



Fact Sheet

Drinking water crisis in the Gaza Strip

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Introduction:

The drinking water crisis in the Gaza Strip is considered one of the most pressing issues facing its population, especially given the region's highest population growth rate in the world. This crisis stems from the diminishing sources through which safe drinking water used to be provided, primarily due to a decline in groundwater levels caused by decreased rainfall resulting from global climate change. This has led to the intrusion of seawater into the groundwater, rendering it unsuitable for consumption.

The Israeli occupation's actions in seizing the vital water sources for the Gaza Strip, including groundwater and streams, and preventing their access, have further exacerbated and intensified the water crisis. All of these resources are now under Israeli control, leading to a severe shortage of drinking water for the people of Gaza. The Israeli occupation is the main cause of the water crisis in Palestine, particularly in the Gaza Strip. This is despite their recognition of Palestinian water rights in the Oslo Accords, with negotiations for their settlement to be addressed in a final agreement.

This paper aims to shed light on the reality of drinking water and its sources in the Gaza Strip, the existing deficiencies, and the main methods employed by the residents to meet their needs.

Firstly: The current status of drinking water in the Gaza Strip.

The drinking water sector in the Gaza Strip is facing significant crises and challenges. We will highlight the most important indicators and statistics that demonstrate the reality of drinking water in the Gaza Strip:

1. Approximately 90% of Gaza's population suffers from difficulties in accessing safe water.¹
2. The Israeli occupation controls approximately 85% of the water in the underground aquifer, which is equivalent to "500–600" million cubic meters².

¹According to the United Nations, safe drinking water is not available to all residents in the Gaza Strip. <https://news.un.org/ar/story/2022/03/1097572>

² Abdulghani Salama: The conflict over water is a reality and solutions, website of the Palestinian Liberation Organization, Research Center, <https://bit.ly/3M12Blu>.

3. One of the main reasons for the worsening drinking water crisis in the Gaza Strip is that Palestinians receive only 18% of the water from the coastal aquifer, while Israeli authorities exploit 82% of it³
4. Groundwater in the Gaza Strip has become unfit for drinking, with approximately 97% of it being contaminated due to the intrusion of seawater caused by the decline in groundwater levels.⁴
5. More than 115 liters of wastewater are being discharged into the sea daily, resulting in severe biological contamination of the water that seeps from the sea into the groundwater⁵. According to the World Health Organization's standards, 95% of the drinking water in the Gaza Strip is deemed unfit due to the contamination it contains. The chloride level in Gaza's wells has reached 600 milligrams per liter, whereas the World Health Organization recommends that it should not exceed 250 milligrams per liter. Similarly, the nitrate level in most of Gaza's wells has exceeded 400 milligrams per liter, while the maximum allowable limit is 50 milligrams per liter.⁶
6. Polluted water is responsible for 26% of diseases in the Gaza Strip, in addition to 50% of children suffering from parasitic infections due to water pollution.⁷ The most significant health issues include kidney failure, gastrointestinal diseases, and others.⁸
7. The per capita water allocation for Palestinians is estimated at around 60–70 liters per day, which is even lower in marginalized areas. The World Health Organization recommends a minimum of 100–120 liters per day per individual

³ Raed Hells: Water Rights in Palestine: A Real Crisis and Continuous Israeli Violations. Website of the Palestinian Liberation Organization (PLO), Research Center. You can find more information at the following link: <http://bit.ly/3nqfv8l>

⁴ Raed Hells: Water Rights in Palestine: A Real Crisis and Continuous Israeli Violations. Previous source.

⁵ Raed Hells: Water Rights in Palestine: A Real Crisis and Ongoing Israeli Violations. Previous source.

⁶ Report on the reality of desalination plants in the Gaza Strip. You can find the report at the following link: <https://www.mezan.org/uploads/files/12153.pdf><https://www.mezan.org/uploads/files/12153.pdf>.

⁷ The website Fanack Water - Middle East and North Africa provides information about the water crisis in Gaza. You can find more details at the following link: <https://water.fanack.com/ar/publications/gaza-water-crisis/>.

⁸ Water pollution in the sea raises concerns about waterborne diseases and environmental risks in the Gaza Strip. You can find more information from the United Nations Office for the Coordination of Humanitarian Affairs at the following link: <https://cutt.us/RvY7p>.

to achieve water security for a household, ensuring sufficient water for drinking and other uses.⁹

8. The void created in the quantity of water inside the groundwater reservoir in the Gaza Strip has been compensated by seawater due to the high permeability of the reservoir rocks, extending approximately 4 kilometers inside the Strip along the coast.¹⁰
9. The water available through public networks meets the drinking water specifications by 17.9%, according to the World Health Organization.¹¹
10. The municipalities in the Gaza Strip have 286 registered extraction wells, in addition to thousands of unregistered and unauthorized wells, which have a negative and serious impact on the groundwater reservoir.¹²
11. Only 4% of treated or pollution-free water is delivered through the public networks in the Gaza Strip.¹³

The main causes of the water crisis can be attributed to the Israeli occupation's policies of controlling water resources, including the drilling of unauthorized wells to intercept the water that feeds the coastal aquifer. Other factors include the highest population density in the world and limited rainfall due to global climate change.

