

# Weaponizing a Water Crisis: The Destruction of Water Supplies in Gaza

September 26, 2024

By Juan Cole



Displaced Palestinians line up to fill their containers with water in Deir Balah in the central Gaza Strip on April 25, 2024, amid ongoing battles between Israel and the militant Hamas group. (Majdi Fathi/NurPhoto via Getty Images)



The Israeli use of water as a weapon of war in Gaza in 2023-2024 turned what had been a perennial public health crisis into a humanitarian catastrophe. The targeting of wastewater treatment facilities, which no longer exist at all in several Gazan cities, seems calculated to provoke health crises for the Palestinian civilian population. It is for this reason, among others, that South Africa charged the Israeli government with the crime of genocide<sup>1</sup> before the International Court of Justice, a charge the court found “plausible” in January.

Two days after the Oct. 7, 2023, Hamas attack in Israel, Israeli Minister of Defense Yoav Gallant announced at the Israeli army Southern Command in Beersheba, “I have ordered a complete siege on the Gaza Strip. There will be no electricity, no food, no fuel, everything is closed. We are fighting human animals and we are acting accordingly.”<sup>2</sup>

Although he did not mention water, that was cut off, too.

Gaza has faced a potable water crisis for two decades. Some 90 percent of well water in the Strip comes from the Coastal Aquifer Basin. It was over-exploited, however, especially along the coast, causing levels to drop and exposing it to seawater intrusion from the Mediterranean, especially beginning around 2000.<sup>3</sup> The rise in the sea level owing to anthropogenic climate change is also implicated here. In addition, the Israeli siege of Gaza had often crippled sewage treatment, so sewage seeped into the aquifer, as did chemicals from manufacturing workshops. Israel’s use of treated wastewater for irrigation close to the border with Gaza also caused saline return flow into the aquifer.<sup>4</sup> Only four percent of this ground water is considered potable.

Clean water was brought in by private trucks in tanks or was produced by small desalinization units in Gaza itself or was piped into Gaza from Israel by the Mekorot water authority, which provided about 12 percent of the water in the strip.<sup>5</sup> Israel is using water as a weapon in Gaza – an action characterized as a war crime. This essay will examine the state of the crisis in November 2023, February 2024, and July 2024. Snapshots of the Israeli-imposed water crisis in Gaza illustrate the situation’s unfolding.

## **November 2023: ‘Dehydration and Malnutrition’**

By Nov. 18, over a month into the Israeli campaign, the World Food Program (WFP) of the United Nations urgently announced that Gaza was experiencing extensive food and water shortages. A senior WFP spokeswoman, Abeer Etefa, declared at a press conference, “We are already beginning to see cases of dehydration and malnutrition, which are increasing rapidly.”<sup>6</sup>

Since 2007, Israel had enforced an economic blockade on the Gaza Strip. As a result, the inhabitants of Gaza had relied on aid for survival. Aid agencies delivered 500 trucks’ worth of supplies into the strip daily before Oct. 7. Only a fraction of such deliveries continued after the attack.<sup>7</sup> WFP Executive Director Cindy McCain said at a press conference in mid-November, “With winter fast approaching, unsafe and overcrowded shelters, and the lack of clean water, civilians are facing the immediate possibility of starvation.”<sup>8</sup>

Israeli ground assaults west of Gaza City also created life-threatening conditions. The Office for the Coordination of Humanitarian Affairs (OCHA) observed that “households in the western neighbourhoods of Gaza city appealed for help after their remaining food and drinking water had been depleted. Reportedly, they were unable to leave their homes because of the presence of Israeli ground troops and fighting.”<sup>9</sup> The United Nations Relief and Works Agency for Palestine Refugees in the Near East (UNRWA) cautioned in mid-November that 70 percent of Palestinians – men, women, and children – in southern Gaza lacked access to clean water. Moreover, raw sewage started flowing in the streets in some areas.<sup>10</sup>



In the north at that point, there appeared to be no clean drinking water at all, given that the desalination unit was out of operation and the Israeli pipeline had been closed in October. No bottled water had been supplied. People were consuming contaminated surface water or polluted aquifer water. The lack of clean water was among the reasons that bakeries were closed at that time. This dire situation, and the pressure from world bodies, reinforced the efforts of the Biden administration to secure a short cease-fire, or “humanitarian pause,” from Nov. 24-30.

