

# Environmental Aspects Impact on Women and Girls in Context of Gaza Conflict

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## Palestinian Women Water Network

9/25/2024



“In  
Gaza, we [women] cannot meet our simplest and  
most basic needs: eating well, drinking safe  
water, accessing a toilet, having (sanitary) pads,  
taking a shower, ... changing our clothes...”

## Executive Summary

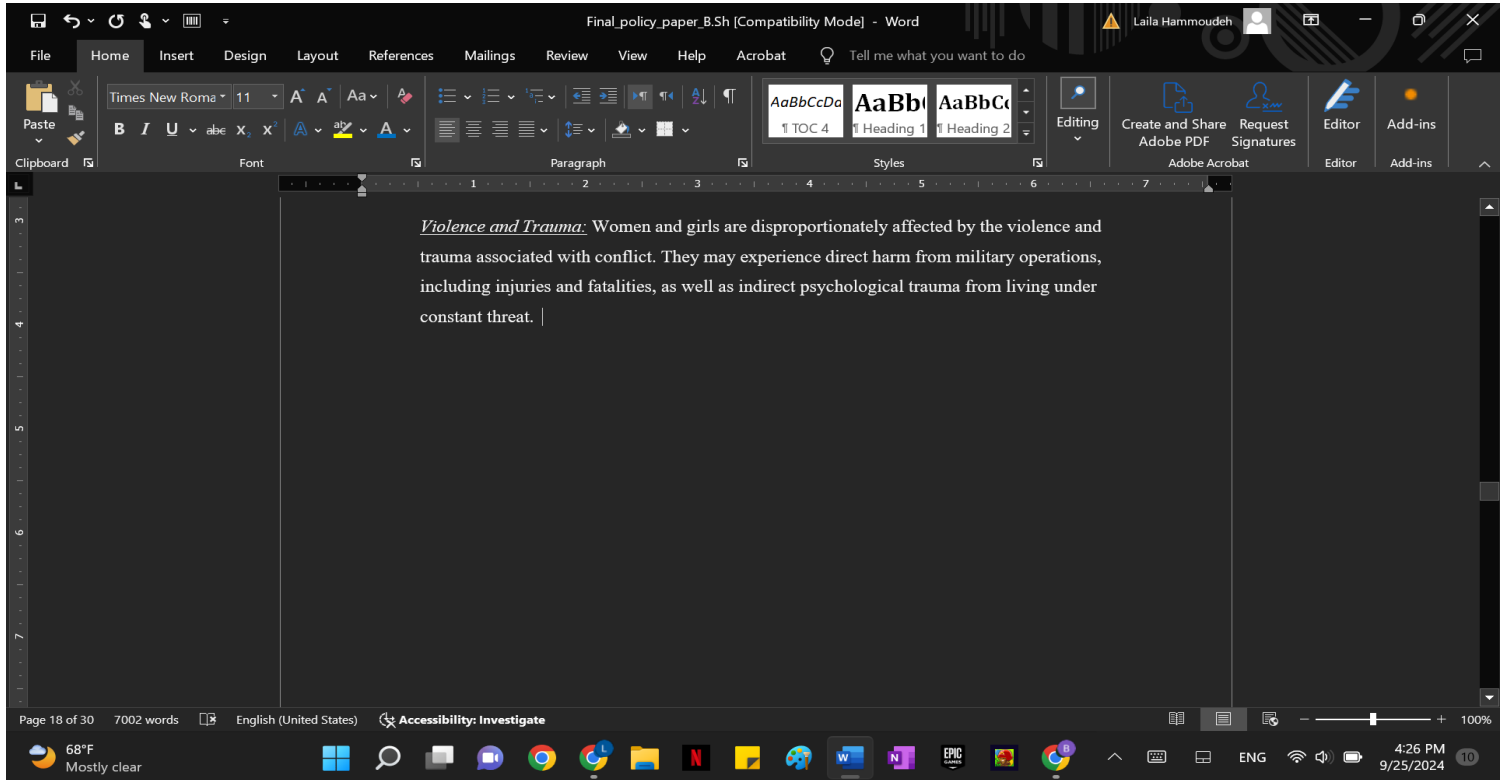
Conflict exacerbates risks of gender-based violence, leaving women and girls vulnerable to exploitation and abuse, women in Gaza demonstrate resilience through community networks and initiatives aimed at sustaining livelihoods. Conflict exacerbates risks of gender-based violence, leaving women and girls vulnerable to exploitation and abuse, women in Gaza demonstrate resilience through community networks and initiatives aimed at sustaining livelihoods.

The conflict in Gaza has inflicted devastating humanitarian consequences, particularly impacting women and children. Since Oct. 7, Israel's bombing of Gaza has killed 36,654 Palestinians, including 15,328 children and 10,171 women, and injured 83,309 others. This is the result of 8 months of genocide.

Furthermore, an alarming 85% of Gaza's population, estimated at 1.93 million civilians, are forcibly displaced, disproportionately affecting women and children. A qualitative approach was used in this policy paper as quantitative data are dangerous to collect under the ongoing conflict. Urgent international support and sustainable development efforts are crucial to mitigate these impacts and support affected communities. All the main issues listed above in addition to the SWOT, PEST analysis was taken into consideration.

