

# ECCCIDE

Israel's Deliberate and Systematic Environmental Destruction in Gaza



Al Mezan Center for Human Rights (Al Mezan) is an independent, non-partisan and non-governmental human rights organization established in 1999. Al Mezan is dedicated to protecting and advancing the respect of human rights, with a focus on economic, social, and cultural rights, supporting victims of violations of international law through legal initiatives, and enhancing democracy, community and citizen participation, and respect for the rule of law in Gaza as part of occupied Palestine.

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Cover photo: Piles of garbage in Deir Al-Balah, Middle Area Governorate. Photo credit: Doaa Rouga/Reuters.

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### Introduction

A healthy and clean environment is essential for a population's physical survival. Vital resources like clean air and water, fertile soil, and arable land sustain life and ensure the overall well-being of any population. When the environment is compromised, the very foundation of human life is jeopardized, threatening both survival and quality of life.

For many years, and long before October 2023, Al Mezan has been documenting and reporting on the devastating environmental impact of Israel's settler-colonial and apartheid regime in Gaza. This includes the effects of recurrent large-scale military operations and the de-development policies implemented through the 17-year-old closure and blockade imposed by Israel on Gaza.

Israel's closure regime has been the primary catalyst for environmental degradation in Gaza, severely hindering Palestinians' ability to protect the environment and pursue sustainable development. For example, Israeli authorities have consistently obstructed the development of critical projects such as the construction of desalination plants, landfills, and sewage disposal systems necessary for effective waste management and public health. Furthermore, chronic electricity and fuel shortages—a direct consequence of the Israeli closure, further escalated with the implementation of the total siege as of 9 October 2023—continue to erode Gaza's infrastructure and de-develop critical sectors.

The deliberate and systematic destruction of Gaza's environment has been a central feature of Israel's genocidal campaign since October 2023. Israeli military operations in Gaza have been characterized by the intensive use of explosive ordnance in densely populated urban areas, resulting in vast quantities of debris and rubble, along with the widespread destruction of critical civilian infrastructure in Gaza, including environmental infrastructure such as water treatment facilities, sewage systems, rainwater harvesting systems, and waste management facilities essential for the safe disposal of medical and hazardous waste. Israeli military operations have also significantly impacted air, water, soil, and noise pollution. Israeli actions—including the forced displacement of around 90% of Gaza's population—have also hindered the ability of Palestinian authorities to prevent or try to mitigate environmental damages.

As a result, an environmental catastrophe is currently taking place in Gaza.

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in the Gaza Strip" February 2018, at: https://mezan.org/en/post/43786.

<sup>&</sup>lt;sup>1</sup> See, for example, Al Mezan Center for Human Rights (Al Mezan), "On World Environment Day, Gaza lacks a safe, clean, and sustainable environment", 5 June 2023, at: <a href="https://mezan.org/en/post/46115">https://mezan.org/en/post/46115</a>; Al Mezan, "Gaza Water Desalination Plants—Fact sheet: Health and Environmental Impact", November 2022, at: <a href="https://mezan.org/uploads/files/167860341716683373351564.pdf">https://mezan.org/uploads/files/167860341716683373351564.pdf</a>; Al Mezan, "Israel's Bombing of the Khudair Group's Warehouse in North Gaza", November 2021, at: <a href="https://mezan.org/uploads/files/16382757251831.pdf">https://mezan.org/uploads/files/16382757251831.pdf</a>; Al Mezan, "Effects of Aerial Spraying on farmlands

By intentionally and systematically targeting or eroding key components of a healthy and clean environment, Israel has sought to purposely inflict living conditions calculated to bring about the physical destruction of 2.3 million Palestinians in Gaza—a genocidal act foreseen at Article 2(c) of the 1948 Convention on the Prevention and Punishment of the Crime of Genocide (Genocide Convention).

In this context, the term 'ecocide' refers to Israel's extensive destruction, damage, and obliteration of the basic components of the environment and ecosystems in Gaza to such a degree that the survival of the Palestinian population is severely threatened or rendered impossible. This devastation not only affects the current population but also endangers future generations, compromising their ability to live and prosper in Gaza.

The present report examines the consequences of Israel's ongoing ecocide in Gaza, highlighting how the deliberate destruction of the environment has been systematically used to undermine the survival and well-being of the Palestinian population, both immediate and long-term. Through this lens, the report connects ecocide to various acts of genocide.

# 1. Israel's Targeting of Water Sources and Infrastructure in Gaza

Israel's military operations, including airstrikes and artillery bombardments, have systematically destroyed key components of Gaza's water sources and infrastructure. It must be noted that long before October 2023, the people of Gaza had to rely on contaminated water sources or insufficient supplies of clean water. Before 7 October 2023, less than 3% of the water in Gaza met the World Health Organization (WHO) standards for human consumption.<sup>2</sup>

In Gaza, groundwater is the primary source of drinking water. The Palestinian Coastal Municipalities Water Utility (CMWU) manages 310 wells across 25 municipalities.<sup>3</sup> The United Nations Relief and Works Agency (UNRWA) also manages nine wells in three areas: Jabaliya, Khan Younis, and Rafah.<sup>4</sup> Before the beginning of the ongoing genocide, these wells supplied Gaza with approximately 90 million cubic meters annually, or about 246,000 cubic meters per day. Most wells already exhibited steadily rising salinity levels, surpassing 1,500 mg/l, along with elevated nitrate concentrations between 50 and 100 mg/l, which exceed the permissible limits set by the WHO.<sup>5</sup>

In addition to groundwater, Gaza relied on water purchased from Mekorot, Israel's national water company, delivered to Gaza through three water supply pipelines, which amounts to 17 million cubic meters each year, or an average of approximately 46,575 cubic meters of water per day. There are also three seawater desalination plants in Gaza: Al-Sudaniya (located west of Jabaliya, in northern Gaza), Deir al-Balah (in the Al-Bassa area), and a central plant (south of Deir al-Balah). Together, these plants produced approximately six million cubic meters annually, or about 17,000 cubic meters per day. Overall, local authorities used to pump around 300,000 cubic meters of water daily into the networks across Gaza.<sup>6</sup>

As of 2022, the average daily water consumption for a Palestinian in Gaza was around 84.6 liters, of which only 20.5 liters of fresh water. In comparison, the average daily water consumption for an Israeli citizen was about 300 liters per day, which is three and a half

<sup>&</sup>lt;sup>2</sup> United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), "Study warns water sanitation crisis in Gaza may cause disease outbreak and possible epidemic", 16 November 2018, available at: <a href="https://www.ochaopt.org/content/study-warns-water-sanitation-crisis-gaza-may-cause-disease-outbreak-and-possible-epidemic">https://www.ochaopt.org/content/study-warns-water-sanitation-crisis-gaza-may-cause-disease-outbreak-and-possible-epidemic</a>

<sup>&</sup>lt;sup>3</sup> Omar Shatat, Deputy Executive Director of the Coastal Municipalities Water Utility, Interview by Al Mezan, 6 August 2024.

<sup>&</sup>lt;sup>4</sup> Palestinian Water Authority, General Directorate of Water Resources, Unpublished information obtained by Al Mezan on 30 May 2023.

