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GAZA'S ELECTRICITY CRISIS: THE IMPACT OF ELECTRICITY CUTS ON THE HUMANITARIAN SITUATION

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Introduction

Since January 2010, there has been a serious deterioration in the supply of electricity in the Gaza Strip. The immediate reason is that Gaza's sole power plant, the Gaza Power Plant (GPP), is able to produce only half the electricity that it did prior to January 2010, due to a lack of funds needed to purchase the industrial fuel required to operate the plant.

Gaza City

As a result, many of the 1.4 million Palestinians residing in the Gaza Strip must cope with scheduled electricity cuts of 8-12 hours daily, compared to 6-8 hours prior to January 2010.

These power cuts exacerbate the already difficult living conditions in Gaza and disrupt almost all aspects of daily life, including household chores, health services, education and water and sanitation services.

A Chronic Shortfall

The shortage of electricity in the Gaza Strip dates back to June 2006, when the Israeli Air Force destroyed all six transformers at the GPP during an air strike. Five months later, the power plant resumed production, but at a significantly reduced level; producing around 65 MW (out of 80MW of potential capacity), compared to 118MW at peak production (out of 140 MW of potential capacity) prior to the bombardment.[1] Israel's imposition of a blockade on the Gaza Strip in June 2007, following the Hamas take-over, further tightened existing restrictions on imports of spare parts, equipment, consumables and industrial fuel required for the operation of the power plant and the electricity network.. As a result, there has been a chronic shortfall in the GPP's level of electricity production.

Since January 2010, the daily electricity deficit has increased further, following the expiration of the European Commission's direct subsidy to the fuel purchase for the GPP.[2] Since this time, the power plant has twice had to shut down completely, due to lack of fuel. The plant now operates using one turbine, producing only 30 MW of electricity, compared to its average production of 60-65 MW in 2009.

Impact on the Humanitarian Situation

People killed and injured due to reliance on mobile back-up generators

To mitigate the daily hardship of living for prolonged hours without electricity, especially during evening blackouts, those who can afford to do so buy mobile back-up generators. These generators, which are imported largely through the tunnels under Gaza's border with Egypt, can be unsafe, especially when used incorrectly. Accidents have happened as a result of poor usage, carbon monoxide poisoning, and fires and explosions occurring when people attempt to fuel the generators by candle-light during a blackout. According to the

CHRONOLOGY OF THE ELECTRICITY CRISIS IN THE GAZA STRIP

2002 – The Gaza Power Plant (GPP), a private company, becomes operational as Gaza's sole power producer.

2004 – While the GPP reaches its maximum potential capacity of 140 MW, actual production levels are lower. Nevertheless, they fill some of the gap remaining after electricity is purchased from Israel.

June 2006 – The European Commission (EC) begins subsidizing fuel for the GPP, covering invoices since January 2006.

28 June 2006 – The Israeli Air Force bombs the GPP, destroying all six transformers at the plant; production is halted.

September 2006 – An electricity line is established from Egypt to the Rafah area in the Gaza Strip; since then, 17MW of electricity per day has been purchased from Egypt.

November 2006 – Seven transformers with lower capacity are installed and partial production resumes. A year later, the plant's maximum potential capacity is 80 MW, however, actual production never reaches this maximum because of the restrictions associated with Israel's blockade on the Gaza Strip.

June 2007 – Israel imposes a blockade on the Gaza Strip, which severely restricts the import of necessary electrical equipment, spare parts, consumables and essential electrical inputs.

19 September 2007 – The Israeli Security Cabinet declares the Gaza Strip a 'hostile territory' and imposes further restrictions, including a restriction on electricity and all types of fuel allowed into the Gaza Strip.3

28 October 2007 – Israel begins implementing the September 2007 Cabinet decision regarding fuel restrictions; deliveries of industrial fuel drop to 1.75 million litres per week.

6 January 2008 – The power plant exhausts its fuel reserves and reduces electricity production by 30 percent, causing up to eight hours of daily power cuts.

10 January 2008 – The Israeli State Attorney's office indicates that the military will increase the amount of industrial fuel permitted, however Israel only agrees to increase the amount to the 2.2 million litres per week allowed prior to October 2007.

30 January 2008 – The Israeli Supreme Court rejects a petition by human rights groups challenging the government's decision to reduce the electricity and fuel supply to the Gaza Strip.4

July – September 2008 – In the context of a ceasefire between Israel and Hamas, fuel deliveries reached 2.6 million litres per week.

October 2008 – January 2009 – Beginning in October 2008, the ceasefire begins to deteriorate and deliveries are again reduced.. Since then deliveries have not exceeded 2.2 million litres per week.

