PALESTINE
Flooding in the Gaza Strip

acaps | Briefing note
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CRISIS IMPACT OVERVIEW

- Since November 2022, Gaza has been experiencing intermittent heavy rainfall that has accumulated in Israeli-controlled dams and reservoirs near the Gaza Strip (MEMO 27/12/2022 and 08/11/2022; CGTN 09/11/2022). Between 24–26 December 2022, Israeli authorities opened dam gates and levees along the perimeter fence east of Gaza, flooding the central and southern areas of the Gaza Strip with accumulated rainwater (MEMO 27/12/2022; IMEMC 25/12/2022).
- Flooding has submerged many homes in neighbourhoods in Deir al-Balah governorate in the centre of Gaza city (MEMO 27/12/2022; IMEMC 25/12/2022). These neighbourhoods include Deir al-Balah and az-Zawaida towns and al-Bureij refugee camp.
- Floods have also damaged significant acres of farmland and farmers' homes in al-Qarara neighbourhood in Khan Younis governorate in southern Gaza (MEMO 27/12/2022; IMEMC 27/12/2022).
- Flooding is likely to worsen pre-existing humanitarian needs resulting from protracted conflict, the blockade of Gaza, and poor socioeconomic development in Palestine.

ANTICIPATED SCOPE AND SCALE

- The rainy season in Gaza Strip usually lasts from late October to early April. January is normally the month with the most rainfall (Weather Spark accessed 04/01/2023). More rainfall is expected in the coming weeks in January, likely resulting in further flooding.
- As heavy rainfall is expected to continue, there is a risk of Israel reopening dam gates and levees, aggravating the flooding situation in areas of Gaza (IMEMC 25/12/2022 and 24/01/2020). People already affected by flooding may not have enough recovery time because of a lack of resources.
- Because of intermittent clashes in the Gaza Strip over the past few years, a significant number of explosive remnants of war (ERW) contaminates Gaza Strip. About one million people live in areas at risk of ERW. Less than 20% of affected households have received information or training on ERW risks (OCHA 16/12/2021). Flooding in ERW-contaminated territories creates a risk for the population and humanitarian workers (FSD 19/08/2010; ICBL 02/11/2015).

HUMANITARIAN CONSTRAINTS

- The street where the Al-Aqsa Hospital is located in Deir al-Balah governorate is flooded, constraining movement to and from the hospital (IMEMC 25/12/2022).
- Access restrictions from the Israeli blockade physically and administratively restrict the freedom of movement of Palestinians. The constraints hinder them from accessing assistance and services and limit the delivery of humanitarian aid into Gaza.

KEY PRIORITIES

+148,500

PEOPLE LIVING IN FLOOD AFFECTED AREAS (AS AT 2017)

96%

OF WATER IN GAZA IS NOT DRINKABALE

NATIONAL RESPONSE CAPACITY

Municipal council (Updated information on civil society and local NGO activities is unavailable.)

INTERNATIONAL RESPONSE CAPACITY

UN agencies (OCHA, FAO, UNRWA, WHO, UNICEF)

INGOs (Islamic Relief, Palestine Red Crescent Society)

HUMANITARIAN NEEDS

WASH

In May 2021, hostilities in the Gaza Strip escalated and damaged at least 290 WASH facilities, including water wells, pumping stations, and distribution networks. The conflict left 1.2 million Palestinians with limited access to WASH services (OCHA 16/12/2021). In August 2022, three days of conflict re-escalating did not damage WASH infrastructure, but access restrictions by Israel and power supply shortages severely affected the provision of WASH services (OCHA 16/12/2021 and 08/08/2022).

Only 4.3% of water in the Gaza Strip is fit for human consumption (OCHA 08/08/2022; Oxfam accessed 04/01/2023). This constraint leads families to purchase drinking water from unregulated private vendors who do not necessarily treat the water to make it safe for drinking (PCBS/PWA 21/03/2021). About 24% of people in the Gaza Strip report not being able to afford drinking water (PCBS/UNICEF 18/01/2021).

Health

Flooding frequently contaminates water sources, increasing the risk of waterborne diseases, especially acute diarrhoea (OCHA 16/12/2021). Exposure to heavy rainfall combined with cold weather is likely to worsen the health conditions of affected people. In winter (typically between December–March), temperatures in the Gaza Strip can drop to as low as 10° C. Since houses are not equipped for the cold and access to heating is often challenging because of constant power cuts, children are exposed to respiratory diseases (Al-Haq 22/01/2015; DW 20/12/2014). Some families burn wood for heating, which is a fire hazard and can lead to children inhaling fumes (Islamic Relief 09/10/2019).