<sup>&</sup>lt;sup>5</sup> Palestinian Water Authority, General Directorate of Water Resources, Unpublished information obtained by Al Mezan on 30 May 2023.

<sup>&</sup>lt;sup>6</sup> Omar Shatat, Deputy Executive Director of the Coastal Municipalities Water Utility, Interview by Al Mezan, 6 August 2024.

times higher.<sup>7</sup> As of March 2024, the Palestinian Central Bureau of Statistics (PCBS) and the Palestinian Water Authority (PWA) reported that Palestinians in Gaza had access to only 3-15 liters of water per day per capita, highlighting the severe decline in water availability.<sup>8</sup>

Upon drafting this document, Gaza's daily water supply had declined by approximately 70% compared to the amount provided before October 2023, with authorities now pumping only about 92,500 cubic meters per day. The current daily water supply is composed of approximately 48,000 cubic meters from groundwater wells, about 39,000 cubic meters from Mekorot, and around 5,500 cubic meters produced by two seawater desalination plants—Al-Bassa (2,000 cubic meters) and the southern plant (3,500 cubic meters). As a result, on average, during the ongoing genocide, Palestinians in Gaza have received no more than eight liters of water per day, at most.



Palestinians queuing for hours to access clean water in al-Mawasi.

Photo credit: Al Mezan.

<sup>&</sup>lt;sup>7</sup> Palestinian Central Bureau of Statistics and Palestinian Water Authority, "Joint Press Release on the World Water Day", 22 March 2024, at: <a href="https://www.pcbs.gov.ps/post.aspx?lang=en&ItemID=4716">https://www.pcbs.gov.ps/post.aspx?lang=en&ItemID=4716</a>
<sup>8</sup> Ibid.

This severe decline in water access is attributed to several factors that can be traced back to Israel's genocidal policies against Palestinians in Gaza, including the extensive damage to pipelines, tanks, reservoirs, and other critical infrastructure caused by Israeli military attacks, which have disrupted the water distribution system.

Israel's relentless air, sea, and land military attacks across Gaza prevent a full assessment of the total damages, and a comprehensive evaluation of the destruction of the Palestinian water sector in Gaza can only be conducted once there is a ceasefire. Yet, the damage to Gaza's water infrastructure during the ongoing genocide is already substantial and continues to worsen. Approximately 180 kilometers (km) of water networks have already been either fully or partially destroyed. Additionally, 203 out of 319 groundwater wells have been rendered out of service due to either complete or partial damage, or because they became inaccessible and could no longer be operated. Around 33 out of 50 water reservoir tanks were either destroyed or damaged, 9 along with more than 500 valves. 10

Israeli attacks also targeted municipal water facilities, thereby destroying or damaging them. For example, on 21 January 2024, Israeli forces bombed the central storage facilities of the Coastal Municipalities Water Utility near the Al-Mawasi area in Khan Younis, despite prior coordination with international organizations, which had designated the storage area as a 'non-conflict zone' and informed the Israeli forces and authorities with its exact coordinates. The attack destroyed the storage facilities, igniting fires that consumed vital materials, equipment, tools, and electrical and electromechanical spare parts. The estimated losses are valued at nine million US dollars.<sup>11</sup>

Additionally, all groundwater desalination plants, both private and public, along with household desalination systems, have ceased operations due to power outages, which were caused by Israel's imposition of a total siege on 9 October 2023.

It must also be noted that the water supply from Mekorot was completely suspended by order of Israel's Minister of Defense on 9 October 2023 for approximately two months, before gradually resuming thereafter. In approving this decision to cut off water supplies to 2.3 million Palestinians, the then-Minister of Energy and Infrastructure stated: "For years we supplied Gaza with electricity, water, and fuel. Instead of saying thank you, they sent thousands of human animals to slaughter, murder, rape and kidnap babies, women,

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<sup>&</sup>lt;sup>9</sup>Omar Shatat, Deputy Executive Director of the Coastal Municipalities Water Utility, Interview by Al Mezan, 6 August 2024.

<sup>&</sup>lt;sup>10</sup> Al-Youm Al-Sabe, "The Middle East is on the verge of an environmental disaster due to the war on Gaza", 7 June 2024, at: <a href="https://2u.pw/FhfgFAaR">https://2u.pw/FhfgFAaR</a> (available in Arabic only).

<sup>&</sup>lt;sup>11</sup> The Palestinian Coastal Municipalities Water Utility.

and the elderly—that's why we decided to stop the flow of water, electricity, and fuel, and now their local power station has collapsed and there is no electricity in Gaza."<sup>12</sup>

Not only has the quantity of water decreased, but the quality has also significantly deteriorated. Due to the sweeping ban enforced by Israeli authorities on the entry of certain materials and products into Gaza, including chlorine, the Palestinian Coastal Municipalities Water Utility and local municipalities are forced to chlorinate the water at a minimal level of 0.2 mg per liter. This level is insufficient to properly disinfect the water and eliminate harmful pathogens.<sup>13</sup>

The access to adequate water in both southern and northern Gaza has drastically declined. What was once a daily water supply is now available only once a week or every few days, and for brief periods that are insufficient to meet household needs. The electricity shortage prevents water from being pumped to rooftop tanks, especially in multistory buildings, forcing people to place tanks at ground level to collect water. Many are relying on public water sources, gathering small amounts that fall far short of their daily needs, particularly in camps for internally displaced persons (IDPs).

The situation is particularly grave in Gaza City, where water scarcity has reached critical levels. Mekorot, the Israeli national water company that supplied 25% of the city's water, cut off its supply in October 2023. The Al-Sudaniya desalination plant has also ceased operations due to fuel shortages, further reducing water availability. Additionally, Israeli forces have destroyed the Safa wells, which contributed to another 25% of the city's water. As a result, only 40% of Gaza City's water sources remain operational. With 44 wells destroyed, 16 partially damaged, and 70 km of water infrastructure lost, residents are struggling to secure water for essential needs. The Gaza Municipality, which previously operated wells for 10 hours a day, is now only able to run them for 10 hours a week.<sup>14</sup>

In central Gaza, the Nuseirat Municipality has limited its services to providing essential needs such as drinking water, solid waste management, and sewage handling, particularly in areas accommodating displaced residents. The population in Nuseirat has surged from 100,000 to nearly 500,000, as many IDPs have sought refuge in public facilities or set up tents along the coast and in agricultural areas. The Nuseirat Municipality is struggling to sustain its services due to limited diesel fuel furnished by the Coastal

<sup>&</sup>lt;sup>12</sup> Israel Katz, post on X (formerly Twitter), 11 October 2023, at: https://twitter.com/Israel\_katz/status/1712083122227909116?t=nd9aPqyMtpUXy4A0HhqFMw&s=09.

<sup>&</sup>lt;sup>13</sup> Omar Shatat, Deputy Executive Director of the Coastal Municipalities Water Utility, Interview by Al Mezan, 6 August 2024.

