



*This article was developed in cooperation with Oxfam and MA'AN development centre*

## **Access to Flooding Mitigation and Prevention Measures in Light of Climate Change Impact in Gaza**

The longstanding closure of the Gaza Strip has a significant impact on the technical capacities of the WASH service providers as it restricts the entry of vital materials (including construction materials, tools and heavy machinery). This impedes the sector from operating, rehabilitating and developing at the scale and pace necessary to provide for the growing population. As a result, service providers face technical and financial challenges that undermine their ability to operate more than 500 water, sanitation and stormwater facilities in the Gaza Strip, and to respond to natural and man-made crises and hazards.<sup>1</sup>

### **Rainfall fluctuation and flash flooding in the Gaza Strip**

The Gaza Strip is a flat area with a relatively large coastline, high population density and an intensively built-up area. The average annual rainfall in the Gaza Strip is 365 mm/year.<sup>2</sup> Since 2008, fluctuations and variance in rainfall have led to extreme flooding events. According to the Gaza Strip flood-risk mitigation plan, more than 280,000 Gazans live in 360 flooding areas.<sup>3</sup> These people are exposed to annual flood events that vary in intensity from one region to another. The

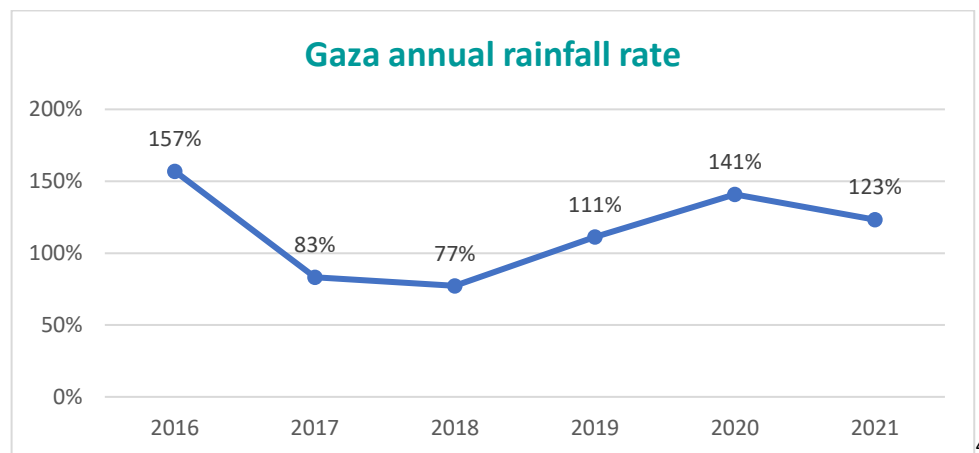
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<sup>1</sup> State of Palestine HNO 2021.

<sup>2</sup> Palestinian meteorological department 2021.

<sup>3</sup> Action Against Hunger, flood-risk mitigation plan for the Gaza Strip 2018.

most severe impact of these floods is in the Gaza Strip's northern governorates. According to climate change numerical simulation models, such events are expected to worsen in the coming years, and the number of people affected by flooding will increase.



According to the WASH Cluster vulnerability mapping assessment in 2021, more than 8,500 households in Gaza were affected by flooding events in the last three years; 1,300 of these households were exposed to severe damage to their private and public structures and assets, particularly in Gaza and North Gaza governorates.

WASH Cluster partners cooperate continuously with WASH service providers in the Gaza Strip to implement flood mitigation and prevention measures. However, these efforts are hampered by the service providers' limited financial and technical capacities, in addition to entry restrictions on vital WASH construction materials and tools such as steel pipes, water pumps, fittings and heavy machinery.

### **The impact of flash flooding in the Gaza Strip: Al Zaytoon neighbourhood**

Al Zaytoon neighbourhood is located in the southern part of Gaza city and is inhabited by some 85,000 persons. Due to its low elevation, the neighbourhood frequently experiences severe flash flooding events that affect more than 30,000 people living in the neighbourhood's flood-prone area.<sup>5</sup>

Al Zaytoon neighbourhood is flooded with a mix of rainwater and sewage. Water can reach up to two metres deep in places and takes days to drain. In such circumstances, families can be trapped in their houses for days. There are no immediate municipal-level interventions to address this flooding issue.

Moreover, many shelters are flooded with water during rainy days when damage occurs to furniture, roofs, walls, windows, doors and personal belongings. Every winter, Al Zaytoon

<sup>4</sup> Palestinian meteorological department 2021.

<sup>5</sup> Oxfam and MA'AN community assessment 2021.

residents spend many nights during rainstorms trying to save their houses and belongings from flooding.

*“ Winter always comes with bad memories. We run like crazy at night under the water falling on us from the roof. We try to save whatever we can,”* a resident from Al Zaytoon neighbourhood said.

Gaza municipality is responsible for stormwater management in the area but reported that its ability to respond to the flooding events in Al Zaytoon neighbourhood is limited. Following Israeli restrictions on the entry of construction materials and machinery, the municipality lacks the capacity to respond to more than 60 flood-prone areas.

*“ We do not have sufficient materials and heavy machinery to respond to the increased flooding events in Gaza. Sometimes our technicians spend days to drain flooded areas manually with shovels and axes,”* said a Gaza municipality official.

### **Recommendations**

In light of climate change’s impact on Palestinian communities and households living in the Gaza Strip’s flood-prone areas, the WASH Cluster and its partners call upon:

- **Israeli authorities** to allow restriction-free entry of required construction materials, tools and heavy machinery that will allow service providers to respond to increased flooding events in the Gaza Strip, as well as for the construction, operation and maintenance of WASH projects.
- **UN Member States** to advocate with the Israeli authorities for the timely entry of items essential for flood mitigation and prevention, and increased funding for flood mitigation and prevention projects in the Gaza Strip, such as the construction of rainwater culverts and stormwater networks. This is particularly important in communities and neighbourhoods located in flood-prone areas and exposed to a high risk of flooding.
- **Palestinian Authority** to adopt adequate and practical climate change adaptation strategies and plans, and to take a proactive stance by prioritizing the implementation of efficient and durable flooding mitigation measures in areas exposed to severe flooding events.
- **Palestinian municipalities** to raise public awareness about the required mitigation and prevention measures and practices to be followed by the affected population before, during and after the flooding events.