November 2009 – In accordance with an agreement between the EC and the Palestinian Authority (PA) the EC direct subsidy to the fuel purchase for the Gaza Power Plant ceases.

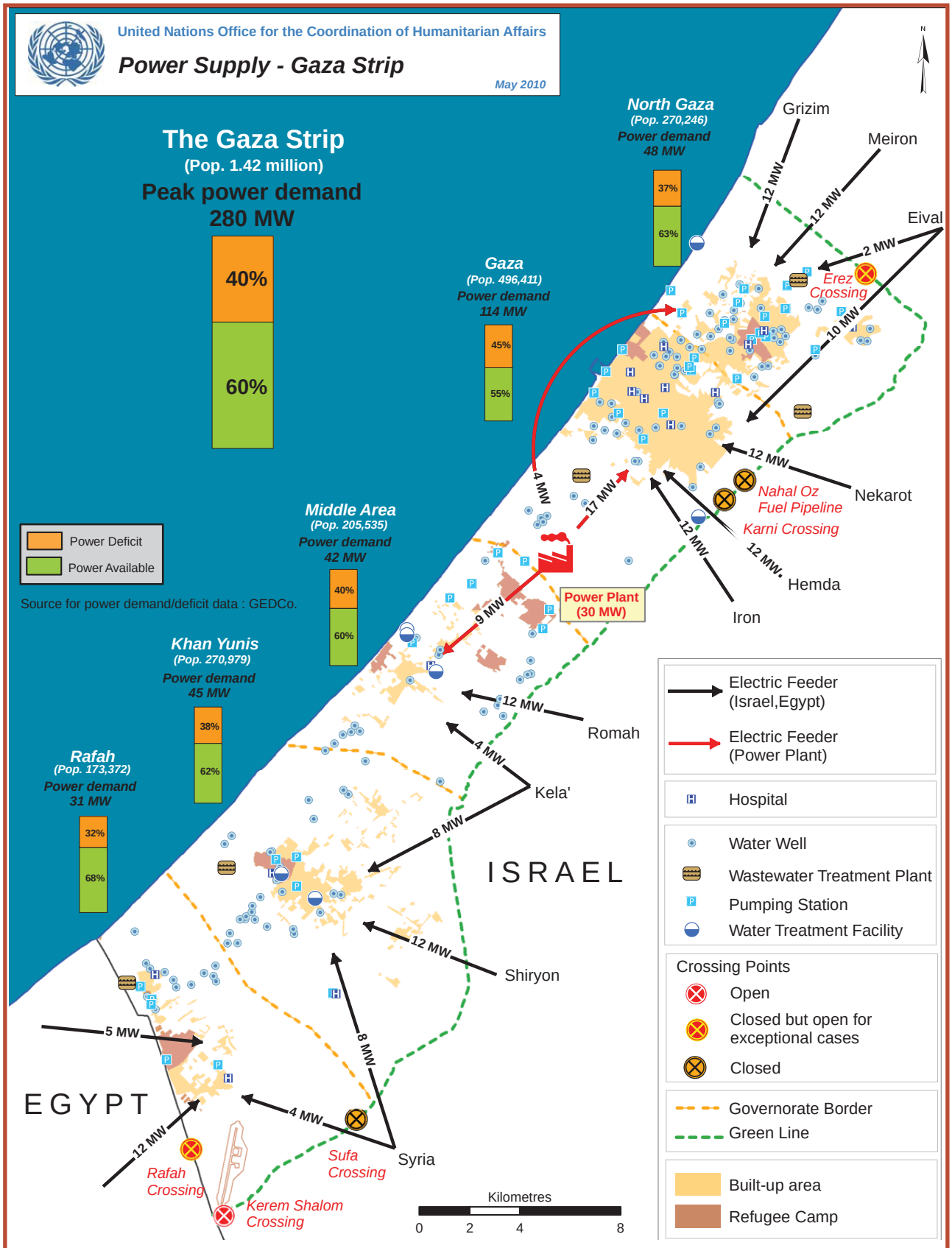
January 2010 to present – Further shortage of fuel for the GPP due to funding constraints and problems in revenue collection leads to increased power cuts.

April 2010 -The PA establishes a mechanism to generate funds from the private sector, international organizations, PA ministries and others that can be used to pay for consumed electricity. Israel approves entry of PA-purchased electricity meters and paper, to measure household electricity consumption and issue bills. At the time of writing, these measures have not yet had an impact on the amount of fuel purchased.