<sup>&</sup>lt;sup>14</sup> Asem al-Nabih, Spokesperson for the Gaza Municipality, Episode 132 of Taqarob Podcast, 25 July 2024, at: <a href="https://www.youtube.com/watch?v=jw2cBwL56Os">https://www.youtube.com/watch?v=jw2cBwL56Os</a> (available in Arabic only).

Municipalities Water Utility, resulting in water being supplied only once a week and for a short period, averaging just five liters per person per day.<sup>15</sup>

The forced displacement of 1.9 million Palestinians has further aggravated the crisis, intensifying the strain on already limited water resources and essential services in Gaza, and forcing facilities to shut down when they were located in areas affected by displacement orders. For example, following the issuance of displacement orders by the Israeli military on 16 August 2024, the Deir al-Balah Municipality announced the shutdown of ten water wells and two main reservoirs. Access to three additional wells was also jeopardized, threatening groundwater supply for Al-Aqsa Hospital. On 25 August 2024, a new Israeli displacement order targeted the area near Al-Aqsa Hospital, leading to the closure of 14 groundwater wells, which impacted 70% of Deir al-Balah's population and caused the shutdown of three reservoirs. Although some of these measures were reversed four days later, the eastern area of Deir al-Balah remains under Israeli displacement order.

Israel's genocidal campaign has severely restricted the ability of over two million Palestinians, particularly IDPs, to access adequate water for essential daily needs such as hygiene, drinking, and cooking. Many residents must wait in long lines for just a few liters of water. Deir al-Balah faces immense challenges as its desalination plant struggles to meet the overwhelming demand, frequently shutting down due to fuel shortages or equipment failures.

Unable to afford bottled water, residents are forced to rely on contaminated groundwater pumped by municipalities, which contains unsafe levels of nitrates and salts. As a result, Palestinians are increasingly seeking alternatives to the unreliable municipal water supply. One such option is drilling private artesian wells, where water is extracted without monitoring or sterilization. These shallow wells contain dangerously high levels of salts, nitrates, organic pollutants, bacteria, and chemicals, rendering the water unsafe for human consumption and leading to health problems and disease outbreaks within the community.<sup>17</sup>

To help alleviate the water supply crisis for residents and displaced people, the Coastal Municipalities Water Utility has deployed 34 trucks and tankers to transport water from its two seawater desalination plants. These trucks deliver around 1,500 cubic meters of

<sup>&</sup>lt;sup>15</sup> Ayman Abu Ataya, General Director of al-Nuseirat Municipality, Interview by Al Mezan, 19 August 2024.

<sup>&</sup>lt;sup>16</sup> Deir al-Balah Municipality, post on Facebook, 26 August 2024, at: https://web.facebook.com/photo/?fbid=898684878957149&set=a.46523157230

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<sup>&</sup>lt;sup>17</sup> Said al-Aklouk, Palestinian environmental expert, Interview by Al Mezan, 19 August 2024.

desalinated water each day to approximately 250 shelters and camps. The utility has also distributed 50 tanks, with capacities between 5 and 10 cubic meters, to shelters and areas where displaced individuals gather. Additionally, about 2,000 cubic meters of water are provided daily to private tanker owners from the desalination facilities. Moreover, various humanitarian efforts and initiatives have been introduced to support residents and displaced persons by supplying them with free drinking water.

# 2. Israel's Targeting of the Waste Management Sector in Gaza

In Gaza, waste is divided into two types: liquid waste, which refers to sewage, and solid waste, which includes household waste, waste generated by facilities and hospitals, as well as debris from demolished buildings.

# 2.1. Liquid Waste (Sewage)<sup>18</sup>

The ongoing genocide has significantly worsened Gaza's pre-existing sewage crisis. Most of Gaza's 87 sewage treatment facilities, including five central stations and 80 pumping stations, 19 have been heavily damaged. According to preliminary assessments, Israeli attacks have destroyed between 80 and 100 km of sewage pipelines, all five central treatment plants, and approximately 45 pumps. 20 Additionally, over five km of rainwater and surface water networks, including channels and manholes, have been damaged. 21

The remaining sewage systems have been blocked by rubble, leading to overflows into streets and shelters, forming pools up to 10 cm deep. Palestinians are forced to live and move through these contaminated areas, increasing the risk of disease outbreaks. For instance, the Gaza Municipality has been pumping sewage into the Sheikh Radwan basin, which was originally designed for rainwater collection and groundwater recharge but has now reached capacity. Fuel shortages also prevent the Gaza Municipality from draining the excess water into the sea.<sup>22</sup>

The overcrowding of IDPs in densely populated areas like Deir al-Balah, al-Zawaida, and al-Mawasi—along with Khan Younis and Rafah before Israeli ground invasions—has overwhelmed the already fragile local sewage systems. This has resulted in sewage flooding streets and public spaces, particularly near IDPs' camps, further compounding the health risks in these areas. The crisis has worsened due to fuel shortages needed to operate pumps and treatment plants, compounded by the shutdown of Gaza's power plant and frequent electricity cuts. As a result, 65 sewage pumps and all six treatment plants have ceased functioning.<sup>23</sup>

<sup>&</sup>lt;sup>18</sup> This includes wastewater from households, industrial facilities, and other sources, which is typically channeled through sewage systems.

<sup>&</sup>lt;sup>19</sup> Palestinian Water Authority, General Directorate of Water Resources, Unpublished information obtained by Al Mezan, 30 May 2023.

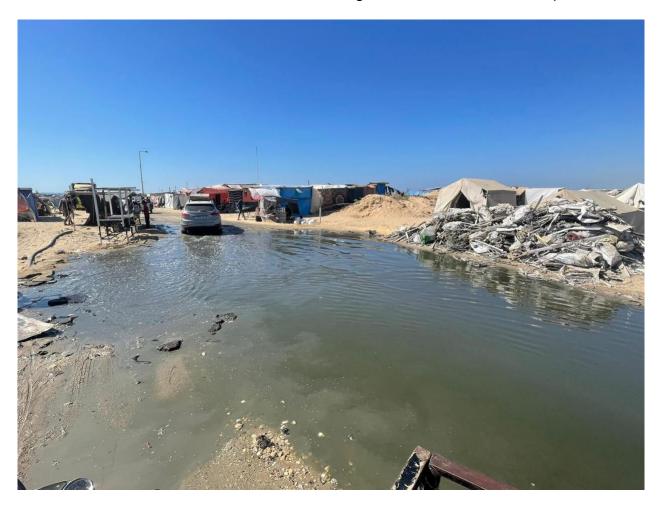
<sup>&</sup>lt;sup>20</sup> Omar Shatat, Deputy Executive Director of the Coastal Municipalities Water Utility, Interview by Al Mezan, 6 August 2024.

<sup>&</sup>lt;sup>21</sup> Al-Youm Al-Sabe, "The Middle East is on the verge of an environmental disaster due to the war on Gaza", 7 June 2024, at: https://2u.pw/FhfqFAaR (available in Arabic only).

<sup>&</sup>lt;sup>22</sup> Asem al-Nabih, Spokesperson for the Gaza Municipality, Episode 132 of Taqarob Podcast, 25 July 2024, at: https://www.youtube.com/watch?v=jw2cBwL56Os (available in Arabic only).

