



Fuel Supply in Gaza – Needs and Uses

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EXECUTIVE SUMMARY: This article provides an overview of the current fuel supply situation in the Gaza Strip. It examines how much fuel is needed for Gaza’s basic humanitarian needs, how much fuel is held by Hamas, and who is responsible for providing more fuel once it runs out. It concludes that Israel’s denial of fuel supply into Gaza offers relatively marginal tactical advantages since Hamas has enough diesel stored away to last for several months. Diesel denial mainly affects the operation of hospitals and water supply to Gaza’s population, adding to international pressure against Israel to end its military campaign.

As part of the ongoing “Swords of Iron” operation in Gaza, the Israeli Ministry of Energy announced on October 12, 2023, that it had cut off all diesel supply to the Gaza Strip. Israel argues that, unlike water, food, or medicine, diesel can be used by Hamas to operate its tunnel system and continue its fight against IDF forces. As such, it has only allowed minimal quantities of diesel into Gaza since early November. By denying fuel provision, Israel aims to “dry out” Hamas militants and force them to leave their underground bases. In the process, however, the IDF’s fuel denial policy is hindering the ability of UNRWA and other organizations to supply basic humanitarian needs to Gaza’s population. As such, Israel is under considerable international pressure, including from the US, to allow more diesel into Gaza.

To properly assess the effectiveness of the IDF’s fuel denial policy, this article examines (1) how much fuel is needed for basic humanitarian needs in Gaza, (2)

how much fuel is held by Hamas and what it is used for, and (3) who has the responsibility to provide more fuel to Gaza's population once it runs out. It ultimately argues that the tactical advantages of fuel denial are outweighed by the heavy humanitarian and diplomatic toll it creates for Israel's ongoing military campaign. Israel will eventually be forced to resume more diesel supply to the Gaza Strip, and it must find a way to do so without allowing it to fall into the hands of Hamas.

How much fuel is needed in Gaza?

Diesel serves three primary functions for Gaza's population, not including Hamas activities: (1) electricity generation for critical infrastructure such as hospitals and bakeries, (2) powering water treatment facilities, and (3) fueling supply trucks for food, water, and medicine provision. Taken together, diesel can thus be considered the primary resource required to supply all other essential resources and living needs in Gaza:

(1) **Electricity generation:** While roughly [half of Gaza's electricity comes from Israel](#) through 10 power lines, the other half is generated independently, mostly with diesel-powered generators. Gaza's power plant consumes around 17,500 liters (4,620 US gallons) of diesel every hour to produce 65MW (25% of Gaza's electricity). The rest of the electricity comes from hundreds of small-scale diesel generators throughout the Gaza Strip in hospitals, businesses, warehouses, government buildings, and the homes of private individuals who can afford to purchase them. Although [Gaza also has one of the highest shares of off-grid rooftop PV panels in the world](#), they can supply only around 25% of its electricity needs and for less than 30% of the day.

(2) **Water supply:** 90% of Gaza's water is produced independently, primarily by drilling into local aquifers or using water desalination facilities. However, most of the water in the aquifers (75-95%) is unfit for human consumption. Over the years, seawater and sewage has penetrated Gaza's underground reservoirs due to overproduction, unregulated drilling, and poor maintenance of the wells. As a result, the water needs to be [processed in water treatment or desalination facilities](#) before it can be consumed. These facilities are energy-intensive and must operate continuously without relying on the main grid, which experiences frequent blackouts. As such, the larger facilities all have private diesel generators, and some also have

rooftop PV panels. [The largest water desalination facility in Gaza](#), located in Deir al Balah, can produce 90 liters of potable water per capita for 275,000 people. It requires 12MW, which amounts to approximately 3,200 liters (845 US gallons) of diesel per hour.

- (3) **Fueling trucks:** Even before Israel's current military operation, basic infrastructure in Gaza was in poor condition (roads, water and fuel pipelines, electricity grid), making its population reliant on trucks to provide food, water, and diesel. Over the years, Hamas has neglected to maintain Gaza's basic infrastructure [despite large amounts of foreign aid directed specifically for this task](#). International organizations like the UN and the EU funded and executed most of the existing infrastructure, and any damage it sustained due to past military operations by the IDF (mainly "Protective Edge" in 2014) or to lack of maintenance has remained that way ever since. As a result, diesel is needed to distribute essential supplies to Gaza's population via trucks, making diesel the primary resource required to supply all other resources in Gaza.