⁹ Dr. Ahmed Hells: Paper on the Environmental Situation in Gaza and the Role of Civil Society Organizations in its Protection:
<file:///C:/Users/Mohannad/Downloads/%D8%A7%D9%84%D9%88%D8%B1%D9%82%D8%A9%20%D8%A7%D9%84%D8%A8%D9%8A%D8%A6%D9%8A%D8%A9%202022.pdf>

¹⁰ Ahmad Hells, a paper on "The Environmental Situation in the Gaza Strip and the Role of Civil Organizations in its Protection," a previous source.

¹¹ Ahmed Hells, Paper on The Environmental Reality in the Gaza Strip and the Role of Civil Society Organizations in its Protection, previous source.

¹² Ahmed Hells, Paper on The Environmental Reality in the Gaza Strip and the Role of Civil Society Organizations in its Protection, Previous Source.

¹³ Central Bureau of Statistics, Water Resources Security,
<https://www.pcbs.gov.ps/postar.aspx?lang=en&ItemID=3943>.

Secondly: Sources of drinking water in the Gaza Strip.

Palestine is characterized by a variety of water sources, including surface water and groundwater. Surface water sources include the Jordan River, Lake Tiberias, Lake Hula, and some streams and wadis, such as Wadi Gaza. As for groundwater sources, there are eight basins distributed throughout historical Palestine, with the coastal aquifer located beneath the Gaza Strip¹⁴. Rainfall used to be one of the main sources that replenished the water resources in the Gaza Strip through infiltration into the ground. However, environmental and climate changes have led to a decrease in rainfall, coupled with urbanization and a decrease in agricultural land, which has limited the amount of rainwater reaching the ground. Consequently, the Israeli occupation has sought to control the springs and other water sources¹⁵.

The groundwater reservoir in the Gaza Strip is considered the almost sole source for obtaining water after Israeli control over its other sources. The population in the Gaza Strip relies on the groundwater reservoir for approximately 94% of their increasing water needs. The remaining sources are divided into 4% from seawater desalination and 2% from purchasing water from the Israeli company "Mekorot." ¹⁶ As a result, water resources and sources in the Gaza Strip have become scarce.

The surface sources in the Gaza Strip consist of three valleys that have become semi-dry due to measures taken by the Israeli authorities, including the construction of dams that prevent water from reaching its course inside the Gaza Strip. These valleys are Wadi Beit Hanoun, located in the northern part of the Gaza Strip, which is semi-dry and gets flooded when there are heavy rains. The estimated annual water flow in this valley ranges between one and a half to four million cubic meters.

There is also Wadi Gaza, located in the south of the city of Gaza, which has been deprived of water due to Israeli measures that prevent water from reaching it. During periods of heavy rainfall, the dams are opened, resulting in disasters for the residents of that area and sudden flooding. Additionally, Wadi As-Salqa, located in the southern

¹⁴ Palestinian Water Authority, Groundwater Sources, http://www.pwa.ps/en_page.aspx?id=8PBG7da2702978520a8PBG7d.

¹⁵ Tayseer Jabara: Zionist control over water in Palestine, Website of the Palestine Liberation Organization, Research Center, <https://bit.ly/3TJY4fo>.

¹⁶ Ahmed Hells, Paper on The environmental reality in Gaza and the role of civil organizations in protecting it, previous source.

part of Deir al-Balah in the middle of the Gaza Strip, is a small valley that forms when there is heavy rainfall, and its average water flow is estimated at one million cubic meters.¹⁷

Three desalination plants have been established in the Gaza Strip. The Deir al-Balah desalination plant produces 6,000 cubic meters of desalinated water daily. Similarly, the Khan Yunis desalination plant, located in the southern part of the Strip, also produces 6,000 cubic meters per day. The Gaza City desalination plant includes a mixing tank with a capacity of 5,000 cubic meters, a booster pumping station, and a 500mm diameter pipeline spanning 6 kilometers from the desalination plant to the mixing tank.¹⁸

Thirdly: Drinking water shortage.