<sup>&</sup>lt;sup>23</sup> Palestinian Central Bureau of Statistics and Palestinian Environment Quality Authority, "Joint Press Release on National Environment Day", 5 March 2024, at:

Internally displaced Palestinians, particularly those forced to live in tents, rely on shallow absorption pits—typically no deeper than four meters—for sewage, which are frequently replaced as they fill up. This practice has resulted in the creation of thousands of pits, particularly in sandy areas like al-Mawasi, where the high permeability of the soil allows sewage to rapidly seep into and contaminate the groundwater. The direct contamination with human waste contributes to disease outbreaks, pollutes the water supply, and increases insect and rodent infestations, creating an environmental catastrophe.<sup>24</sup>



Sewage water flows between the tents of internally displaced Palestinians in al-Mawasi.

Photo credit: Al Mezan.

Municipalities in central Gaza have been forced to divert around 35,000 cubic meters of sewage—including 9,000 cubic meters from Nuseirat—into the Wadi Gaza Nature Reserve. This sewage then flows from the valley into the sea, further contaminating both the natural environment and coastal waters. Before the ongoing genocide, this sewage

https://www.pcbs.gov.ps/postar.aspx?tabID=512&lang=ar&ItemID=4705&mid=3915&wversion=Staging (available in Arabic only).

<sup>&</sup>lt;sup>24</sup> Said al-Aklouk, Palestinian environmental expert, Interview by Al Mezan, 19 August 2024

was treated at a plant east of al-Bureij refugee camp. Since Israeli forces have taken control of the area and established military positions and checkpoints along the so-called Netzarim corridor (including near the village of Juhor ad-Dik), access to the sewage treatment plant has been blocked, forcing the diversion of untreated sewage into the valley.<sup>25</sup>

As a direct result of the situation described above, Palestinian authorities have been forced to release untreated sewage into the sea, with over 130,000 cubic meters being discharged daily due to the lack of functional sewage treatment facilities.<sup>26</sup> This discharge, through eight main and nine temporary outlets, has created a significant environmental problem. IDPs living in tents along the coast, as well as beachgoers, are both severely impacted by this discharge, facing heightened health risks from polluted coastal waters.



The beach in Gaza's Middle Area, where tents of IDPs extend almost to the shoreline.

Photo credit: Al Mezan

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<sup>&</sup>lt;sup>25</sup> Ayman Abu Ataya, General Director of al-Nuseirat Municipality, Interview by Al Mezan, 19 August 2024.

<sup>&</sup>lt;sup>26</sup> Palestinian Central Bureau of Statistics and Palestinian Environment Quality Authority, "Joint Press Release on National Environment Day", 5 March 2024, at:

https://www.pcbs.gov.ps/postar.aspx?tabID=512&lang=ar&ItemID=4705&mid=3915&wversion=Staging (available in Arabic only).

Tests conducted in 2023 by the Palestinian Ministry of Health and the Water and Environmental Quality Authority revealed that 70% of Gaza's 40-km shoreline was already polluted, highlighting a pre-existing issue that has since worsened.<sup>27</sup> Amid the absence of official testing, seawater pollution could potentially reach around 85% or higher. This situation endangers the marine environment and poses significant risks to individuals entering the sea, including fishermen, lifeguards, swimmers, and beachgoers, who rely on the beach as a refuge. Moreover, IDPs camping on the beach due to overcrowding face similar dangers. The overflow of sewage into streets and tents highlights the looming environmental disaster, contributing to the spread of diseases and creating conditions for harmful insects to thrive.

### 2.2. Solid Waste<sup>28</sup>

The Israeli genocide in Gaza has made the management of solid waste—critical for safeguarding the environment and public health—virtually impossible. Gaza has only two main landfills—Juhor ad-Dik and al-Fukhari—along with several temporary dumping sites. Even before October 2023, these landfills were struggling to meet the population needs' due to Israel's 17-year-old closure regime, which imposed restrictions on expansion and limited access to essential machinery.<sup>29</sup>

Gaza's population is now generating approximately 2,000 tons of waste daily, including food scraps, paper, glass, plastic, and medical waste. Approximately 710,000 tons of waste—including household, human, sewage, and hazardous medical waste—have accumulated in Gaza, scattered across 190 inadequate dumpsites near residential areas and IDP camps and shelters. This situation has contributed to the spread of diseases and pests, posing a significant environmental and public health threat.

One year into the ongoing genocide, the waste management system across Gaza's municipalities has collapsed due to a multitude of factors that can be traced back to Israel's genocidal military campaign against Palestinians in Gaza.

<sup>&</sup>lt;sup>27</sup> Mohammed Musleh, Director of the Environmental Protection Program of the Palestinian Water Authority, Interview by Al Mezan, 31 July 2024.

<sup>&</sup>lt;sup>28</sup> Solid waste encompasses household waste, waste generated by facilities and hospitals, as well as debris from demolished buildings.

<sup>&</sup>lt;sup>29</sup> Al Mezan, "Landfills in the Gaza Strip: Environmental and Health Impacts", 10 September 2023, at: https://www.mezan.org/public/ar/post/46234 (available in Arabic only).



Piles of waste accumulating in al-Mawasi, 2024. Photo credit: Al Mezan.

Since October 2023, Israeli attacks have destroyed 141 waste management vehicles and 3,876 waste containers. Among these, Israeli forces targeted and destroyed 12 vehicles belonging to the Joint Service Council for Solid Waste Management in the southern governorates of Rafah, Khan Younis, and the Middle Area, including four collection and transport vehicles, seven disposal vehicles, and one medical waste vehicle, along with 1,536 waste containers. In the early days of their genocidal military campaign, Israeli forces targeted and damaged the Al-Fukhari landfill in southern Gaza, thereby restricting access to it and further complicating waste disposal efforts. Another three solid waste facilities were also damaged.<sup>30</sup>

The mass, recurrent forced displacement of hundreds of thousands of Palestinians from northern to southern Gaza, particularly in areas like al-Mawasi, combined with the constant relocation of IDPs and ongoing security challenges on the ground, has created chaos and severely disrupted solid waste management efforts. Many waste collectors have been displaced and are unable to return to work. Private cleaning companies that once supported the municipalities have ceased operations.<sup>31</sup>

Those who remain operational face significant dangers and severe restrictions on freedom of movement within Gaza, largely due to Israeli displacement orders, relentless bombing, widespread road destruction, a lack of vehicles caused by fuel shortages, and the establishment of Israeli military checkpoints. For instance, access to the main landfill in

<sup>&</sup>lt;sup>30</sup> Al Mezan, "Landfills in the Gaza Strip: Environmental and Health Impacts", 10 September 2023, at: https://www.mezan.org/public/ar/post/46234 (available in Arabic only).

<sup>&</sup>lt;sup>31</sup> Asem al-Nabih, Spokesperson for the Gaza Municipality, Episode 132 of Taqarob Podcast, 25 July 2024, at: <a href="https://www.youtube.com/watch?v=jw2cBwL56Os">https://www.youtube.com/watch?v=jw2cBwL56Os</a> (available in Arabic only).