In conclusion, the conflict in Gaza has inflicted unprecedented damage on both its people and environment, exacerbating long-standing environmental challenges and necessitating urgent humanitarian intervention. The ongoing violence has disrupted essential services such as water management and waste disposal, compounding health risks for civilians. Immediate efforts for ceasefire and humanitarian aid are crucial to mitigate further suffering and begin the process of recovery and reconstruction. Looking forward, comprehensive environmental assessments, including through the Rapid Damage and Needs Assessment (RDNA) process, will be essential to guide recovery efforts. These assessments must prioritize the mitigation of pollution, contamination from munitions, and restoration of critical infrastructure like wastewater treatment and solid waste management systems. Collaboration among international agencies, local authorities, and scientific communities will be vital in ensuring that recovery plans integrate environmental considerations from the outset, safeguarding public health and environmental sustainability in Gaza's path towards resilience and recovery.

## Selected up-to date info graph Feb. 2024 (source euro monitoring .org)





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## Introduction

Water resources and environmental conditions are crucial for survival and development, especially in conflict-ridden areas like Gaza, where they profoundly impact public health, livelihoods, and gender dynamics. The ongoing Israeli-Palestinian conflict has led to severe environmental degradation in Gaza, exacerbated by frequent warfare, with significant consequences for women and girls.

Historical disputes over territory and statehood underpin Gaza's enduring conflict, marked by recurrent military operations and humanitarian crises. Women and girls bear unique burdens exacerbated by their roles in care giving, compounded by violence, displacement, and disrupted access to essential services. Environmental challenges such as damaged infrastructure and water scarcity further heighten their vulnerabilities.

The pursuit of a sustainable and healthy environment is inseparable from women's empowerment and gender equality. Tackling ongoing environmental challenges that affect women requires both individual commitment and collective action toward achieving Sustainable Development Goals, particularly those aimed at ensuring clean, healthy environments and safeguarding essential natural resources for our communities. Adopting a gender-sensitive approach to environmental issues is crucial, supported by grassroots activism and advocacy from diverse stakeholders including citizens and international NGOs. This becomes even more urgent in the context of ongoing conflicts and the broader impacts of global climate and environmental changes.

## Gaza Strip: Geography and demography

The Gaza Strip, a narrow coastal territory spanning 365 square kilometers, is densely populated with 6,102 individuals per km<sup>2</sup>, among the highest globally. Urbanization has rapidly expanded, with urban areas growing from 69 km<sup>2</sup> in 2013 to over 85 km<sup>2</sup> in 2020, while agricultural areas increased from 175 km<sup>2</sup> to 220.6 km<sup>2</sup> during the same period (Musallam, Zhou, & Jewitt, 2023). About 40% of Gaza's population are children under 15 years old, and 60% are refugees, exacerbating issues of overcrowding and poverty.



## Context of the Conflict

Gaza, a small Palestinian territory bordered by Israel and Egypt, has been a focal point of the Israeli-Palestinian conflict for decades. The region has experienced multiple wars and military operations, leading to widespread destruction of infrastructure, loss of lives, and severe humanitarian crises. The conflict is multifaceted, involving issues such as land disputes, Palestinian statehood, security concerns, and the status of Jerusalem.

The conflict in Gaza is a protracted and complex issue primarily rooted in the Israeli-Palestinian conflict, characterized by territorial disputes, political tensions, and deep-seated historical grievances. This conflict has far-reaching consequences for all residents of Gaza, including significant impacts on women and girls, with environmental factors exacerbating their vulnerabilities.

## Women and Girls in Gaza

In Gaza, the population density exceeds 6,100 individuals per square kilometer, placing it among the world's most densely populated areas. Women and girls constitute approximately half of Gaza's population, with a significant number under the age of 18. Female literacy stands at about 96%, showcasing relatively high educational achievement despite challenging circumstances.

However, women face substantial hurdles in accessing employment opportunities, contributing to high unemployment rates. Healthcare access, including reproductive services, remains critical, affecting maternal and infant mortality rates. Gender-based violence, including domestic abuse, is pervasive, exacerbated by ongoing conflict and humanitarian crises. Political participation among women is limited, although efforts are underway to enhance their involvement in decision-making processes. These statistics underscore the urgent need for targeted interventions to improve women's socio-economic status, health outcomes, and overall well-being in Gaza.

**Impact of Conflict:** Essential services such as healthcare, education, and clean water are severely disrupted, increasing care giving burdens for women.

Women and girls face higher poverty rates, unemployment, and limited economic opportunities compared to men, increasing their vulnerability to violence and displacement.

Conflict exacerbates risks of gender-based violence, leaving women and girls vulnerable to exploitation and abuse, women in Gaza demonstrate resilience through community networks and initiatives aimed at sustaining livelihoods.



## Problem Statement

The conflict in Gaza has inflicted devastating humanitarian consequences, particularly impacting women and children. Since Oct. 7, Israel's bombing of Gaza has killed 36,654 Palestinians, including 15,328 children and 10,171 women, and injured 83,309 others. This is the result of 8 months genocide. Furthermore, an alarming 85% of Gaza's population, estimated at 1.93 million civilians, are forcibly displaced, disproportionately affecting women and children.

Healthcare services have been severely disrupted, posing significant risks to maternal and child health. Pregnant women face heightened dangers due to limited access to medical facilities and essential supplies, often forced to give birth in inadequate conditions amidst ongoing bombardments. The region also faces catastrophic levels of food insecurity, with reports of children dying from starvation in northern Gaza. Malnutrition rates among children under 2 have soared, exacerbating health risks for pregnant and breastfeeding women.