Shelter

Gaza is one of the most densely populated territories in the world, with about 5,800 people per square kilometre (TWP 14/05/2021). Comparatively, the population density in Israel is 426 people per square kilometre, while the average in the Middle East and North Africa is between 43–48 people per square kilometre (WB accessed 05/01/2023).

There is also a chronic housing crisis in Gaza, with at least 21,300 houses falling below the minimum standards for overcrowding, the provision of basic services, and protection against adverse weather (NRC/Shelter Cluster 26/04/2021; MPWH accessed 05/01/2023). Floods could destroy houses and generate waves of displacement to densely populated shelters and family homes, further aggravating the situation (OCHA 16/12/2021).

Livelihoods

Portions of agricultural land have been flooded. Between 8–10% of the economically active population in Gaza works in the agricultural sector (The times of Israel 17/05/2016). 45% of the economically active population is unemployed, and 50% of the entire population in Gaza lives below the poverty line (Al Jazeera 24/06/2022). Floods disrupt the livelihoods of farmers and people living from commerce and other informal sectors.

VULNERABLE GROUPS AFFECTED

There were reports of flooding in al-Bureij camp in Deir al-Balah governorate, which was hosting over 28,000 refugees according to the 2017 census (UNRWA accessed 05/01/2023 a; IMEMC 25/12/2022). Other refugee shelters located in flooded governorates are the Deir al-Balah, Khan Younis, Maghazi, and Nuseirat refugee camps (UNRWA accessed 05/01/2023 a). All of these refugee camps are overcrowded, have limited WASH infrastructure, and are polluted with contaminated water (PRC Facebook 27/01/2021; UNRWA accessed 05/01/2023 a; UNRWA accessed 05/01/2023 b; UNRWA accessed 05/01/2023 c). Flooding and waterlogging further aggravate the unavailability of drinking water and the poor sanitation conditions that refugees are facing. Palestinian refugees living inside and outside of camps are identified as some of the most vulnerable population groups because of their high humanitarian needs and protracted displacement situation.

AGGRAVATING FACTORS

Conflict-driven humanitarian needs

Protracted armed conflict and the prolonged Israeli military occupation of the Gaza Strip as well as West Bank, including East Jerusalem, continue to generate severe humanitarian needs among Palestinians. An estimated 1.32 million people in the Gaza Strip (63% of the total population) are in need. In the flood-affected areas, roughly 197,000 people in Deir al-Balah governorate, out of a population of 309,000, are in need of humanitarian assistance. Similarly, in Khan Younis, 291,000 people out of a population of 422,000 are in need of humanitarian support (OCHA 16/12/2021).

The protracted conflict has also driven significant protection needs among the Palestinian population in Gaza as they face risks such as significant internal displacement; exposure to violations against children, women, and girls; and a general deterioration in the psychosocial, mental, and physical wellbeing of the population because of violence (Global Protection Cluster 16/09/2022).

Blockade of the Gaza Strip

The Israeli ban on the entry of different emergency equipment into Gaza has worsened the ability of Palestinian municipalities to mitigate the impact of flooding (MEMO 27/12/2022). During previous escalations of violence, the Israeli blockade prevented the proper entry of materials needed for the reconstruction of damaged houses and WASH infrastructure (OCHA 16/12/2021; ACAPS 05/10/2021). Sufa, the main entry point for construction materials, was shut down in 2007, and Karni, the main commercial crossing, closed down in 2011. Currently, there is only one entry point for imports and exports into Gaza, Kerem Shalom crossing, which is subject to severe restrictions and complex bureaucratic procedures from Israel. The Salah Ad Din gate with Egypt is only open on an ad hoc basis for the informal import of commercial materials (OCHA 16/12/2021). The blockade has led to a 30% reduction in the volume of truckloads entering the Gaza Strip between 2007–2022. At the same time, there has been a 50% increase in the population (OCHA 30/06/2022).

The blockade has also contributed to a fuel scarcity in Gaza since 2011 with the shutdown of Nahal Oz, the main entry point for fuel (OCHA 16/12/2021).