Palestinian citizens in the Gaza Strip suffer from a severe water scarcity crisis. The per capita water allocation for an Israeli individual is seven times higher than that of a Palestinian; the Israeli individual receives around 60–70 liters of water per day¹⁹, compared to 500 liters for an Israeli individual of fresh water. The disparity between the two sides increases to nine times in the water used for irrigation and agriculture purposes²⁰. Israeli authorities have dug 26 water wells along the border with the Gaza Strip to prevent and reduce the natural flow of water into the Gaza Strip's aquifer. They have also constructed dams to prevent surface water, which used to supply Wadi Gaza with fresh water, from reaching it, resulting in its complete depletion of water.²¹

The Gaza Strip's demand for fresh water is estimated to be over 210 million cubic meters annually, covering domestic, agricultural, and industrial purposes. The average rainfall in the Gaza Strip is approximately 130 million cubic meters per year²². The water deficit in the Gaza Strip is estimated to be around 140 million cubic meters annually, which is needed to meet household and agricultural needs alone²³.

¹⁷ Water Authority and environmental quality, water sources in Gaza Strip, <http://www.pwa.gov.ps/article/120>.

¹⁸ Water Authority of the State of Palestine, groundwater sources, previous source.

²¹ A report on the reality of desalination plants in the Gaza Strip, <https://www.mezan.org/uploads/files/12153.pdf>.

²² The Palestinian Water Authority warns of a severe and escalating water crisis in the Gaza Strip, Munther Salem, ARABIC.NEWS.CN: http://arabic.news.cn/2022-01/19/c_1310430225.htm.

²³ Water pollution, salinity, and severe scarcity, the water crisis worsens in the Gaza Strip, Al-Araby website, <https://cutt.us/B7j1X>.

More than 97% of municipal water wells in the Gaza Strip do not meet the quality standards for drinking water. This has led the population to rely on private groundwater desalination plants to obtain water that is suitable for consumption²⁴.

The water scarcity problem in the Gaza Strip is accompanied by a continuous decline in groundwater levels and a persistent increase in water salinity. The average salinity of water extracted for municipal purposes is around 1000 milligrams per liter, while the international standard sets a maximum limit of 250 milligrams per liter. Furthermore, more than 97% of municipal water wells do not meet the quality standards set by the World Health Organization for drinking water²⁵.

Fourth: The methods used by citizens to meet their needs.

After the salinity levels in the water from public networks increased, individuals in the Gaza Strip resorted to purchasing water from private stations. The number of these stations exceeds 150, and they sell water at prices much higher than the prices of water supplied through the pipelines²⁶.

The Water Authority, in cooperation with the Coastal Municipalities Water Utility, has worked on the establishment of three short-term and small-scale desalination plants in the Gaza Strip. These plants were funded by external sources. The first plant is a seawater desalination plant in the central area of Deir al-Balah. The second plant is a seawater desalination plant in the southern area of the Gaza Strip, serving approximately 75,000 residents of Khan Younis and western Rafah. The third plant is a seawater desalination plant serving approximately 25,000 residents in western Gaza City²⁷.

²⁴ ARABIC.NEWS.CN, the Palestinian Water Authority warns that the Gaza Strip is suffering from a severe and escalating water crisis, Munther Salem, previous source.

²⁵ A major crisis is affecting the water situation in the Gaza Strip, Sama News Agency, Mazen Al-Banna, Head of the Water Authority, source: <https://cutt.us/beAlc>.

²⁶ Ahmed Hells, a paper on The environmental situation in the Gaza Strip and the role of non-governmental organizations in its protection, previous source.

²⁷ Ahmed Halas, a paper about The environmental reality in the Gaza Strip and the role of civil organizations in its protection, previous source.

In addition, individuals in Gaza also utilize expensive household filters that require regular replacement of salt filters. Furthermore, wells are dug in the eastern areas where seawater has not been reached, and the salinity levels are lower, making the water suitable for drinking. However, these wells need to undergo water quality testing in laboratories to ensure they are free from contamination.

Conclusion:

The water crisis in the Gaza Strip is increasing significantly, posing a major threat to the water security of the population. We recommend the need to develop public desalination plants and expand their coverage to provide safe drinking water to all residents of the region, ensuring water security and public health.

It is evident that the problem of water scarcity in the Gaza Strip is due to the practices of the Israeli occupation, which has been involved in the theft of groundwater through the construction of water wells around the Gaza Strip and the installation of pipelines to extract water from within the occupied territories since it controlled the lands of Khan Yunis in the Gaza Strip, which contain the area known as Al-Mawasi and its abundant groundwater resources.

The high pollution levels in the groundwater resulting from the sewage and solid waste effluent, which are classified as highly toxic, pose a significant risk to public health, as they can cause diseases and their spread. It is the collective responsibility of the municipalities and the Palestinian governments, through external support or self-support, to secure and allocate a dedicated financial budget for the development and sterilization of desalination plants. This will ensure the provision of safe drinking water that meets the needs of the people, reducing their reliance on contaminated water and minimizing their financial expenses to obtain safe drinking water.