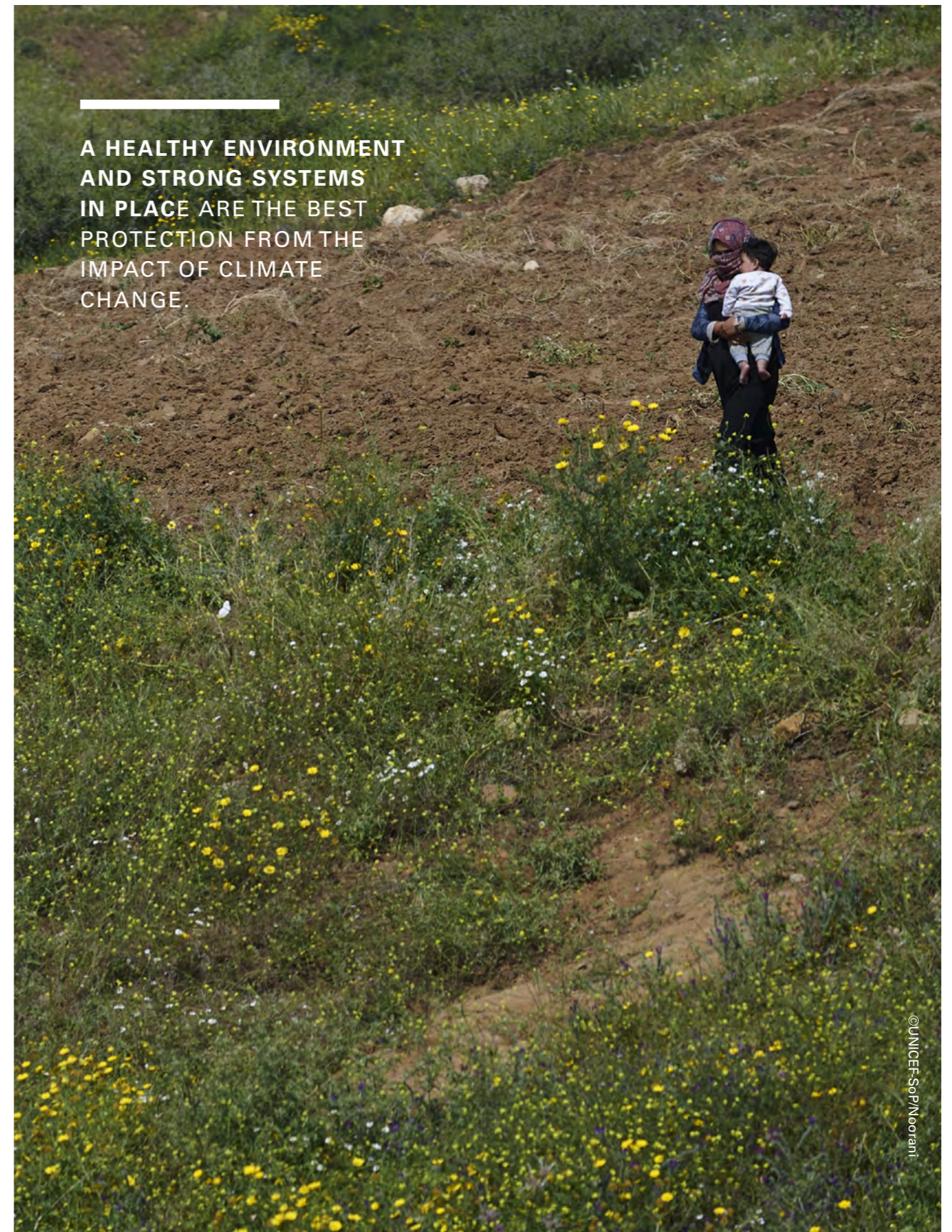
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UNICEF fosters a green and hopeful future in the State of Palestine where children and youth are climate champions and stewards of the environment.

All programme approaches must be aimed at preparing future generations with the skills, knowledge and motivation to protect and foster resilient communities ready to mitigate climate change impacts, benefiting everyone.

A healthy environment and strong systems in place are the best protection from the impact of climate change. UNICEF is well placed to influence governments and partners and has an important role to advocate for child-sensitive and gender-responsive climate policies and actions that safeguard the citizens of today and tomorrow, while empowering children and young people to become climate and environmental advocates and reducing the environmental impact of operations and programmes to promote a greener, more sustainable environment for children.

Each stream of UNICEF work presents opportunities to take action on climate, energy and/or the environment in order to deliver more sustainable results for every girl and boy to achieve their Their right to reach their full potential, and their right to live in protective, equitable and inclusive societies.



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