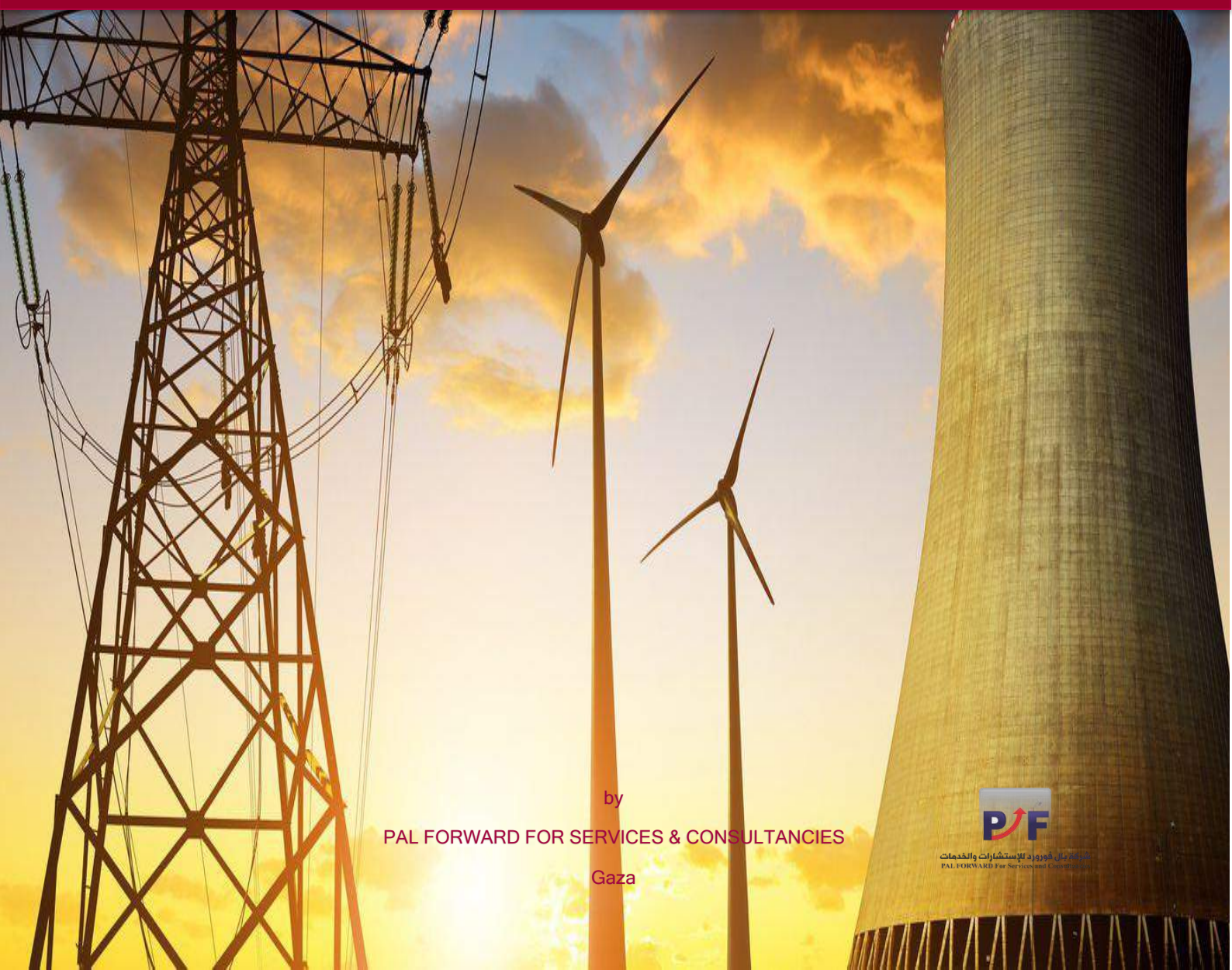


The International Committee of the Red Cross (ICRC)

November 2020



The Impact of the Electricity Crisis on The Humanitarian & Living Conditions in the Gaza Strip – Survey Study



by

PAL FORWARD FOR SERVICES & CONSULTANCIES

Gaza



Table of Contents

TABLE OF CONTENTS-----1

PROCEDURAL TERMS OF THE STUDY -----2

 STUDY TERMS -----2

EXECUTIVE SUMMARY -----3

PART ONE: OVERVIEW AND BACKGROUND OF THE STUDY -----5

 OVERVIEW-----5

 STUDY OBJECTIVE -----6

 STUDY METHODOLOGY -----6

 .1 Study Approach-----6

 .2 Study sample and design-----6

 .3 Study tool-----6

 .4 Study time limits-----6

 .5 Implementation mechanisms-----6

PART TWO: STUDY RESULTS AND CONCLUSION -----7

 THE DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE-----7

 SECOND: RESULTS OF THE STUDY -----7

 1. The amount of electricity a citizen receives from the public electricity grid:-----7

 2. Alternative sources of electricity from the public network, access to it, and reasons why citizens are prevented from obtaining it: -----9