The humanitarian crisis has magnified vulnerabilities for women, including increased risks of gender-based violence and compromised access to reproductive health services. The collapse of essential services and infrastructure further compounds these risks, leaving women and children disproportionately affected by the conflict's impact on their safety, health, and well-being.

In light of these dire circumstances, urgent international intervention is imperative to address these gender-specific humanitarian challenges. Immediate action is needed to protect the rights and ensure the safety of women and children in Gaza, providing essential humanitarian aid, healthcare services, and protection from violence amidst ongoing hostilities.

## Objectives

Based on the situation described in Gaza, here are four key objectives for addressing the humanitarian crisis, particularly focusing on the impacts on women and children:

1. Protecting Civilian Lives Ensure immediate and sustained protection for civilians, particularly women and children, from violence, displacement, and other humanitarian threats arising from the conflict.





2. Restoring Healthcare Services: Facilitate and support the restoration of essential healthcare services, including maternal and child health services, by providing access to medical facilities, supplies, and trained healthcare personnel.

3. Addressing Food Insecurity Implement urgent measures to alleviate food insecurity and malnutrition among children under 2 years old, with targeted interventions to support pregnant and breastfeeding women at high risk.

4. Enhancing Gender-Based Violence Response Strengthen initiatives to prevent and respond to gender-based violence, ensuring women have safe access to support services, legal assistance, and reproductive health care in humanitarian settings

These objectives aim to mitigate the severe impacts of the conflict on vulnerable populations, particularly women and children, by addressing immediate humanitarian needs and promoting their safety, health, and well-being in Gaza



## Literature Review

### Overview

The conflict in Gaza has resulted in severe environmental degradation and humanitarian crises, particularly impacting women. Immediate and sustained international intervention is essential to mitigate environmental damage, protect the rights and safety of women, and support sustainable development efforts amidst ongoing hostilities. Thus comparing What is going on in Gaza to other recent conflicts is crucial to understand that the impacts in Gaza are massive, in addition the violations needs a long time to overcome

### Ukraine Conflict

The conflict in Ukraine, notably in the Donbas region, has had profound dual impacts on the environment and women. Industrial damage resulting from bombings and shelling has caused hazardous substance leaks from facilities such as chemical plants, leading to contamination of soil and water. By 2020, more than 20 water facilities had been damaged, severely affecting access to clean water for millions. Ongoing landmine contamination continues to pose risks, impeding environmental recovery and access to agricultural land, and threatening biodiversity. Women in Ukraine are particularly vulnerable in the conflict's aftermath, with approximately 1.5 million internally displaced persons, many of whom are women, struggling to access essential services and healthcare. Incidents of gender-based violence have tripled in conflict-affected areas, exacerbating risks of domestic violence and human trafficking. Disruptions to healthcare services have further compromised reproductive health and maternal care, deepening challenges for women and children. Economic instability stemming from the conflict has disproportionately impacted women's livelihoods and economic security.

From 2014 to 2022, more than 3,300 civilians were killed and over 7,000 wounded in eastern Ukraine (UN, 2022). The Donbas region has suffered significant environmental degradation, with up to 60% of water sources contaminated (EEA, 2021). Gender-based violence incidents in eastern Ukraine tripled between 2014 and 2016, with profound impacts on women and girls (UN Women, 2016). Severe disruptions to healthcare services have particularly affected maternal and child health outcomes (WHO, 2020). Addressing the environmental and humanitarian impacts of the Ukraine conflict necessitates urgent international support to safeguard women's rights, restore environmental health, and foster sustainable peace-building initiatives.



## Syria Conflict

The Syrian conflict since 2011 has profoundly impacted both the environment and women: Since the onset of the Syrian conflict in 2011, the environmental toll has been profound, with industrial damage from bombings and shelling causing extensive pollution and hazardous waste, including oil spills and burning, which have contaminated air, soil, and water sources (UNEP). Infrastructure destruction has disrupted water services, leaving more than 11 million Syrians in urgent need of safe drinking water due to contamination and shortages (UNICEF). Concurrently, the destruction of farmland, irrigation systems, and livestock has exacerbated food insecurity, accelerated desertification, and degraded soil quality (UNEP). Unsustainable practices such as deforestation for fuel and land degradation have further strained natural resources amidst ongoing displacement and military activities. Women and children constitute a significant portion of the 12 million Syrians dependent on humanitarian aid, facing heightened risks of displacement, gender-based violence, including sexual violence and forced marriages, which have disproportionately affected them (UN Women). Access to critical healthcare services, particularly reproductive health, has been severely compromised, contributing to elevated maternal mortality rates and exacerbated health challenges (WHO). Economic instability stemming from the conflict has exacerbated poverty and food insecurity among women, underscoring the urgent need for robust international support to mitigate environmental degradation, protect women's rights, and promote sustainable development in post-conflict Syria.

**These summaries will be used to compare these conflicts with gaza's conflict.**

## Methodology

A qualitative approach was used in this policy paper as quantitative data are dangerous to collect under the ongoing conflict. The Impacts are illustrated below

## Environmental Impacts

- *In Gaza*

### *Water and Sanitation*

Gaza faces severe water scarcity and contamination issues due to damaged infrastructure and over-extraction of groundwater.

### *Infrastructure Damage*

Bombings have targeted critical infrastructure, including water treatment facilities, exacerbating water shortages and pollution.