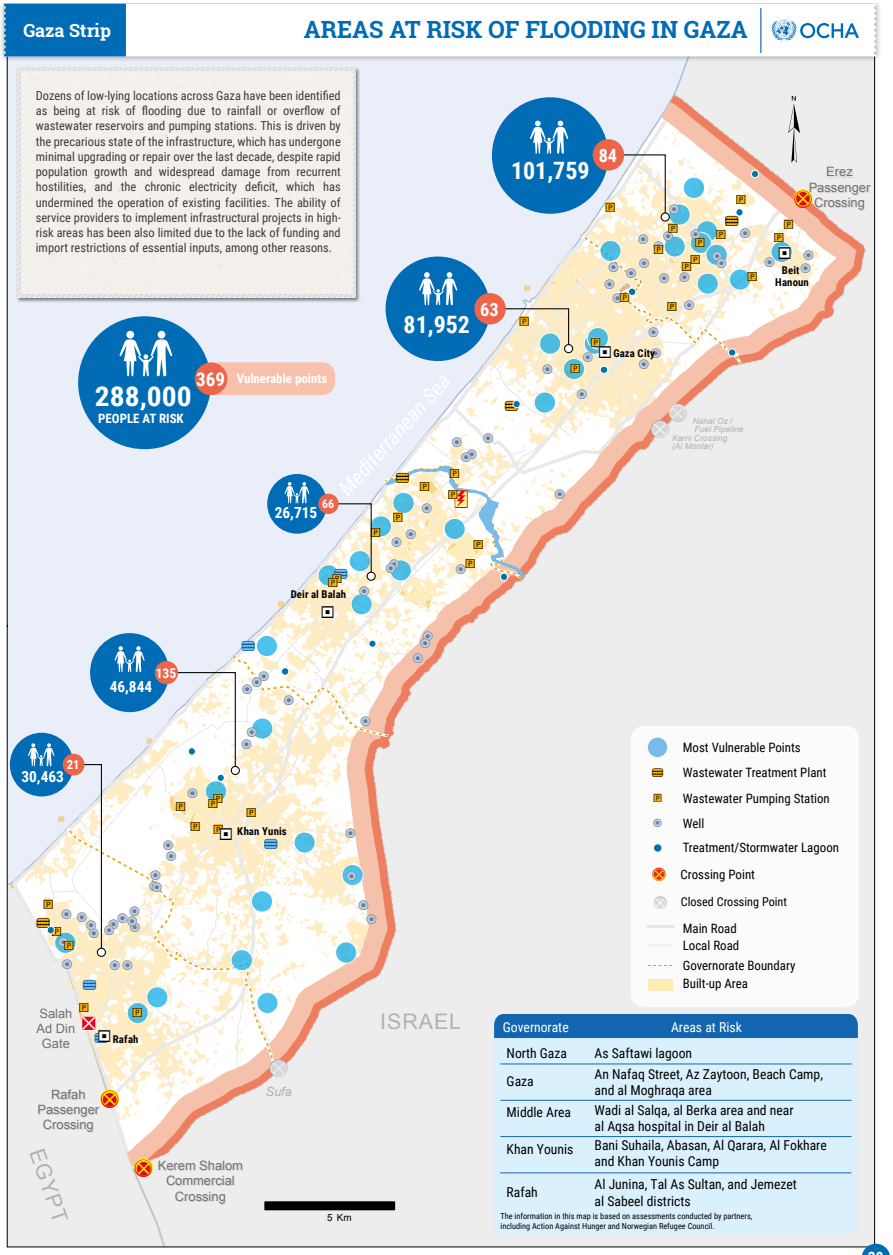
Release of rainwater from levees and dam gates into Gaza

During heavy rainfall, Israeli authorities open levees and dams, flooding the eastern parts of the Gaza Strip within the perimeter[1] fence (IMEMC 25/12/2022 and 24/01/2020). In January 2020, Israeli authorities released water from a dam several times just before the harvest season for Palestinian farmers in Gaza, causing more than USD 500,000 worth of damage to over 332 hectares of land (MEE 08/02/2020; IMEMC 19/01/2020 and 12/01/2020).