## February 2024: Salt, Contamination, and Sewage

When that pause ended, the water situation did not materially improve. In mid-February 2024, Doctors without Borders (MSF) estimated that approximately 70 percent of the population in Gaza was compelled to drink contaminated water or water with excessive salt content, which poses a health hazard. Although each individual needs about 3 liters of drinking water per day and requires four times that for hygiene and other uses, entire families receive only 3 liters a day, according to MSF. It was estimated that there was just one toilet for every 500 individuals.<sup>11</sup>

Ala’ al-Hilu, an independent Palestinian journalist in Gaza, described the scene in an article for the London pan-Arab daily *Al-Arabi al-Jadid*: “The streets of the Gaza Strip are undergoing a catastrophic environmental crisis because of the mingling of rainwater with sewer water, which is now inundating various streets as a result of a continuous overflow.”<sup>12</sup> Al-Hilu added, “This situation is a result of the targeting of infrastructure by the Israeli military, and the inability to drain the necessary amounts of wastewater owing to the depletion of fuel, and the total blackout of electricity.” Al-Hilu quoted Hosny Muhannad, spokesman for the Gaza Municipality, as saying that the Israeli total war on Gaza had “led to the crippling of many basic service sectors, including the work of municipalities, such as repairing primary and secondary roads, rainwater drainage, and wastewater drainage from the streets.”<sup>13</sup>

By February, the Israeli military had forced more than 1 million Palestinians in Gaza into the far south of the Strip, Rafah, which constitutes only 20 percent of the total land area. Despite Israeli claims that this area would be safe for noncombatants, bombing of the area continued. Approximately two-thirds of the Palestinians driven from their homes in the northern and central parts of the Strip had at that point gathered in Rafah.

Clean water for Gaza had originally been provided by three desalination units, but Israel closed them after Oct. 7 and only restored some of their production from December 2023 following significant pressure from the Biden administration. There are 284 groundwater wells, but the water they produce is problematic. It is often polluted and high in salt content. Normally, people could boil it, but those living in tents and shelters without adequate fuel could not reliably boil their water. Only 17 percent of the wells were fully functional by February 2024. Around 39 had been destroyed by Israeli bombing, and 93 had been damaged. Two months later, in April, satellite analysis found that attacks had damaged or destroyed 63 percent of the water and sanitation infrastructure in Gaza.<sup>14</sup>

Gaza City, Rafah, and other municipalities could not operate wastewater treatment centers amid the war that winter. All the wastewater treatment systems had either been damaged by bombing or lacked sufficient fuel. Gaza was drowning in excrement, presaging the outbreak of gastrointestinal and skin diseases, very widespread watery diarrhea, and, by July, polio.

OCHA found two of the desalination plants largely out of order, adding that the third – the United Arab Emirates’ small desalination plant on Egypt’s side of Rafah – “operates at full capacity, providing 2,400 cubic metres per day, following the construction of a 3-kilometre transmission



line.”<sup>15</sup> Many of the pipelines that had once delivered desalinized water were non-operational owing to insufficient fuel to power their pumps. Other pipelines were damaged by intense Israeli bombardment. The problems in distributing the desalinized water were detailed by OCHA, which noted that in February two of the three pipelines operated by Israel’s Mekorot water authority – which controls all water in the West Bank and provided 12 percent of the water in Gaza – were out of service. OCHA explained that the third, the Bani Saeed pipeline, “is functioning, but is currently producing 6,000 cubic metres per day, which is only 42 per cent of its full capacity.”<sup>16</sup>

An Oxfam analysis for Gaza in 2023-2024 of lines, wells and springs controlled by Mekorot found that 80 percent of the water produced was lost through leakage, presumably because bombardment had broken the pipelines. Moreover, it took until May for all three Mekorot pipelines to come back online, though to little practical effect given the distribution difficulties.<sup>17</sup>

OCHA concluded that as of the first quarter of 2024, “only 5.7 per cent of water is being produced from all the water sources in Gaza, compared to pre-war production levels. Safe drinking water and water for domestic use, including personal hygiene, remains very limited.”<sup>18</sup> The surface water from February rains or broken pipelines was contaminated. Some refugees were reduced to cupping their hands in the sewage-filled streets and drinking from it.

UNICEF attempted to construct 80 family latrines in mid-February, but its spokesman said then that “the sanitation coverage remains very low. WASH [water, sanitation and hygiene] partners continue to construct family latrines, but the lack of cement, wood, and other construction materials slows the progress.”<sup>19</sup> Israel continued to limit or bar needed materials for the repair of water and sewage infrastructure. Although the situation in February was far worse than that in November, the Biden administration either would or could not force another humanitarian pause.