### *Land and Coastal Degradation*

Urbanization and conflict have led to land degradation and pollution of coastal waters, impacting marine ecosystems.

- *In Syria*

### *Industrial Damage*

Conflict has damaged factories and oil refineries, resulting in pollution and hazardous waste, including oil spills.

### *Water and Sanitation*

Infrastructure damage has disrupted water services, leading to widespread contamination and shortages.

### *Agriculture and Land Use*

Destruction of farmland, irrigation systems, and livestock has exacerbated food insecurity and desertification.



- [\*In Ukraine\*](#)

### **Industrial and Infrastructure Damage**

Conflict has damaged industrial facilities and critical infrastructure, leading to pollution and hazardous substance leaks.

### **Water and Sanitation**

Bombings have damaged water treatment facilities, resulting in contamination of water sources and shortages.

### **Landmine Contamination**

Landmines and unexploded ordnance pose risks to civilians and hinder environmental recovery efforts.

## **Impacts on Women**

- [\*In Gaza\*](#)

### **Displacement**

Women in Gaza are disproportionately affected by displacement and face challenges in accessing essential services and healthcare.

### **Gender-Based Violence**

Conflict exacerbates risks of gender-based violence, including domestic abuse and exploitation.

### **Healthcare**

Access to healthcare services, including reproductive health, is compromised, impacting maternal and child health outcomes.

- [\*In Syria\*](#)

### **Displacement and Refugees**

Women and children constitute a significant portion of displaced persons and refugees, facing heightened vulnerabilities in protection, health, and livelihoods.



## **Gender-Based Violence**

Conflict-related gender-based violence has risen sharply, with women and girls at increased risk of sexual violence and exploitation.

## **Healthcare**

Disruptions to healthcare services have exacerbated health challenges for women, including higher maternal mortality rates.

- **In Ukraine**

## **Displacement**

Women make up a significant portion of internally displaced persons, facing challenges in accessing essential services and healthcare.

## **Gender-Based Violence**

Conflict has led to an increase in gender-based violence incidents, including domestic violence and trafficking.

## **Healthcare**

Disruptions to healthcare services have affected women's access to reproductive health services and maternal care.



### Summary:

Each conflict zone presents unique challenges and impacts on both the environment and women. Gaza faces severe water scarcity and infrastructure damage, exacerbating environmental degradation and impacting women's health and safety. In Syria, industrial damage and agricultural disruption worsen environmental sustainability, while conflict-related displacement and violence disproportionately affect women. Ukraine's conflict has led to industrial and infrastructure damage, alongside landmine contamination, affecting environmental recovery and posing risks to women's health and security. Urgent international support and sustainable development efforts are crucial to mitigate these impacts and support affected communities. All the main issues listed above in addition to the SWOT, PEST analysis summarized in appendices were taken into consideration in the next sections.

## Current Situation Analysis Overview

Water access in Palestine, especially in Gaza, is severely unequal due to Israeli control over resources. Palestinians in Gaza face polluted water and damaged infrastructure, surviving on just 2 to 3 liters per day, while Israeli settlements enjoy abundant resources. Gaza's challenges include untreated sewage and over-extraction of groundwater, with 110,000 cubic meters of sewage flowing daily into the Mediterranean. The Coastal Aquifer suffers from declining levels and high nitrate levels, endangering water quality. Efforts to improve include wastewater treatment and renewable energy projects, yet Gaza continues to face power shortages and environmental degradation.

### Pre-Gaza War Environmental Challenges

Gaza faced numerous environmental challenges before the latest conflict, which exacerbated an already critical situation. The following key issues highlight the environmental degradation, heavily supported by statistics and reports from UN agencies and other credible international organizations:

**1. Water Crisis:** Scarcity and Contamination - 97% of Gaza's water from its coastal aquifer is unfit for human consumption due to high levels of salinity and sewage contamination (UNICEF).

- Only 10% of Gaza's population has access to safe drinking water through the public network, with most people relying on expensive desalinated water from private vendors (OCHA).

- The UN Environment Programme (UNEP) predicted that Gaza's coastal aquifer would become irreversibly damaged if no immediate action was taken, with a total collapse forecast by 2020.

**2. Energy Shortages:** Disrupting Essential Services

- Gaza receives only 3-6 hours of electricity per day due to extensive damage to its power infrastructure and import restrictions (OCHA).

- Power outages severely disrupt water pumping stations and wastewater treatment plants, compounding the issues with water availability and public health (UN Human Rights Council).

- The World Bank estimated that Gaza's energy supply covered just one-third of its demand, causing constant blackouts that negatively affect hospitals, businesses, and homes.



### **3. Food Insecurity:**

Agricultural Decline - 68% of Gaza households suffer from food insecurity, driven by restrictions on land use, water access, and imports of agricultural goods (FAO).

- More than 80% of Gaza's population relies on humanitarian aid, including food assistance, as reported by UNRWA.
- 35% of Gaza's agricultural land is inaccessible due to security restrictions, further hampering local food production (FAO).

### **4. Waste Management Problems**

- 80 million liters of untreated or partially treated sewage are discharged into the Mediterranean Sea daily, due to damage to sewage treatment plants (UNDP).
- Solid waste collection services only reach 60% of Gaza's population, resulting in widespread illegal dumping and open burning of waste, which worsens air and environmental quality (OCHA).