 3. Everyday problems and impacts due to lack of electrical power:----- 11

 4. The effect of the lack of electric power on citizens' Mental health: -----13

 5. The impact of the lack of electricity on citizens' ability to refrigerate food: -----14

 6. Adaptation mechanisms in the event of food failure -----15

 7. Actions by citizens on the return of the electric current:----- 16

 8. The impact of the lack of electricity on citizens' daily business:----- 16

 9. Power shortage affects citizens' lives:-----17

 10. Can owning 24 hours of energy a day change the lives of individuals? ----- 18

CONCLUSION----- 19

LIST OF SOURCES AND REFERENCES -----20

Procedural terms of the study

Study terms

The study relied on the following procedural definitions:

- **Electricity:** The electric power that operates all the electrical tools used in the Gaza Strip and is supplied by the electric power plant in the Gaza governorates, and the company buys this energy from several sources: The Distribution Company, Israel, Egypt.)
- **Alternative Energy:** Alternative energy in this study is the energy obtained by a citizen from sources other than the distribution company, which is diverse in type and source and include high-capacity energy sources (commercial generators, roof-top solar panels, batteries above 100 V) and those with limited capacity (Batteries below 18 V, LED, and Candles).

Executive Summary

In light of the challenges posed by the electricity crisis in the Gaza Strip and to its residents, the current study was undertaken by the International Committee of the Red Cross (ICRC), a neutral humanitarian institution working to protect and assist civilians affected by armed conflict, seeks to highlight the humanitarian challenges facing civilian populations in the areas in which they operate. The study uses the analytical approach, both quantitative and qualitative. The sample of the study was composed of (347) citizens of both genders and distributed to the five governorates (Gaza Strip). The study also relied on the questionnaire as a key information-gathering tool and, after analyzing the information, the results were as follows:

1. 86.2% of the sample reported that they received electricity for (6–8) hours daily on average during the year.
2. 80.1% of the sample reported that the lowest amount of electricity they received in one day last year was less than 4 hours.
3. 26.8% of the sample reported that they could not access any alternative power source either at high or low capacity, in which 91.4% of them stated they were unable to pay for additional energy, while 8.6% said they could not access any alternative power source because they initially refused to pay for additional energy costs.
4. 57.1% who rely on alternative energy sources cannot access alternative high-capacity energy sources sufficient to meet their needs and work.
5. 22.0% of those who rely on alternative energy sources have access to commercial generators available in residential neighborhoods as a high-power alternative energy source, compared to only 8.7% who rely on solar systems as an alternative energy source.
6. Village residents can have access to a lower alternative energy source than other residents of cities and camps.
7. Residents of Gaza governorate have more access to alternative energy sources, followed by northern Gaza governorate, central governorate, Rafah governorate, and finally Khan Younis governorate which have less access to alternative energy sources.
8. About 77.0% of the sample think that the most important problems due to lack of electricity are "their inability to complete electricity-based household work" and "inability to store food and vegetables in the refrigerator for fear of damage". While 57.0% of the sample believes that the most important problems due to lack of electricity are "failure of electrical appliances in case of a frequent and sudden power outage", and "the heat suffering during the summer because of the inability to cool the environment".
9. Other energy sources that citizens have access to have contributed to a limited extent in reducing or limiting some of the problems caused by the lack of electricity provided by the public network.
10. 94.0% of citizens believe that the lack of electricity is affecting their mental health.