Juhor ad-Dik is now impossible, being located in an area under full Israeli control and with the presence of Israeli ground troops since the end of October 2023.

As mentioned earlier, the continued mass forced displacement of Palestinians has resulted in the majority of Gaza's 2.3 million inhabitants being concentrated in certain areas, primarily in central Gaza. As a result, local services in these areas are now overwhelmed, struggling to manage a far greater influx of people than the usual population they were designed to support. Waste generation in southern Gaza has surged to 1,400 tons per day, up from 500 tons before October 2023.<sup>32</sup> Approximately 500,000 tons of waste have now accumulated in 40 temporary landfills and numerous smaller dumpsites in southern Gaza.

For instance, the Nuseirat Municipality established a landfill along the western beach because trucks faced significant challenges reaching the Al-Fukhari landfill. The situation worsened as daily waste production surged from 60 tons before the war to 180 tons during it, leading to a rise in insects and rodents as pest control programs were halted. Additionally, the Nuseirat Municipality struggled to provide PTI, a substance used for environmentally friendly mosquito control.<sup>33</sup>

Waste management teams in the south are encountering difficulties because solid and liquid waste is mixed in garbage containers, especially in shelters and displacement camps. This complicates their efforts to handle the waste properly and leads to contaminated water leaking from transport vehicles into streets and residential areas, worsening environmental and health problems.<sup>34</sup>

International organizations reported the establishment of 20 makeshift dumps in central and southern Gaza, receiving about 1,354,408 cubic meters of waste since October 2023. Waste management has been limited to collection without sorting or recycling, overseen by the United Nations Development Programme (UNDP) and the International Committee of the Red Cross, in coordination with the Joint Service Council for Solid Waste Management in the Khan Younis, Rafah, and the Middle Area Governorates.<sup>35</sup>

In northern Gaza—the area most heavily targeted by Israeli attacks and under continuous displacement orders since 13 October 2023—approximately 210,000 tons of waste have

<sup>&</sup>lt;sup>32</sup> Tariq Al-Habbash, Executive Director of the Joint Services Council for Solid Waste Management in Khan Younis, Rafah, and Central Gaza, Interview by Al Mezan, 5 August 2024.

<sup>&</sup>lt;sup>33</sup> Ayman Abu Ataya, General Director of al-Nuseirat Municipality, Interview by Al Mezan, 19 August 2024.

<sup>&</sup>lt;sup>34</sup> Tariq Al-Habbash, Executive Director of the Joint Services Council for Solid Waste Management in Khan Younis, Rafah, and Central Gaza, Interview by Al Mezan, 5 August 2024.

<sup>&</sup>lt;sup>35</sup> WASH Cluster Coordinator. Solid Waste Management in the Gaza Strip, Emergency Response Concept Note, May 2024.

accumulated in the Gaza and North Gaza Governorates, creating a serious environmental hazard. Israeli attacks have destroyed key waste management infrastructure, causing the loss of all but seven collection vehicles, and heavily damaged roads. As a result, Palestinian authorities have been forced to use animal-drawn carts to transport waste to 150 temporary dumpsites located near hospitals, clinics, schools, shelters, and other public areas.<sup>36</sup>

### 2.3. Medical and Hazardous Waste

The waste generated by healthcare activities is mostly general and non-hazardous, but a part of it is classified as hazardous and can include potentially infectious, toxic, or radioactive materials. Hazardous waste poses health and environmental risks because it may contain infectious chemical materials or biological remnants, and improper disposal can release harmful chemicals and carcinogenic gases.

Hospitals in Gaza currently produce around 3,471.5 kg of non-hazardous medical waste and 33 kg of hazardous waste daily, with the majority originating from the maternity departments, followed by surgical, internal medicine, and nephrology departments.<sup>37</sup> Under normal circumstances, two facilities at the Juhor ad-Dik and Al-Fukhari landfills manage the safe disposal of this waste through sterilization and shredding processes.

Amid the ongoing genocide and continuous Israeli attacks on Palestinian hospitals, the proper disposal of medical waste has stopped, as safe collection and disposal become impossible. Waste management teams have been unable to access the sterilization and shredding equipment at the Al-Fukhari landfill in southern Gaza. In this area, where numerous main and field hospitals and medical points are located, waste collection has drastically decreased to just 1.5 to 2 tons per month, down from the previous daily average of one ton. A similar situation is underway in northern Gaza, where waste management teams are unable to access the sterilization microwave at the Juhor ad-Dik landfill.<sup>38</sup> As a result, hazardous medical waste has accumulated in hospitals or mixed with regular waste, piling up in unqualified makeshift dumps.<sup>39</sup>

In the past year, most hospitals in Gaza were forced to shut down—either temporarily or permanently. While grappling with numerous challenges in their efforts to restore even

<sup>&</sup>lt;sup>36</sup> Waheed al-Bursh, Director of the Joint Services Council for Solid Waste Management in Gaza City and North Gaza, Interview by Al Mezan, 1 August 2024.

<sup>&</sup>lt;sup>37</sup>Al Mezan "Medical Waste: Real Risks to Public Health and the Environment in Gaza", 6 April 2019, at: https://www.mezan.org/ar/post/28493. (Available in Arabic only).

<sup>&</sup>lt;sup>38</sup> Waheed al-Bursh, Director of the Joint Services Council for Solid Waste Management in Gaza City and North Gaza, Interview by Al Mezan, 1 August 2024.

<sup>&</sup>lt;sup>39</sup> Tariq Al-Habbash, Executive Director of the Joint Services Council for Solid Waste Management in Khan Younis, Rafah, and Central Gaza, Interview by Al Mezan, 5 August 2024.

limited emergency services, some hospitals have partially resumed operations, such as Kamal Adwan and Al-Awda hospitals in North Gaza, Al Ahli Arab Hospital in Gaza City, Al Aqsa Hospital in central Gaza, Nasser Hospital in Khan Younis. To address the collapse of Gaza's healthcare system, several primary healthcare centers and field hospitals have been established and run by the Palestinian authorities, UNRWA, and other international and humanitarian organizations.

The frequent relocation of field medical facilities due to Israeli displacement orders, coupled with a shortage of staff—especially sanitation workers—has severely disrupted the sorting and safe disposal of medical waste. This situation increases the risk of hazardous waste mixing with regular waste, posing significant environmental and health dangers. Additionally, medical waste may include human remains, which, if not properly disposed of through specialized burial methods, could contaminate the soil, leading to severe environmental problems and the spread of diseases.

# 3. Soil Damage and Environmental Destruction in Gaza

Gaza's total agricultural land covers approximately 150 to 170 km², which constitutes about 41% to 47% of its total area. Before the ongoing genocide, Al Mezan found that since the year 2000, Israel had destroyed approximately 35% of Gaza's agricultural land to establish no-go buffer zones enforced by the Israeli military in the easternmost and northernmost areas of Gaza.<sup>40</sup> Since October 2023 the Israeli military has systematically targeted and destroyed Gaza's agricultural land and soil, causing such environmental destruction as to threaten Gaza's livability.