### **5. Polluted Coastal Waters:** Impact on Health and Livelihoods

- Over 70% of Gaza's untreated sewage is discharged directly into the sea, causing severe marine pollution and threatening Gaza's fishing industry (UNEP).
- The World Health Organization (WHO) warned that this sewage contamination contributes to outbreaks of waterborne diseases, including diarrheal diseases, which are a leading cause of illness in the region.

### **6. Air Pollution:** Health Risks from Generator Use

- Frequent power outages force households and businesses to rely on diesel generators, contributing to significant air pollution. The UNEP raised concerns over the health impacts of burning low-quality diesel in these generators.
- WHO studies link air pollution to an increase in respiratory illnesses, particularly affecting vulnerable groups such as children and the elderly.

## **7. Climate Change Impacts:** Intensifying Water and Agricultural Challenges

- The World Bank highlighted that Gaza is highly vulnerable to the impacts of climate change, such as rising temperatures and more frequent droughts, further straining water resources and reducing agricultural productivity.

- The Intergovernmental Panel on Climate Change (IPCC) warned of rising sea levels threatening Gaza's coastal infrastructure and agricultural areas, with over 50% of Gaza's farmland already affected by saltwater intrusion.

## **8. Overpopulation and Urban Stress**

- Gaza has one of the highest population densities in the world, with over 2 million people living in a 365 km<sup>2</sup> area, resulting in a population density of approximately 5,500 people per square kilometer (UN Human Rights Council).

- The UNDP reported that Gaza's urban infrastructure, including roads, sewage systems, and housing, is severely overburdened, leading to overcrowded living conditions and putting immense strain on natural resources.

## **Conclusion**

UN-backed data paints a grim picture of Gaza's environmental challenges before the recent conflict. Water scarcity, energy shortages, food insecurity, pollution, and overpopulation contributed to a precarious situation that worsened due to military operations and the blockade. The environmental degradation—coupled with poor governance and economic constraints—created a context ripe for humanitarian crises and further conflict. Immediate international action was already urgently needed to avert complete collapse, especially regarding water and energy infrastructure, food security, and sanitation.

## Post Gaza War Environmental Challenges

The environmental conditions in Gaza have worsened significantly following the recent conflict, exacerbating existing crises related to water, sanitation, food insecurity, and public health. The situation is now dire, as detailed by the United Nations (UN) and the WASH (Water, Sanitation, and Hygiene) Cluster, with updated data and references revealing the extent of the damage:

### **1. Water Crisis:** Worsening Scarcity and Contamination

- 50% of water and sanitation facilities have been damaged (WASH Cluster 2023).
- 800,000 people (40% of Gaza's population) have limited access to clean water (UN OCHA).
- 97% of Gaza's water remains unfit for human consumption due to salinity and sewage contamination (UNICEF).

### **2. Sanitation Crisis**

- Over 100 million liters of untreated sewage are discharged into the Mediterranean Sea daily (WASH Cluster, UNICEF).
- 30% of illness cases are now attributed to unsafe water and poor sanitation, with increasing risks of cholera and dysentery (WHO).

### **3. Energy Shortages and Impact on Water & Sanitation**

- Electricity is available for only 2-4 hours per day due to damage to the power grid (UNDP).
- Desalination plants are functioning at 15-20% capacity, further limiting access to clean water (OCHA).

### **4. Food Insecurity and Agricultural Damage**

- Over 30,000 acres of agricultural land have been damaged or are inaccessible (FAO, OCHA).
- 70% of Gaza's population is now food insecure, a sharp increase from pre-conflict levels (FAO).
- 50% of Gaza's fishing workforce is now unemployed due to contaminated waters and restricted access (UNRWA).

## **5. Waste Management: Exacerbated by Conflict**

- 40% of waste management infrastructure has been damaged, leading to 30% of waste going uncollected (WASH Cluster).
- Open burning of waste has contributed to a 20% increase in respiratory diseases (WHO).

## **6. Polluted Coastal Waters and Public Health Risks**

- More than 80% of Gaza's coastline is unfit for swimming or fishing due to sewage contamination (UNEP).
- 25% increase in waterborne diseases post-conflict, with children and the elderly most affected (WHO).

## **7. Air Pollution and Respiratory Health**

- The use of diesel generators due to power shortages has contributed to a 15-20% increase in respiratory infections (WHO, UNDP).
- Indoor air pollution has worsened due to unsafe fuel sources used for cooking and heating.

## **8. Climate Change and Environmental Vulnerabilities**

- 30% of Gaza's agricultural land faces saltwater intrusion due to rising sea levels (IPCC, UNEP).
- Higher temperatures and prolonged droughts are further limiting water availability and agricultural productivity (UNEP, WHO).

## **9. Overpopulation and Infrastructure Collapse**

- Gaza's population density remains extremely high, with over 2 million people in a small, blockaded territory (UN OCHA).
- Over 50% of urban infrastructure has been damaged, leading to overcrowded housing and pressure on sanitation systems (UNDP).



## Conclusion

Post-conflict Gaza is experiencing a compounded environmental crisis. Damage to water and sanitation facilities, coupled with electricity shortages and food insecurity, has pushed the region into a near-total humanitarian collapse. The UN and WASH Cluster report that without immediate intervention, the population will continue to face increasing health risks, environmental degradation, and resource scarcity, requiring urgent international aid to restore basic services. Some resources indicate that the required sum for Gaza's reconstruction is an amount of 18 billion USD as of April 2024, but no clear agreement has been reached to date and the destruction is causing more challenges to continue.