## July 2024: Ongoing Devastation

Israeli military personnel continued the systematic destruction of ground wells, demolishing 30 in July alone. By that time, the Israeli military had put all three desalinization units in the Strip out of action and damaged or destroyed 88 percent of the water wells.<sup>20</sup> Whereas Rafah had retained most of its water infrastructure throughout the campaign, by late May a third of it was damaged or destroyed during the Israeli offensive launched that month.<sup>21</sup>

In July, Israeli troops boasted on video of having destroyed the Canadian Well Reservoir in Rafah, a solar-powered treatment plant built by Canada that provided fresh water. James Elder, the UNICEF spokesman, said in a briefing, “Until recently, that reservoir served thousands and thousands of internally displaced people who had sought refuge in Rafah in the area. Now without it, vulnerable children and families are likely to be forced again increasingly to resort to unsafe water, so putting them again at all those risks that we see time after time, day after day in Gaza – dehydration, malnutrition, diseases.”<sup>22</sup>

Another casualty of the Rafah campaign, which defied a red line set by the Biden administration, was the UAE desalination plant, the water from which could not be distributed because the Israeli military severely damaged the newly installed supply line mentioned above.<sup>23</sup>

Not only has the Israeli army systematically damaged or destroyed Gaza’s water infrastructure, it also actively prevents its repair by banning the importation of pipes and other materiel, and by delaying permissions for repairs.<sup>24</sup> UNICEF noted, “Essential water and sanitation items such as pumps, drilling equipment and disinfectant chemicals are considered “dual use,” meaning that they are only allowed into Gaza selectively.”<sup>25</sup>



UNICEF and other aid organizations have had to scramble from region to region as the Israeli attacks continue to displace hundreds of thousands of people time and again, vainly fighting severe water shortages with small consignments of water bottles and some fuel for water pumps.<sup>26</sup> The organization also did what it could to improve sanitation and sewage treatment, though these problems, like thirst, remained intractable.

The intensity and scale of the damage and destruction wrought on Gaza's water infrastructure by the Israeli military, visible by satellite from outer space, suggests that it was a deliberate tactic of war; at the very least it demonstrated a reckless disregard for civilian life. It is part of the devastation of the civilian infrastructure in general, with the deployment of 2,000-pound bombs on densely packed residential complexes, creating some 500 craters in just the first three months of the campaign. The targeting of wastewater treatment facilities (which no longer exist at all in several Gazan cities) seems calculated to provoke health crises and to increase mortality in the Palestinian civilian population. Likewise, subjecting noncombatants to constant thirst and water scarcity can only be understood as an element in a total war on the civilian population, aiming at making them ill with renal and other diseases.

Chapter 20, Article 51 of the Berlin Rules on Water Resources adopted at the Conference of the International Law Association in August 2004, states, "In no event shall combatants attack, destroy, remove, or render useless waters and water installations indispensable for the health and survival of the civilian population if such actions may be expected to leave the civilian population with such inadequate water as to cause its death from lack of water or force its movement."<sup>27</sup> Israel's attacks on water infrastructure in Gaza – and its barring of imports for infrastructure repairs – is driving Palestinian civilians into dehydration, disease, and death.

**Juan Cole** is the Richard P. Mitchell Collegiate Professor of History at the University of Michigan. He is also a non-resident Fellow of the Center for Conflict and Humanitarian Studies in Doha and of Democracy for the Arab World Now (DAWN).

## Endnotes

---

<sup>1</sup> Sagoo, R., and Bar-Yaacov, N. "South Africa's genocide case against Israel: The International Court of Justice explained," Chatham House, Jan. 26, 2024. <https://www.chathamhouse.org/2024/01/south-africas-genocide-case-against-israel-international-court-justice-explained>

<sup>2</sup> Jankowicz, M. "Israel announces 'complete siege' of Gaza, cutting its electricity, food, water, and fuel," *Business Insider*, Oct. 9, 2023 <https://www.businessinsider.com/israel-gallant-announces-complete-siege-gaza-no-electricity-food-fuel-2023-10>

<sup>3</sup> Hall, N.; Kirschenbaum, A.; and Michel, D. "The Siege of Gaza's Water," Center for Strategic and International Studies, January 12, 2024. <https://www.csis.org/analysis/siege-gazas-water>

<sup>4</sup> Mushtaha, A.M., and Walraevens, K. "Evolution of salinity in the Gaza Strip over the last five decades deduced from field data," *Journal of African Earth Sciences*, vol. 198 (Feb. 2023): 1-19; Musallam, I.; Zhou, Y.; and Jewitt, G. "Simulation of groundwater flow and seawater intrusion in response to climate change and human activities on the coastal aquifer of Gaza Strip, Palestine," *Hydrogeology Journal* 31, 7 (2023): 1953–1969.