According to [Lynn Hastings, UN coordinator for humanitarian affairs in Gaza](#), UNRWA requires around 130,000 liters (34,000 US gallons) of diesel daily to meet the minimum requirements for the three essential functions mentioned above. This includes diesel to power only the major hospitals, some of the water treatment facilities and UN warehouses, and to fuel the trucks. According to Hastings, UNRWA receives occasional access from Israel to a diesel storage facility inside Gaza located next to the Rafah crossing near Egypt. Hastings claims UNRWA draws 200,000 liters of fuel from these pumps at a time (53,000 US gallons), but this seems unlikely as the storage would have run out much sooner if those were the correct amounts.

It's unclear where UNRWA is receiving the rest of the diesel it needs to operate, considering that the IDF said it had not allowed any new diesel to enter Gaza throughout October. Either Gaza has much more diesel than the IDF initially estimated, or new diesel is still somehow coming into Gaza via either trucks or underground pipelines. In any case, the amount UNRWA has will not be enough to cope with the worsening humanitarian crisis in south Gaza. Because of this, Israel is facing considerable international pressure to allow more diesel into Gaza.

How much fuel does Hamas have?

Hamas still holds considerable amounts of diesel inside Gaza, but it is challenging to provide an accurate estimate of its operational needs. Modest assessments put the number between 800,000 and 1 million liters (200,000 to 264,000 US gallons), but the true number is likely much higher.

There are several indicators of how much diesel Hamas might have, assuming no new diesel comes from outside Gaza. [IDF satellite images](#) have revealed above-ground silos that can store around 500,000 liters of diesel (132,000 US gallons), but most of Hamas's diesel is stored in its underground tunnels. On the first day of the war, Hamas announced that Gaza's main diesel power plant had run out of fuel, though it should have had at least 400,000 liters (105,000 US gallons) in its storage to operate. It is likely that Hamas emptied the power plant's emergency storage and funneled it underground. In addition, the IDF [conversation recording](#) claims that Shifa Hospital has 500,000 liters of diesel in underground storage, but there is no way to verify this.

Another question that is difficult to estimate is how long Hamas can operate with its current diesel supply. Diesel allows Hamas to run underground generators for air purification, ventilation, light, and communications, but there is no open-source material indicating the extent of the underground tunnels or what they contain. If Hamas uses its diesel only for the essential functions mentioned here, it will last several months. However, if Hamas's underground city also includes a hospital, labs, a rocket manufacturing facility, and other energy-intensive facilities, the diesel won't last for more than a few weeks, and Hamas will be under pressure to get more.

It should be noted that Hamas does not use diesel as fuel for launching rockets. Hamas rockets (Qassams) use solid fuel, potassium nitrate, for propulsion. [When the IDF warns that Hamas uses diesel for rockets](#), it means for the manufacture of rockets, not their launch. Hamas has local rocket production factories that need a lot of electricity and heat, requiring diesel fuel.

It is important to highlight that Hamas does not see itself as responsible for providing fuel to its population. Hamas views itself as a resistance force, not a government, and [it claims that it is the responsibility of the UN and the "occupying" power \(Israel\) to take care of Gaza's residents](#). Therefore, private parties in Gaza, such as businessmen and aid organizations, must pay Hamas to release some of its hoarded diesel for the generators in smaller hospitals that

receive less international attention. [According to recordings presented by the IDF](#), Hamas does release some of its fuel to the population, but in minimal amounts, at a very high cost, and only to those with direct connections to Hamas senior members.

Who has the responsibility to provide more fuel to Gaza?

Although Israel argues that Hamas is responsible for providing diesel to Gaza's population, the international community applies pressure solely on Israel to allow more fuel inside. While Israel has not physically occupied Gaza since 2005, the legal consensus in the international community still views Israel as the *de facto* occupying force. As such, it is demanded that Israel either provide or allow others to provide enough water, food, and medicine to the population of Gaza as determined by UN and WHO standards. Although Israel is not required by international humanitarian law to provide fuel or electricity, Gaza presents a complicated case because water cannot be provided without fuel to power the water treatment facilities. This means that if Israel doesn't provide electricity and fuel, Gaza will eventually run out of potable water.

While Israel initially resisted requests by the US and other international parties to allow more fuel into Gaza, the IDF chief announced on November 2 that Israel would allow small amounts inside. Israel demands close supervision of the fuel trucks to prevent theft by Hamas. Still, once the diesel flows into the UN hospitals and warehouses, there is no way to monitor that Hamas does not simply empty the tanks once the trucks leave, as they did in the first days of fighting. Israel is thus facing a dilemma regarding how much diesel to allow inside and how to monitor the situation.

Israel will need to continue to allow more diesel into Gaza. The effectiveness of the IDF's "drying out Hamas" policy is proving to be somewhat limited, considering that Hamas has enough fuel stored to last several more months. By not allowing fuel to flow to UNRWA trucks and facilities, Israel is setting itself up to become directly responsible for the impending humanitarian crisis in Gaza and will face mounting international criticism, including by the US, at the end of the war.

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