## Policy Landscape

Palestine has demonstrated a strong commitment to environmental sustainability and gender equality through its active participation in international conventions and treaties.

Environmentally, Palestine has signed important agreements such as the UN Convention on the Law of the Non-Navigational Uses of International Watercourses and ratified the Stockholm Convention on Persistent Organic Pollutants. It also engages in the Basel and Rotterdam Conventions on hazardous waste and chemicals trade, and aligns with the Paris Agreement on Climate Change.

On the gender equality front, Palestine supports the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW), the Beijing Declaration and Platform for Action, and the Optional Protocol to CEDAW. It also backs the Maputo Protocol to enhance women's rights in Africa and respects provisions in the Convention on the Rights of the Child (CRC) relevant to girls' empowerment.

Despite Palestine's commitments, the current conflict impedes the implementation and respect of these agreements by the Israeli government, although Israel is also a party to many of these conventions and agreements. Palestine's national policies and strategies reflect its dedication to fulfilling these commitments, aiming to ensure equitable opportunities and protections for all amidst ongoing challenges.

## Challenges and Issues

Before the escalation of conflict in October 2023, the occupied Palestinian territory, including Gaza Strip, West Bank, and East Jerusalem, grappled with severe environmental challenges exacerbated by political constraints, rapid urbanization, and climate change impacts. These issues, worsened by ongoing occupation, included freshwater scarcity, water pollution from agricultural and sewage sources, marine contamination, soil degradation, and hazardous emissions from unregulated industries. Despite some progress in environmental management, persistent challenges persisted amid periodic escalations and conflicts.

## Impact on Women and Girls

Women and girls in Gaza face unique challenges and vulnerabilities exacerbated by the conflict:

*Humanitarian Crisis:* The ongoing conflict has led to severe humanitarian crises in Gaza, including shortages of necessities like food, clean water, and medical supplies. Women often bear the brunt of caregiving responsibilities and face increased challenges in accessing healthcare and essential services for themselves and their families

*Violence and Trauma:* Women and girls are disproportionately affected by the violence and trauma associated with conflict. They may experience direct harm from military operations, including injuries and fatalities, as well as indirect psychological trauma from living under constant threat.

*Displacement and Homelessness:* Conflict-induced displacement is common in Gaza, forcing families, including women and girls, to flee their homes and seek refuge in overcrowded shelters or with relatives. This displacement disrupts their lives, education, and livelihoods, making them more vulnerable to exploitation and abuse.

*Educational Disruption:* Access to education is severely impacted by the conflict. Bombings and military operations often damage schools and educational infrastructure, disrupting learning for girls and denying them opportunities for personal and economic development.

## Environmental Aspects

The environmental impact of the conflict further compounds the challenges faced by women and girls in Gaza:

***Infrastructure Damage:*** Military operations cause extensive damage to infrastructure, including water and sanitation systems, which are essential for public health. This damage increases the risk of waterborne diseases and environmental contamination, disproportionately affecting women and children. The ongoing damage to Gaza's wastewater treatment infrastructure has resulted in the daily discharge of approximately 60,000 m<sup>3</sup> of untreated sewage into the Mediterranean Sea as of March 2024. This sewage contains pathogens, nutrients, organic matter, plastics, and hazardous chemicals, posing immediate health risks to the population. The available water in Gaza during this period was only 70,000 m<sup>3</sup> per day, significantly lower than pre-conflict levels, exacerbating the water crisis.

Past conflicts, such as "Cast Lead" in 2008 and "Protective Edge" in 2014, caused severe damage to wastewater treatment plants, leading to the leakage of over 100,000 m<sup>3</sup> of wastewater and sludge into farmland and urban areas. This resulted in spikes in diarrhoea cases, especially among children, and contamination of groundwater and agricultural land with heavy metals. Post-conflict water samples indicated that 12-14% were contaminated with coliform bacteria.

The porous soil in Gaza, while somewhat protective, increases the risk of sewage contaminating the aquifer, which poses health risks to those using untreated well water.

Efforts to rebuild the aquifer and reduce reliance on saline wells are crucial to mitigate these risks. Damage to desalination facilities further complicates access to freshwater, hindering efforts to safeguard the aquifer and provide alternative water sources.

***Water and Food Security:*** Gaza faces chronic water shortages exacerbated by conflict-related damage to water infrastructure and restrictions on imports. Women, who often bear responsibility for household water management, face increased difficulties in accessing clean and safe water for drinking, cooking, and sanitation.



*Health Risks:* Environmental degradation and pollution resulting from conflict-related activities pose significant health risks to women and girls. Air and water pollution, exposure to hazardous materials, and inadequate waste management contribute to respiratory diseases, skin conditions, and other health problems.

## **Discussion**

Since October 2023, Gaza has faced a severe environmental and public health crisis due to the breakdown of solid waste management systems. By November, landfill operations ceased because of fuel shortages and security issues, resulting in daily accumulations of up to 1,200 tons of garbage, exacerbated by conflict-driven displacement. This waste, including significant amounts from IDP camps and hosting communities, heightened health risks, particularly from medical waste in hospitals.