<sup>5</sup> Hall, N.; Kirschenbaum, A.; and Michel, D. "The Siege of Gaza's Water," Center for Strategic and International Studies, Jan. 12, 2024. <https://www.csis.org/analysis/siege-gazas-water>; Samad, L.A.; Butcher, M.; and Khalidi, B. "Water War Crimes: How Israel has



---

weaponized Water in its Military Campaign in Gaza,” Oxfam, July 2024, p. 15. [https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version\\_-\\_Gaza-water-Policy-Paper\\_17July.pdf](https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version_-_Gaza-water-Policy-Paper_17July.pdf).

<sup>6</sup> World Food Programme. “Gaza faces widespread hunger as food systems collapse, warns WFP,” Nov. 16, 2023. <https://www.wfp.org/news/gaza-faces-widespread-hunger-food-systems-collapse-warns-wfp>; Tanielian, M.S. “The Silent Slow Killer of Famine: Humanitarian Management and Permanent Security,” *Journal of Genocide Research* (2024): 1–9; Cole, J. “Is Israel deliberately Starving the Palestinians of Gaza? WFP Warns of Immediate Possibility of Man-made Famine,” Informed Comment, Nov. 18, 2023. <https://www.juancole.com/2023/11/deliberately-palestinians-possibility.html>

<sup>7</sup> Office for the Coordination of Humanitarian Affairs (OCHA). “Hostilities in the Gaza Strip and Israel | Flash Update #41,” ReliefWeb, November 17, 2023. <https://reliefweb.int/report/occupied-palestinian-territory/hostilities-gaza-strip-and-israel-flash-update-41>; Cole, J. “Is Israel deliberately Starving the Palestinians of Gaza? WFP Warns of Immediate Possibility of Man-made Famine,” Informed Comment, Nov. 18, 2023. <https://www.juancole.com/2023/11/deliberately-palestinians-possibility.html>

<sup>8</sup> “Gaza faces widespread Hunger;” “Food and Fuel Shortages in Gaza” - UNRWA and WFP Press Conference: <https://youtu.be/3TclAwlvL9w?si=twT1sAqT72xRK3Ax>; Cole, J. “Is Israel deliberately Starving the Palestinians of Gaza? WFP Warns of Immediate Possibility of Man-made Famine,” Informed Comment, Nov. 18, 2023. <https://www.juancole.com/2023/11/deliberately-palestinians-possibility.html>

<sup>9</sup> OCHA, “Hostilities in the Gaza Strip and Israel | Flash Update #41,” ReliefWeb, Nov. 17, 2023. <https://reliefweb.int/report/occupied-palestinian-territory/hostilities-gaza-strip-and-israel-flash-update-41>

<sup>10</sup> OCHA. “Hostilities in the Gaza Strip and Israel | Flash Update #41,” ReliefWeb, Nov. 17, 2023. <https://reliefweb.int/report/occupied-palestinian-territory/hostilities-gaza-strip-and-israel-flash-update-41>

<sup>11</sup> Peoples Dispatch/Globetrotter News Service. “Infections On the Rise In Gaza As Israel Impedes Delivery Of Water, Food,” *Eurasia Review*, Feb. 15, 2024. <https://www.eurasiareview.com/15022024-infections-on-the-rise-in-gaza-as-israel-impedes-delivery-of-water-food/>; Cole, J. “Water Crisis and untreated Sewage could kill more Gaza Palestinians than Bombs: Threat of Infant Mortality,” Informed Comment, Feb. 16, 2024. <https://www.juancole.com/2024/02/untreated-palestinians-mortality.html>

<sup>12</sup> Al-Hilu, A. “Miyah al-sirf al-sihhi tughriq shawari` Qita` Ghazzah,” *al-Arabi al-Jadid*, Feb. 10, 2024. <https://tinyurl.com/3nss4f7k>; Cole, J. “Water Crisis and untreated Sewage could kill more Gaza Palestinians than Bombs: Threat of Infant Mortality,” Informed Comment, Feb. 16, 2024. <https://www.juancole.com/2024/02/untreated-palestinians-mortality.html>

<sup>13</sup> Al-Hilu, A. “Miyah al-sirf al-sihhi tughriq shawari` Qita` Ghazzah,” *al-Arabi al-Jadid*, Feb. 10, 2024. <https://tinyurl.com/3nss4f7k>; Cole, J. “Water Crisis and untreated Sewage could kill more Gaza Palestinians than Bombs: Threat of Infant Mortality,” Informed Comment, Feb. 16, 2024. <https://www.juancole.com/2024/02/untreated-palestinians-mortality.html>