According to the latest assessment by the United Nations Satellite Centre (UNOSAT) and the Food and Agriculture Organization (FAO), as of September 2024, approximately 68% of crops in Gaza exhibited a significant decline in both their health and density.<sup>41</sup> Forensic Architecture reported that, as of March 2024, about 40% of the land in Gaza that was previously used for food production has been destroyed.<sup>42</sup>

This is the result of activities such as razing, heavy vehicle activity, bombing, shelling, and other military operations carried out by the Israeli military. In addition, Israeli attacks have specifically targeted agricultural fields and greenhouses, leading to extensive damage to crops, soil, and farming resources. As a result, substantial quantities of pesticides, fertilizers, seeds, and equipment have been destroyed. During the Israeli ground invasion of Gaza, Palestinian agricultural lands have also been turned into military outposts. We must also note that Palestinians in Gaza were forced to resort to burying their dead everywhere but in cemeteries, including in farmlands and open lands, without following proper burial procedures. This practice is causing significant harm to the soil, crops, and groundwater reserves.

Israel's deliberate targeting of soil and agricultural land, including productive trees like date palms, figs, and mulberries, must be seen as part of Israel's overall starvation policies. Since October 2023, Israel has uprooted over a million olive trees in Gaza, devastating Palestinian agricultural lands from Rafah to Beit Hanoun. Olive trees, symbols of Palestinian resilience and identity, once flourished across Gaza. Now, many of these trees have been reduced to rubble by the Israeli military, erasing a vital part of Palestinian culture and identity.

<sup>&</sup>lt;sup>40</sup> Al Mezan, "Farming in a Buffer Zone: The Conditions Gaza Farmer Face Under Closure", 25 February 2021, available at: https://mezan.org/uploads/files/16142371071857.pdf.

<sup>&</sup>lt;sup>41</sup> United Nations Satellite Centre (UNOSAT) and Food and Agriculture Organization (FAO), "Gaza Strip Cropland Damage Analysis - September 2024", at: <a href="https://unosat.org/products/3985">https://unosat.org/products/3985</a>

<sup>&</sup>lt;sup>42</sup> Forensic Architecture, "No Traces of Life: Israel's Ecocide in Gaza 2023—2024", 29 March 2024, available at: <a href="https://forensic-architecture.org/investigation/ecocide-in-gaza">https://forensic-architecture.org/investigation/ecocide-in-gaza</a>

The destruction has severely impacted the biodiversity of Gaza, typically home to 150 to 200 species of birds, both resident and migratory—particularly in Wadi Gaza, a crucial stopover for migratory birds. In addition to birdlife, Wadi Gaza is also home to around 20 species of mammals and 25 species of reptiles. The direct and indirect effects of the ongoing genocide are leading to widespread wildlife destruction, as birds flee the region due to bombings, land degradation, and environmental disruption.<sup>43</sup>

Gaza's animal farming sector has also experienced substantial damage, particularly among cattle, sheep, poultry, and turkey farms. Additionally, indirect damage has occurred because farm workers have been unable to access their facilities, leading to the death of many animals and significant financial losses. Fish farms have faced complete destruction due to direct attacks, power outages, and a lack of essential supplies.

A devastating consequence of these environmental threats is the risk of Gaza becoming entirely uninhabitable. Toxic substances could gradually seep into the soil, forming a harmful mix of soluble organic matter, inorganic elements, heavy metals, and foreign organic compounds. This contamination would affect the soil, agricultural lands, and groundwater, with the toxins eventually entering the food chain and posing serious health risks to humans.<sup>44</sup>

# 3.1. The Rubble of Destroyed Homes and Buildings

According to the latest assessment by UNOSAT, based on satellite imagery collected on 3 and 6 September 2024, **66% of the total structures in Gaza have sustained damage.** UNOSAT identified 52,564 structures that have been destroyed, 18,913 severely damaged, 35,591 possibly damaged and 56,710 moderately affected—for a total of 163,778 impacted structures. This corresponds to 227,591 estimated damaged housing units. The destruction of nearly two-thirds of Gaza's infrastructure has generated an estimated 42 million tons of debris. 46

The UN Environment Programme (UNEP) estimates that it could take up to 15 years to clear Gaza of this rubble.<sup>47</sup> The presence of 10,000 dead bodies buried beneath the

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<sup>&</sup>lt;sup>43</sup> Al-Youm Al-Sabe, "The Middle East is on the verge of an environmental disaster due to the war on Gaza", 7 June 2024, at: https://2u.pw/FhfgFAaR (available in Arabic only).

<sup>&</sup>lt;sup>44</sup> PAX for Peace, "War and Garbage in Gaza", 18 July 2024, at: <a href="https://paxforpeace.nl/publications/war-and-garbage-in-gaza/?highlight=War%20and%20Garbage%20in%20Gaza">https://paxforpeace.nl/publications/war-and-garbage-in-gaza/?highlight=War%20and%20Garbage%20in%20Gaza</a>

<sup>&</sup>lt;sup>45</sup> (UNOSAT), "Gaza Strip Comprehensive Damage Assessment - September 2024", at: https://unosat.org/products/3984

<sup>&</sup>lt;sup>46</sup> United Nations, "Humanitarian efforts 'nowhere near where they should be' 300 days into Gaza war", 1 August 2024, at: https://news.un.org/en/story/2024/08/1152761.

<sup>&</sup>lt;sup>47</sup> UNRWA, post on X (formerly Twitter), 15 July 2024, at: https://x.com/UNRWA/status/1812815626723086584

rubble, along with hazardous waste and unexploded ordnance, adds significant complexity to the already difficult task of clearing the debris in Gaza.

The carbon footprint associated with reconstructing Gaza will be immense. In January 2024 and based on the damage caused during the first 60 days of the genocide, experts calculated that the emissions of carbon dioxide (CO<sub>2</sub>) resulting from the rebuilding of Gaza are projected to exceed the annual emissions of over 130 countries.<sup>48</sup> In addition, Israel's bulldozing and destruction of Gaza's infrastructure has caused the release of a high number of greenhouse gas emissions, including CO<sub>2</sub>. For instance, the destruction of a 100-square-meter office building generates about 1,000 metric tons of debris and releases approximately 110 tons of CO<sub>2</sub> emissions, negatively contributing to climate change globally.<sup>49</sup>

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<sup>&</sup>lt;sup>48</sup> Benjamin Neimark, Patrick Bigger, Frederick Otu-Larbi, Reuben Larbi, "A Multitemporal Snapshot of Greenhouse Gas Emissions from the Israel-Gaza Conflict", 9 January 2024, at: https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=4684768

<sup>&</sup>lt;sup>49</sup>Al-Youm Al-Sabe, "The Middle East is on the verge of an environmental disaster due to the war on Gaza", 7 June 2024, at: <a href="https://2u.pw/FhfgFAaR">https://2u.pw/FhfgFAaR</a> (available in Arabic only).