Informal dumpsites spread across Gaza, worsening environmental hazards. Efforts to address the crisis from December 2023 saw increased waste collection operations, hampered by ongoing conflict. The shortage of cooking gas forced a shift to less clean energy sources such as firewood and open-air burning, escalating air pollution and respiratory health risks.

Gaza's municipal infrastructure sustained considerable damage, impacting five out of six solid waste management facilities. Humanitarian interventions, like UNICEF's cash-for-work program employing 100 workers for emergency waste and sanitation services, aimed to alleviate the crisis. Collaborative efforts involving UNDP, UNRWA, and the Joint Service Council supported waste management in heavily affected southern governorates, were approximately 10,000 tons of waste were collected from Rafah and Khan Yunis by early 2024, mitigating immediate environmental threats.

The environmental and health hazards associated with solid waste (and informal open incineration of solid waste) will be exacerbated by the contamination generated from large quantities of debris, UXO and weaponry used, sewage spills and air pollution. These are covered in Section 3 below.



The severity of medium- to long-term environmental impact of the breakdown of waste management systems would be greatly reduced by the prompt recovery of waste management systems, as well as efficient remediation and restoration of uncontrolled waste dumps.

Conflict disrupts agricultural activities and livelihoods, impacting food security and economic stability. Women are disproportionately affected as they are often involved in subsistence farming and informal sector activities, which are more susceptible to disruptions.

The ongoing conflict in Gaza has led to significant environmental and public health crises due to the widespread use of munitions containing toxic substances like TNT, RDX, and heavy metals. These materials pose immediate threats to plant and animal life, causing mortality, diseases, and bioaccumulation in local ecosystems. Their persistence in soil and water systems can result in long-term impacts spanning decades. Exposure to TNT can lead to carcinogenic effects and organ damage such as liver and kidney toxicity. RDX, present in contaminated water sources, affects the nervous system, causing seizures and nausea. Heavy metals such as arsenic, cadmium, and lead, known for their toxicity and carcinogenic properties, can cause severe organ damage even at low exposure levels. Phosphorus bombs exacerbate these risks by causing severe burns and emitting toxic smoke, posing immediate dangers to human life. Clearing explosive remnants from the conflict is expected to be a prolonged and hazardous task, especially for deeply buried munitions. Historical conflicts have left a legacy of heavy metal contamination in Gaza, impacting agricultural lands and potentially contaminating food supplies. Addressing these environmental and health challenges will require extensive efforts, long-term commitment, and international support.

In this conflict, construction, destruction and flooding of tunnels in Gaza The Gaza tunnel system approximately five hundred kilometers of tunnels under the Gaza Strip were constructed (Reuters 2023). According to media reports, the tunnels are widespread and are constructed from concrete, with electricity, ventilation, sewage and communication networks. It is assumed that the tunnels were not built according to the engineering and safety standards that are often required for other types of underground infrastructure, such as mines and metropolitan train systems.

The construction of a network of tunnels, and the efforts to destroy or render unusable these tunnels, may further contribute to environmental damage. The UN Environment Programme stated earlier that they do not know the extent to which pumping water into the tunnels is accomplished, nor the extent or volume of the tunnel system, how it is built and whether tunnels are inter-connected. If large quantities of seawater were pumped into an extensive network of tunnels, two effects might be expected which could be of concern: contamination of groundwater below the tunnels and potential instability of the area above the tunnels. These two effects are potentially serious and should therefore be investigated as soon as possible.

Possible contamination of groundwater below the tunnels: The addition of more salt water into the tunnel system would likely increase the leaching of highly saline water into the aquifer, further decreasing potability. In addition, electrical equipment, fuel, building materials and munitions in the tunnels could also leach into soil and groundwater. Flooding of tunnels could increase the migration of contamination, further impacting the quality of groundwater (Gonçalves, Albuquerque, Almeida, Gomes, & Cavaleiro, 2024) (Dudek et al. 2020). This is an immediate issue, due to people's reliance on groundwater, and will add an additional characteristic of contamination to be remediated in the longer term. Saline water is also a threat for industry, agriculture and horticulture. For example, high salinity levels can lead to poor crop yields, including salt tolerant varieties of grains.

Potential instability of the land above the tunnels: Flooding or conflict-related structural changes could affect integrity of the tunnels, leading to collapse and hence surface collapse of buildings and structures. The quality of the tunnels and their supporting infrastructure is unknown, hence the uncertainty regarding the nature of impacts. However, there may be lessons from mining experience applicable to the situation in Gaza. In most mining situations where tunnels are flooded, the water levels need to be maintained to support integrity of the tunnels and maintenance of water quality.



The situation in Gaza is different, but could also reflect what happens in shallow aquifers where tunnels are flooded. It has also been observed that the flooding of mines can lead to movements in surrounding rocks and earth and hence “land surface as a result of pressure changes in the flooded zones” i.e. result in subsidence (Dudek et al. 2020)

In conclusion, the conflict in Gaza has profound implications for women and girls, exacerbated by environmental factors that worsen living conditions and increase vulnerabilities. Addressing these issues requires comprehensive humanitarian efforts, including ensuring access to basic services, protecting women’s rights, and promoting sustainable development in a context of peace and stability.