<sup>14</sup> Samad, L.A.; Butcher, M.; and Khalidi, B. “Water War Crimes: How Israel has weaponized Water in its Military Campaign in Gaza,” Oxfam, July 2024, p. 17. [https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version\\_-\\_Gaza-water-Policy-Paper\\_17July.pdf](https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version_-_Gaza-water-Policy-Paper_17July.pdf)

<sup>15</sup> OCHA, “Hostilities in the Gaza Strip and Israel | Flash Update #120,” Feb. 16, 2024 <https://www.unocha.org/publications/report/occupied-palestinian-territory/hostilities-gaza-strip-and-israel-flash-update-120>

<sup>16</sup> OCHA. “Hostilities in the Gaza Strip and Israel | Flash Update #120,” Feb. 16, 2024 <https://www.unocha.org/publications/report/occupied-palestinian-territory/hostilities-gaza-strip-and-israel-flash-update-120>

<sup>17</sup> Samad, L.A.; Butcher, M.; and Khalidi, B. “Water War Crimes: How Israel has weaponized Water in its Military Campaign in Gaza,” Oxfam, July 2024, p. 14-15. [https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version\\_-\\_Gaza-water-Policy-Paper\\_17July.pdf](https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version_-_Gaza-water-Policy-Paper_17July.pdf)

<sup>18</sup> OCHA. “Hostilities in the Gaza Strip and Israel | Flash Update #120,” Feb. 16, 2024 <https://www.unocha.org/publications/report/occupied-palestinian-territory/hostilities-gaza-strip-and-israel-flash-update-120>

<sup>19</sup> Quoted in OCHA, “Hostilities in the Gaza Strip and Israel | Flash Update #119,” Feb. 15, 2024 <https://www.ochaopt.org/content/hostilities-gaza-strip-and-israel-flash-update-119>



- 
- <sup>20</sup> Khalid, H. "Destruction of Gaza water wells deepens Palestinian misery," Reuters, July 30, 2024  
<https://www.reuters.com/world/middle-east/destruction-gaza-water-wells-deepens-palestinian-misery-2024-07-30/>
- <sup>21</sup> Samad, L.A.; Butcher, M.; and Khalidi, B. "Water War Crimes: How Israel has weaponized Water in its Military Campaign in Gaza," Oxfam, July 2024, p. 18. [https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version\\_-\\_Gaza-water-Policy-Paper\\_17July.pdf](https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version_-_Gaza-water-Policy-Paper_17July.pdf)
- <sup>22</sup> Schlein, L. "Rafah water facility demolition raises health risks in Gaza, UN says," VOA, July 30, 2024.  
<https://www.voanews.com/a/rafah-water-facility-demolition-raises-health-risks-in-gaza-un-says/7718792.html>
- <sup>23</sup> Samad, L.A.; Butcher, M.; and Khalidi, B. "Water War Crimes: How Israel has weaponized Water in its Military Campaign in Gaza," Oxfam, July 2024, p. 20. [https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version\\_-\\_Gaza-water-Policy-Paper\\_17July.pdf](https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version_-_Gaza-water-Policy-Paper_17July.pdf)
- <sup>24</sup> Samad, L.A.; Butcher, M.; and Khalidi, B. "Water War Crimes: How Israel has weaponized Water in its Military Campaign in Gaza," Oxfam, July 2024, p. 21-22. [https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version\\_-\\_Gaza-water-Policy-Paper\\_17July.pdf](https://www.oxfam.org.nz/wp-content/uploads/2024/07/Final-version_-_Gaza-water-Policy-Paper_17July.pdf)
- <sup>25</sup> Ferguson, S., and Su, T. "UNICEF Aids Children Caught in Water and Sanitation Crisis in Gaza," UNICEF USA, July 19, 2024.  
<https://www.unicefusa.org/stories/unicef-aids-children-caught-water-and-sanitation-crisis-gaza>
- <sup>26</sup> Ferguson, S., and Su, T. "UNICEF Aids Children Caught in Water and Sanitation Crisis in Gaza," UNICEF USA, July 19, 2024.  
<https://www.unicefusa.org/stories/unicef-aids-children-caught-water-and-sanitation-crisis-gaza>
- <sup>27</sup> International Committee of the Red Cross "Water and Armed Conflicts," <https://casebook.icrc.org/case-study/water-and-armed-conflicts>