Ministry of Health in Gaza, 27 people were killed and 37 others injured during the first four months of 2010 in generator-related incidents, including the explosion of generators, carbon monoxide poisoning and fires. Among the casualties were three children killed from carbon monoxide poisoning[5] and three other children killed when a fire broke out while pouring fuel into a generator.[6]

Hospitals and clinics

As a result of the electricity cuts, hospitals and clinics rely extensively on the use of back-up generators, which are not designed to function for prolonged periods and are often damaged as a result. Additionally, replacement parts needed to repair them are frequently unavailable. Due to the unpredictability in the power supply, hospitals have had to delay some elective surgeries in order to reduce the risk to patients. Given the limited reliability of generators, hospitals also use Uninterruptible Power Supply (UPS) devices to minimize the damage of power cuts and fluctuations in power to sensitive medical equipment. The effectiveness of the UPS use has been undermined due to the Israeli authorities' restrictions on the import of the batteries needed to operate them.[7] Electricity cuts also affect refrigeration in clinics, causing risks to the quality of vaccines.



The Gaza Strip's needs range between 240 and 280 megawatts (MW), of which at least 42 percent is purchased from Israel, distributed in separate feeder lines along the Gaza Strip, and six to seven percent is purchased from Egypt, distributed mainly to the Rafah area. The remaining electricity need is supposed to be met by the GPP. Following the latest decline in production, however, the GPP is able to meet less than 13 percent of the electricity needs. This is resulting in a deficit of up to 40 percent, compared to 31 percent in August 2009.[8] The Gaza Electricity Distribution Company copes with the electricity shortage by applying a load sharing system, through which it schedules electricity cuts in one area in order to feed another.

Water and sanitation

The proper operation of Gaza City's sewage treatment plant requires 14 days of uninterrupted power supply for the full duration of the treatment cycle. Daily power cuts disrupt sewage treatment and hinder the completion of the treatment cycle, which compounds the problem of partially treated and untreated sewage being discharged into the environment. Because of insufficient wastewater treatment capacity, Gaza's water authorities release 60-80 million liters a day of raw and partially treated sewage into the Mediterranean Sea, in order to avoid sewage flooding residential areas.

Electricity is also needed for pumping water for domestic use and irrigation. Because the pumps cannot be operated continuously, water supply for domestic use is insufficient, raising hygiene and health concerns. In order to pump water to households, the water wells must receive electricity in synchronization with electricity supply to the same households. Almost all the households receive water for only 5-7 hours a day.

Education

Power cuts negatively affect the educational environment, both at school and at home. Studying in darkened classrooms affects students' ability to concentrate as does the sound, smoke and smell from generators, in schools and homes that have them. Food for school canteens cannot be stored adequately as refrigeration cannot be maintained, while water shortages, due to disruptions to the water pumps, result in dirty latrines and a lack of water for hand washing. In addition, the frequent electricity cuts damage electronic equipment used in schools. At schools without generators, students lose practical classes in science and technology, since computer labs are not functioning. Power cuts also affect educational aids used for remedial classes, reducing the efficiency of remedial education, and in training sessions for teachers.

Agriculture

The lack of refrigeration causes significant damage to crops, in addition to an increase in the cost of production. The interruption in the irrigation of crops delays flowers and fruit from ripening, resulting in a decreased ratio of yield compared to input. Similarly, fodder production is interrupted, and the yield of egg production and output of dairy farms reduced, as adequate lighting cannot be provided for laying hens and power cuts interrupt the functioning of milk machines. Power cuts are also a major threat to aquaculture farms, since the pumps needed to filter or oxygenate the water are affected.

Endnotes

1. The plant was able to resume production after the installation of seven new transformers, but these have less capacity than the previous six.
2. In consultation with the Palestinian Authority (PA), the European Commission's commitment to financially support the PA's purchase of fuel supply to the GPP expired in November 2009, re-focusing EC funding to other areas. Since then, the PA has actively pursued reform efforts to increase revenue collection to fund fuel for the plant's operation.
3. The Cabinet also called for a reduction of electricity transfer through the lines supplying electricity from Israel to Gaza, but this decision was never fully implemented. Electricity supply was only decreased on one out of ten lines, from January - March 2008. Since March 2008, no electricity reductions have been reported.
4. In its decision, the Court stated that it was convinced that the quota set by the Israeli government, 2.2 million liters of industrial fuel a week, was sufficient to meet the essential humanitarian needs in the Gaza Strip. Since then, daily amounts approved have never been above 2.2 million litres, although between 3.1 and 3.3 million litres are needed to run the power plant at full capacity.
5. The incident took place in January 2010.
6. The incident took place in February 2010.
7. According to the Palestinian Ministry of Health, a number of UPS devices used for dialysis, MRI and CT units are lacking and other UPS devices have been out of order for more than a year, because of dead batteries or lack of spare parts needed to make them functional.
8. The last available data from GEDCo for 2009 is from August 2009.