# 4. The Air Quality Deterioration Resulting from Israel's Bombing

Some estimates suggest that Israel dropped around 85,000 tons of bombs and explosives on Gaza between October 2023 and August 2024. In January 2024, a group of experts calculated that the projected  $CO_2$  emissions from the first 60 days of Israel's genocide in Gaza were greater than the annual emissions of 20 individual countries and territories, amounting to over 281,000 tons of  $CO_2$ .

This environmental impact extends beyond Israel and Palestine, affecting neighboring countries such as Lebanon, Syria, Jordan, and Egypt, as well as other countries in the Mediterranean area. Dust and microparticles, originating from metals and other sources, form an air mass that drifts toward the eastern Mediterranean, posing a significant environmental threat. These tiny particles can be inhaled, entering the human body and the food chain, with the potential to cause health and environmental consequences.<sup>51</sup>

Air pollution, combined with the harsh living conditions faced by internally displaced Palestinians living in tents, has led to a rise in diseases and a significant increase in deaths, particularly among the elderly and those with weakened immune systems.<sup>52</sup>

Dust and smoke are heavily concentrated in areas affected by Israeli military operations in Gaza. The deployment of smoke bombs and phosphorus shells, along with gas emissions from explosives, has led to widespread cases of suffocation, particularly among vulnerable groups such as the wounded and sick, elderly, and children. The resulting smoke and dust clouds not only decrease oxygen levels but also elevate pollutants and toxins, posing serious threats to the health of humans, animals, birds, and the vitality of trees and crops.

Smoke and ash from the destruction of homes and other infrastructure, combined with particles from cement, severely damage the respiratory health of Palestinians in Gaza. These fine particles settle in the lungs, increasing the risk of long-term health problems such as lung cancer, and exacerbating conditions in individuals with weakened immune systems, especially those suffering from asthma.<sup>53</sup>

<sup>&</sup>lt;sup>50</sup> Benjamin Neimark, Patrick Bigger, Frederick Otu-Larbi, Reuben Larbi, "A Multitemporal Snapshot of Greenhouse Gas Emissions from the Israel-Gaza Conflict", 9 January 2024, at: https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=4684768

<sup>&</sup>lt;sup>51</sup>Al-Youm Al-Sabe, "The Middle East is on the verge of an environmental disaster due to the war on Gaza", 7 June 2024, at: <a href="https://2u.pw/FhfgFAaR">https://2u.pw/FhfgFAaR</a> (available in Arabic only).

<sup>&</sup>lt;sup>52</sup> Dr. Ghassan Wahba, Director of Preventive Medicine in the Palestinian Ministry of Health, Interview by Al Mezan, 8 August 2024.

<sup>&</sup>lt;sup>53</sup> Said al-Aklouk, Palestinian environmental expert, Interview by Al Mezan, 19 August 2024.

Israel's restrictions on the import of fuel and cooking gas are worsening environmental pollution in Gaza, forcing Palestinians, especially displaced families, to rely on open fires for cooking. As a result, they are burning wood, timber, plastic, and paper waste, which releases smoke and air contaminants. Additionally, due to fuel shortages, vehicle owners have turned to using cooking oil as a substitute for fuel, leading to the emission of harmful smoke and air pollutants. This situation has significantly increased the prevalence of diseases, particularly respiratory conditions.

# 5. Assessing Noise Pollution Linked to Israel's Military Campaign

For the past twelve months, residents of Gaza have endured continuous noise pollution from Israeli military aircraft, particularly drones, that hover over densely populated areas. The constant buzzing generates deep anxiety among two million Palestinians in Gaza and is considered a significant environmental disturbance.

Noise is defined as a combination of loud and unwanted sounds, measured in decibels (dB). Levels exceeding 75 dB can potentially cause hearing loss and psychological effects. The maximum permissible noise level varies based on the type of area and the time of day. 54 The Palestinian Ministry of Labor considers noise levels between 85 and 115 decibels to be problematic.55 The Israeli Ministry of Environmental Protection sets a maximum noise limit of 50 dB from 6:00 AM to 10:00 PM. It categorizes noise levels as follows: 30 dB is considered quiet, 60 dB is regarded as loud and bothersome, and 80 dB is classified as unacceptable and harmful.<sup>56</sup>

During Israel's genocidal war on Gaza, extreme noise pollution has emerged from various sources, mostly due to intense Israeli attacks involving all types of weapons, bombs, and missiles, leading to constant disturbances and significant psychological strain on the population. The persistent noise from low-flying Israeli surveillance drones, locally known as "zannana", further exacerbates this stress. 57

Al Mezan considers the noise generated by these drones a form of psychological torture, inducing panic and fear in both adults and children and leading to complex mental health issues. The continuous drone noise over prolonged periods can trigger sudden panic attacks, involuntary urination, insomnia, and anxiety. Although these problems may not manifest immediately, they can evolve into post-traumatic stress disorder (PTSD), chronic anxiety, and a pervasive sense of insecurity. This results in a negative mindset characterized by constant anticipation of disaster and fear of the future and death.

environment/who compendium noise 01042022.pdf?sfvrsn=bc371498 3 <sup>55</sup> Instructions No. 4 for the year 2005 on Safe Levels of Noise, the Palestinian Minister of Labor.

<sup>&</sup>lt;sup>54</sup> World Health Organizations (WHO), "Compendium of WHO and other UN guidance on health and environment. Chapter 11. Environmental noise", 2022 update, at: https://cdn.who.int/media/docs/defaultsource/who-compendium-on-health-and-

https://magam.najah.edu/media/uploads/2021/06/legislations/F Documents e4aab4ec-b7a5-4858-9eccacf712bd331a.pdf (available in Arabic only).

<sup>&</sup>lt;sup>56</sup> Israel's Ministry of Environmental Protection, "The NIOSH Sound Level Meter app", 19 January 2023, at: https://www.gov.il/he/Departments/DynamicCollectors/noise-duration?skip=0 (available in Hebrew only).

<sup>&</sup>lt;sup>57</sup> Palestinian NGOs Network (PNGO), Fact sheet on the Environmental Situation in the Gaza Strip and the Role of NGOs in Protecting It, 2022, at: https://pngoportal.org/uploads/documents/2022/01/9aO9X.pdf (available in Arabic only).

Between 15 and 19 August 2024, Al Mezan's Research Unit assessed noise levels in Gaza during the ongoing genocide, focusing on measuring sounds from various Israeli military aircraft, particularly the constant noise from drones and ongoing explosions.

Measurements were taken from the rooftop of a building in Deir al-Balah situated away from street noise and closer to the sounds of Israeli aircraft flying over the designated areas using a sound meter app. While the Sound Meter dB (8.6) App cannot deliver readings as accurately as specialized equipment—much of which was destroyed during bombings—the assessment aimed to provide an overview of the noise conditions in Gaza.