11. 82.0% of citizens are unable to refrigerate food due to the lack of electricity provided by the public network.
12. The more hours of electricity citizens get from the public network, the more they can refrigerate and store food.
13. The higher the power of alternative energy sources available, the more the refrigerator and coolers are used to refrigerate food by people.
14. One of the adjustment mechanisms used in case food is unable to be refrigerated is to go to the market every day to buy the daily needs of food and drink as indicated by 51.2% of the sample, while people are not buying foods that need refrigeration for fear of corruption was indicated by 40.3%. Moreover, 8.5% use another person's refrigerator to refrigerate their food as an adaptive mechanism.
15. When the power is restored, citizens take several actions as their first action; almost 53.0% reported that they operate the necessary household appliances such as (fan - air-conditioning - fridge - washing machine - iron - electric oven - TV, etc..). However, 24.2% said they are operating the water pump to fill the tanks as the first act on the return of electricity, while 15.3% charge home batteries for recharging.
16. The lack of electricity has a major impact on the daily work of citizens, such as changing the daily routine of life, according to 37.9% of citizens, changing the working hours, as 35.9% of citizens have said, and losing the source of livelihood to rely on electricity, according to 15.9%. The reduction in working hours, therefore, is the decrease in workers' wages, as 10.3% of citizens said.
17. The lack of electricity has had a significant negative impact on the lives of citizens in the Gaza Strip, which has contributed to the worsening of the difficult humanitarian situation and the deteriorating economic conditions caused by the blockade; Such as damage to electrical equipment, increased physical cost of life, poor health of some patients, and poor mental condition.
18. About 99.42% of citizens believe that availing of 24-hour power can change their lives.

Part One: Overview and Background of The Study

Overview

Gaza's population is experiencing extremely complex humanitarian and living conditions as a result of these restrictions on movement. The OCHA Humanitarian Needs Report 2020 confirms that 75% of the population is somehow affected by the humanitarian impact of limited access to basic services. The report also noted that a large number of Palestinians were extremely vulnerable and needed to improve their access to basic services, including education, health, water, sanitation, hygiene, and adequate shelter. (OCHA: 2020) the electricity crisis in the Gaza Strip.

According to OCHA, the demand for electricity in the Gaza Strip is estimated at 470 megawatts, of which approximately 45% are currently being met. All areas in the Gaza Strip suffer from scheduled electricity outages of 12-18 hours a day, while densely populated areas are most affected. Owing to severe fuel shortages since July 2013, when the Gaza power plant was operating at about half of its capacity (60 MW out of 120 MW), it was necessary to shut it down on several occasions. Also, Gaza relies on electricity from Israel (120 MW) and Egypt (28 MW) as well. Nearly 70% of households do not pay their electricity bills because they are unable to pay them or because of not imposing collection of those bills. More than 70% of Gaza's households are supplied through municipal water systems for a period of 6-8 hours every two to four days, owing to inadequate energy supply (water supply, sanitation, and hygiene). Up to 90 million liters of partially treated wastewater were dumped in the Mediterranean Sea daily due to lack of electricity and fuel.

Although the station is partially repaired, there is a shortage of fuel for its operation, which causes a large shortage of electricity supplies, with power outages of 16 hours per day. In this context, the Euro-Mediterranean Human Rights Observatory referred to several facts such as:

- In June 2019, and at the beginning of 2020, the total number of hours of a power outage was from 16 to 20 hours because Israel stopped entering the fuel. Gaza Strip citizens received about six hours of electricity, followed by eight hours of an outage.
- About 30% of Gaza's population are deprived of their right to water due to the continuous power outage.
- Less than half the amount of fuel needed to operate the Gaza power plant at full capacity is available.
- About 100 million liters of contaminated (untreated) wastewater is pumped daily in the Mediterranean Sea due to lack of energy, polluting the beaches.
- The electricity crisis forced hospitals to postpone non-emergency surgical operations, thus increasing the estimated waiting period by 16 months by the beginning of 2020, compared with 3 months in 2000.

Study Objective

In the light of the above-mentioned data, this study comes from the International Committee of the Red Cross (ICRC) to highlight the humanitarian challenges and needs posed by the electricity crisis for the Gaza Strip by presenting it as information material to the international community that highlight the daily challenges faced by the population in the Gaza Strip in the light of the electricity crisis.

Study Methodology

1. Study Approach

The study was based on the descriptive analytical approach in its quantitative form, through which information was collected from the study community which was determined in consultation with the Red Cross.

2. Study sample and design

The sample of the study was composed of (347) citizens of both genders and distributed to the five governorates of Gaza. It was also considered that they were adults and aged over 18 through contact lists prepared by the company and also through contact lists sent to the company from the Red Cross who were beneficiaries of projects previously worked on by the Red Cross.

3. Study tool

In collecting information, the study relied on the questionnaire that was prepared and presented to a group of specialists and was then presented to the Red Cross, which in turn approved it with some modifications.

4. Study time limits

The fieldwork was conducted from September to November 2020.

5. Implementation mechanisms

Fieldwork was conducted through cellular phone connections following the criteria by identifying the caller name and the target of the call, and it took 7-12 minutes for each interview to connect.