Power shortages

In 2022, the population of Gaza only received electricity for about 12 hours per day, leading to failures in the health system and limitations in the refrigeration of food or the implementation of certain work (OCHA accessed 04/01/2023). Water treatment plants operated on a limited basis because of power failures, possibly leading to further delays in handling floodwaters and increasing the risk of health issues (ICRC 29/07/2021; Al-Monitor 12/08/2022; The Guardian 03/01/2018).

Flood-prone areas in the Gaza Strip as at 18 March 2019



Source: OCHA (18/03/2019)

1 The perimeter fence is an electronic fence built by Israel in the 1990s along the 1949 Armistice line with Egypt (the Green Line) (OCHA 16/12/2021).

Lack of WASH infrastructure

A large amount of drainage infrastructure in the Gaza Strip was damaged during outbreaks of violence, including in 2021. As a result, heavy rainfall started causing waterlogging within homes (MEMO 27/12/2022). The Israeli blockade of Gaza severely hinders construction materials from entering the Gaza Strip, preventing the development of sufficient WASH infrastructure for its residents. Less than 16% of the items needed to construct essential water infrastructure are reaching Gaza (Oxfam accessed 04/01/2023). According to the Coastal Municipalities Water Utility in Gaza, the required equipment, such as pumps and pipes, are unavailable, resulting in the shutdown of many facilities, including pumping stations, sewage treatment systems, and water desalination facilities (Gisha 12/07/2021).

OCHA estimated in 2017 that around 60 communities located in low-lying areas across Gaza were at risk of flooding, even from light rainfall worsened by the lack of adequate infrastructure (OCHA 15/12/2017).

The targeting of civilian infrastructure by Israeli authorities during attacks deepens the humanitarian crisis in the Gaza Strip as well as West Bank, including East Jerusalem, further increasing the dependence on humanitarian aid (Weinthal and Sowers 01/03/2019; CEOBS 01/03/2019).

Access to healthcare

Access to different types of healthcare and procedures is significantly restricted in Gaza given the blockade and bureaucratic restrictions put in place by Israel, combined with protracted conflict and years of socioeconomic decline (MAP/PHR accessed 09/01/2023; UNRWA accessed 09/01/2023). The public health system in Gaza lacks the required resources and infrastructure to provide adequate health assistance compared to the number of people who need it (UNRWA accessed 09/01/2023). Doctors are unable to access training outside Gaza to keep up-to-date with developments in medical practice (MAP/PHR accessed 09/01/2023; UNRWA accessed 09/01/2023). People who need intensive and complex treatments have to travel outside Gaza, which involves applying for exit permits to transit through the Erez crossing (ACAPS 05/10/2021; WHO accessed 21/06/2020). The number of approved applications for health-related travel is often low (WHO accessed 21/06/2020).

Flooding has also affected Al-Aqsa Hospital, the main hospital serving over 350,000 people in Gaza, worsening the damage caused by past conflict. Several Israeli military strikes struck Al-Aqsa in 2014, destroying and damaging many buildings, equipment, and ambulances (MEE 12/02/2015; Al Mezan et al. 11/07/2016).

Refugees in the Gaza Strip

Roughly 1.4 million out of the 2.1 million people living in the Gaza Strip are Palestinian refugees (UNRWA accessed 05/01/2023 a). There are five refugee camps located within Deir al-Balah and Khan Younis governorates in Gaza (UNRWA accessed 05/01/2023 a; IMEMC 25/12/2022).

Al-Bureij refugee camp was built in the 1950s to host roughly 13,000 Palestinian refugees but as at 2017, as per the census, it hosted more than 28,000 people (UNRWA accessed 05/01/2023 b; SESRIC 28/03/2018). The Deir al-Balah refugee camp is the smallest within the Gaza Strip. It was established in 1949 to host around 9,000 people; as at January 2021, it was hosting over 25,500 registered Palestinian refugees (PRC Facebook 27/01/2021). Khan Younis camp was also built after the 1948 Arab-Israeli war, when 35,000 Palestinian refugees had initially resided there (UNRWA accessed 05/01/2023 c). The projected population for 2023 for the Khan Younis camp is over 48,500 refugees (PCBS 30/05/2021). Population data for Maghazi and Nuseirat refugee camps is currently unavailable.

In 2021, 48% of injuries recorded in refugee camps were caused by live ammunition during Israeli Forces (IF) operations compared with 14% of injuries outside camps (OCHA 16/12/2021). People facing compounding vulnerabilities, such as refugees with disabilities, face more difficulties in recovering from incidents such as flooding.