Sound Meter dB measured noise levels four times a day—at 1:00 AM, 7:00 AM, 1:00 PM, and 7:00 PM. Noise levels were high at 1:00 AM and 7:00 AM, and very high at 1:00 PM and 7:00 PM, peaking at 7:00 PM. Even the early morning readings exceeded international standards. The results are presented in the following table:

Time	1:00 am			7:00 am			1:00 pm			7:00 pm		
dB	Min.	Avg.	Max.									
	30.4— 39.7	33.8— 46.3	57.4— 78.6	33.0— 36.7	43.1— 54.5	61.5— 72.8	43.1— 46.6	54.2— 61.6	82.4— 95.7	45.1— 56.4	62.9— 67.8	91.7— 97.0
Total dB	31.6—78.6			33.0—72.8			43.1—95.7			45.1—97.0		

The data reveals noise levels that exceed acceptable limits, posing both short- and long-term health risks, including hearing, neurological, and psychological effects. Typically, Israeli aircraft noise intensifies at night and varies with operational activity, often interrupted by brief pauses. All recorded levels surpassed global noise standards, highlighting the severe pollution caused by the relentless presence of these aircraft. Jets, helicopters, and drones generate overwhelming noise, frequent sonic booms, and continuous explosions, leading to significant psychological distress, especially among children.

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<sup>&</sup>lt;sup>58</sup> Dr. Abdulrahman Al-Tamimi, Professor in Environmental Studies at the Arab American University, Interview by Al Mezan, 26 August 2024.

### 6. Environmental Destruction as a Tool of Elimination

Ecocide and genocide are deeply interconnected, as the deliberate and systematic destruction of the environment can serve as a tool to destroy, whether in whole or in part, a national, ethnical, racial, or religious group. This connection highlights the severe impact that environmental degradation can have on human life: the destruction of ecosystems often threatens the survival of populations, resulting in serious bodily or mental harm and the deliberate infliction of conditions of life calculated to bring about their physical destruction.

Israel's deliberate and systematic destruction of the environment, as detailed in this report, is intended to facilitate the physical destruction of the Palestinian population of Gaza, effectively committing genocide through ecocide. Israel has deliberately created an environmental catastrophe in Gaza, fully aware of the detrimental impact on the well-being and survival of the Palestinian population. Genocidal intent is further made explicit by the statements from Israeli Ministers Gallant and Kantz when announcing the total siege on Gaza in October 2023.

Israel's environmental destruction in Gaza has systematically inflicted conditions that align with both Article 2(b) and 2(c) of the Genocide Convention, causing serious bodily and mental harm to the Palestinian population and creating living conditions intended to bring about their physical destruction.

The deliberate contamination of drinking water poses a severe threat to the physical health of Palestinians, leading to conditions like diarrhea, arsenic, and fluoride poisoning, and Blue Baby Syndrome, which can be life-threatening if left untreated. The contamination of water sources and the destruction of agricultural land not only leads to immediate health issues but also threatens the long-term survival of the affected community by making it increasingly difficult for them to access food and clean water.

Swimming in polluted seawater exposes Palestinians to skin diseases, diarrhea, and intestinal parasites. Harmful bacteria like Pseudomonas present in the water can also lead to serious infections in the eyes and ears. Diseases like chickenpox have affected around 5,000 Palestinians in Gaza, along with 42 cases of skin rash, 4,600 cases of severe jaundice, and 150 cases of meningitis. Respiratory infections and other contagious diseases are also expected to rise. Exposure to toxic emissions from burning waste contributes to respiratory illnesses, particularly in vulnerable groups such as children and the elderly. This environmental destruction is further compounded by antimicrobial resistance due to heavy metal exposure from munitions and the spread of severe illnesses through mishandled medical waste.

The pervasive issue of solid and hazardous waste pollution exacerbates public health risks by creating breeding grounds for pests and spreading diseases like cholera,

gastrointestinal infections, asthma, and hepatitis. Smoke and toxic gases released from burning waste, especially plastics, pose serious public health risks, with particularly severe effects on individuals suffering from respiratory conditions. Hazardous waste further contaminates soil and groundwater, contributing to diseases like hepatitis B and C. Additionally, antimicrobial resistance is emerging as a significant health threat, linked to heavy metal exposure from munitions.<sup>59</sup>

Medical waste harbors fast-spreading microorganisms that can lead to severe illnesses, including cancer, HIV, and hepatitis. The incineration of this waste releases toxic substances like mercury, cadmium, and dioxins, which pose serious poisoning risks. Additionally, smoke and emissions from bombings contribute to respiratory distress and suffocation, disproportionately affecting vulnerable populations such as the elderly and children. The sound of drones induces anxiety and fear, particularly among children, leading to sleep disturbances and various physical symptoms. 60 The persistent noise pollution from military drones and bombings has a profound psychological and physical impact, leading to chronic sleep disorders, cardiovascular problems, and cognitive impairments, particularly in children. It also generates stress, anxiety, and aggressive behavior, which align with the intent to undermine the physical and mental well-being of the population.

This public health crisis is unfolding in a context where Israel has pursued the wholesale destruction of Gaza's healthcare infrastructure. Over 100,000 hepatitis cases have been reported since early 2024, a stark increase from 83 cases the previous year, alongside 120,000 cases of upper respiratory infections and 65,526 instances of skin diseases affecting both children and adults. 61 Respiratory illnesses and skin infections, like scabies, are spreading rapidly.

In conclusion, combined environmental and health consequences indicate a deliberate strategy aimed at systematically undermining the survival and well-being of the Palestinian population of Gaza, clearly demonstrating a calculated intent to inflict conditions of life designed to bring about its destruction.

<sup>59</sup> PAX for Peace, "War and Garbage in Gaza", 18 July 2024, at: https://paxforpeace.nl/publications/warand-garbage-in-gaza/?highlight=War%20and%20Garbage%20in%20Gaza

<sup>60</sup> Al Mezan, "Al Mezan condemns Israel's constant use of drones over Gaza and calls for a stop to this practice", 4 January 2023, at: https://mezan.org/en/post/33747.

<sup>&</sup>lt;sup>61</sup> Dr. Ghassan Wahba, Director of Preventive Medicine in the Palestinian Ministry of Health, Interview by Al Mezan, 8 August 2024.

### **Conclusions**

Al Mezan urgently calls on the international community to take immediate, decisive, and concrete action to stop Israel's ongoing ecocide and genocide in Gaza. This should start with enforcing a ceasefire in Gaza, implementing a two-way arms embargo on Israel to halt its genocidal military campaign and environmental destruction, and imposing lawful sanctions on Israel.

We also urge the international community to ensure that Israel immediately, fully, and unconditionally lifts the siege, closure, and blockade on Gaza, ends all associated unlawful restrictions imposed on the movement of people and goods to and from Gaza, and guarantees the unimpeded delivery of essential humanitarian aid. It is critical to restore access to vital infrastructure for over two million Palestinians and significantly increase the support for medical, food, and clean water supplies to address the immediate needs of Gaza's population. Donor countries should also support environmental recovery initiatives in Gaza.

Lastly, we call on the UN Independent International Commission of Inquiry on the Occupied Palestinian Territory, including East Jerusalem, and the Office of the Prosecutor of the International Criminal Court Israel to promptly investigate and prosecute individuals within the Israeli government and military responsible for ordering and/or committing acts of genocide and ecocide in Gaza. It is essential to hold perpetrators accountable for the widespread destruction of Gaza's environment and the genocidal violence inflicted on the Palestinian population in Gaza.