## Recommendations:

- Call for an immediate and sustainable ceasefire, as mandated by the United Nations Security Council on March 25, 2024 (Resolution 2527), to alleviate humanitarian and WASH (Water, Sanitation, and Hygiene) crises in Gaza.
- Ensure safe, unimpeded, and at-scale humanitarian assistance across the Gaza Strip, including northern Gaza, focusing on improving women's and girls' access to food, safe drinking water, toilets, and menstrual hygiene products that respect privacy and dignity.
- Incorporate gender-sensitive approaches in emergency WASH responses, including the systematic collection of sex, age, and disability disaggregated data (SADDD) to inform planning and response efforts effectively.
- Strengthen support for women-led organizations with direct and flexible financing, recognizing their critical role in shaping WASH interventions and enhancing the inclusivity and responsiveness of services for women and girls affected by the crisis.



## Conclusion

In conclusion, the conflict in Gaza has inflicted unprecedented damage on both its people and environment, exacerbating long-standing environmental challenges and necessitating urgent humanitarian intervention. The ongoing violence has disrupted essential services such as water management and waste disposal, compounding health risks for civilians. Immediate efforts for ceasefire and humanitarian aid are crucial to mitigate further suffering and begin the process of recovery and reconstruction.

Looking forward, comprehensive environmental assessments, including through the Rapid Damage and Needs Assessment (RDNA) process, will be essential to guide recovery efforts. These assessments must prioritize the mitigation of pollution, contamination from munitions, and restoration of critical infrastructure like wastewater treatment and solid waste management systems.

Collaboration among international agencies, local authorities, and scientific communities will be vital in ensuring that recovery plans integrate environmental considerations from the outset, safeguarding public health and environmental sustainability in Gaza's path towards resilience and recovery.

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## Appendices

### Appendix1 South Africa IJC against Isreal

The accusations include:

#### **Mass Killings**

Israel's sustained attacks have reportedly resulted in the deaths of 23,210 Palestinians, predominantly women and children, with 7,000 individuals still missing or presumed dead.

#### **Bodily and Mental Harm**

Nearly 60,000 Palestinians, mostly women and children, have been wounded or maimed, amidst a collapsed healthcare system.

#### **Conditions for Physical Destruction**

Allegations include the forced displacement of 85% of Gaza's population, leading to widespread hunger, dehydration, and starvation. Critical shortages of basic necessities like clean water and medical supplies exacerbate the crisis.

#### **Assault on Healthcare**

Gaza's healthcare infrastructure has been severely damaged, leaving the injured without adequate medical care, further worsening the humanitarian situation.

#### **Genocidal Intent**

South Africa asserts that Israel's actions demonstrate deliberate targeting of civilians, destruction of essential infrastructure, and imposition of conditions aiming at physical destruction. The systematic nature and impact on the Palestinian population suggest a genocidal intent, specifically aimed at the destruction of the Palestinian group in Gaza.

#### **Legal Argument**

South Africa seeks provisional measures under Article 41 of the ICJ statute to halt ongoing atrocities, arguing that Israel's actions violate Article 2 of the Genocide Convention.

This brief summary outlines South Africa's stance on the alleged genocidal acts by Israel in Gaza, emphasizing the severity of the humanitarian crisis and the legal steps being pursued at the International Court of Justice.

## Appendix 2: The Current Palestinian Water Sector with a Gender Perspective Analysis SWOT

Strengths	Weaknesses	Opportunities	Threats
<ul style="list-style-type: none"> <li>- Policies aim to enhance water management and promote women's involvement in decision-making.</li>   <li>- International organizations provide substantial support for gender equality and water management.</li>   <li>- Local communities increasingly engage in water conservation, recognizing women's role in sustainable management..</li> </ul>	<ul style="list-style-type: none"> <li>- Outdated infrastructure causes substantial water losses, disproportionately impacting women who manage household water.</li>   <li>- Institutional overlaps in the water sector hinder effective management and planning, complicating gender-specific initiatives.</li>   <li>- Scarce gender-disaggregated data on water usage limits targeted interventions to address women's specific challenges.</li> </ul>	<ul style="list-style-type: none"> <li>- Training and education programs supported by international donors and NGOs can enhance women's capacity in water management and leadership.</li>   <li>- New technologies in water management can improve efficiency and reduce the workload on women responsible for water collection.</li>   <li>- Climate resilience initiatives can mitigate climate change impacts on water resources, addressing vulnerabilities among women and the broader community.</li> </ul>	<ul style="list-style-type: none"> <li>- Ongoing political instability and conflicts in the region threaten water infrastructure, disproportionately affecting women through increased scarcity and compromised water quality.</li>   <li>- Dependency on donor funding makes water and gender-focused projects vulnerable to fluctuations influenced by political conditions.</li>   <li>- Climate change projections indicate reduced precipitation and higher temperatures, intensifying water scarcity and adding to the challenges faced by women managing household water supplies.</li> </ul>



By addressing these strengths, weaknesses, opportunities, and threats, stakeholders in the Palestinian water sector can develop more comprehensive strategies that incorporate gender considerations, leading to more equitable and sustainable water management practices.

## PEST

Political	Economic	Social	Technological
- Fragmented governance in the Palestinian water sector complicates effective management and hampers gender-inclusive policies, exacerbated by political tensions and overlapping responsibilities among stakeholders	- Dependency on international aid for the Palestinian water sector is vulnerable to economic and political fluctuations, impacting infrastructure and gender-specific initiatives	- Traditional gender roles in Palestinian society assign women primary responsibility for household water management, including fetching water and ensuring its quality, which can be physically demanding	-Updating water infrastructure with modern technologies can reduce losses and alleviate women's burden in water management