PART TWO: STUDY RESULTS AND CONCLUSION

The demographic characteristics of the sample

The sample study was composed of 347 subjects distributed according to many demographic variables, as shown in the following table:

Gender	Male %62.5	Female %37.8			
Age	18-35 years %33.7	36-55 years %51.3	56 years above %15		
Living area	Village %15.3	City %56.2	Camp %28.5		
Governorate	North Gaza %22.2	Gaza %34.6	Dair Al-Balah %15.2	Khan Younis %16.1	Rafah %11.8
Construction type	Cement %80.1	Iron metal roof %7.2	Asbestos %12.7		
Nature of work	Students %2	Housewife %13.5	Unemployed %35.7		
	Daily worker %3.6	Private business %17.3	Private sector %8.9		
	Private organization employee %6.3	Government employee %11.5			

Second: Results of the study

1. The amount of electricity a citizen receives from the public electricity grid:

According to statistical analysis of the amount of electricity that a citizen receives, many results are shown in the following figures (1.1 – 1.2 – 1.3 – 1.4):

- 86.2% of the sample indicated that they received electricity for (6 – 8) hours a day on average during the year. When comparing the current year to the last year, we note that there has been a marked improvement in the number of hours a citizen gets electricity daily.

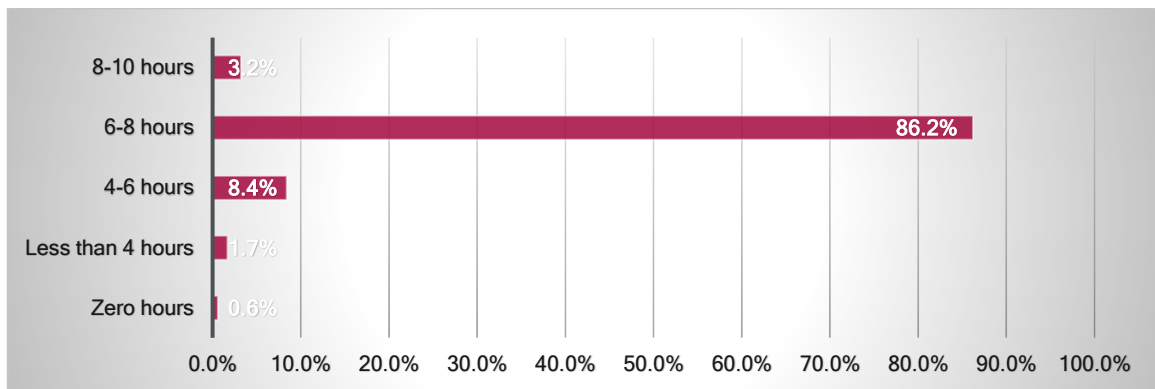


Figure 1.1 - The number of hours of energy per day

- 80.1% of the sample indicated that the least amount of electricity they received in one day last year was less than 4 hours.

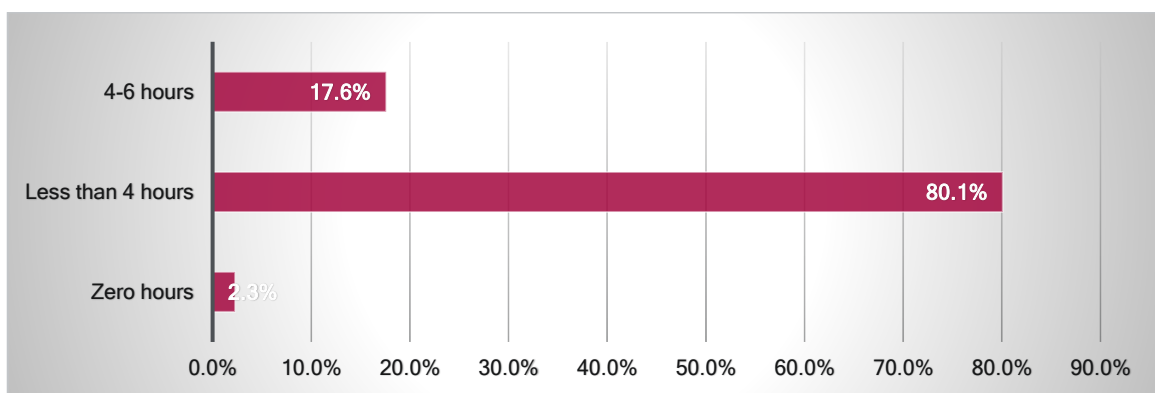


Figure 1.2 - The least amount of energy the citizens have received over the past year

- There are no differences between the residents of the village, city, and the camp in the number of hours of electricity the population receives.

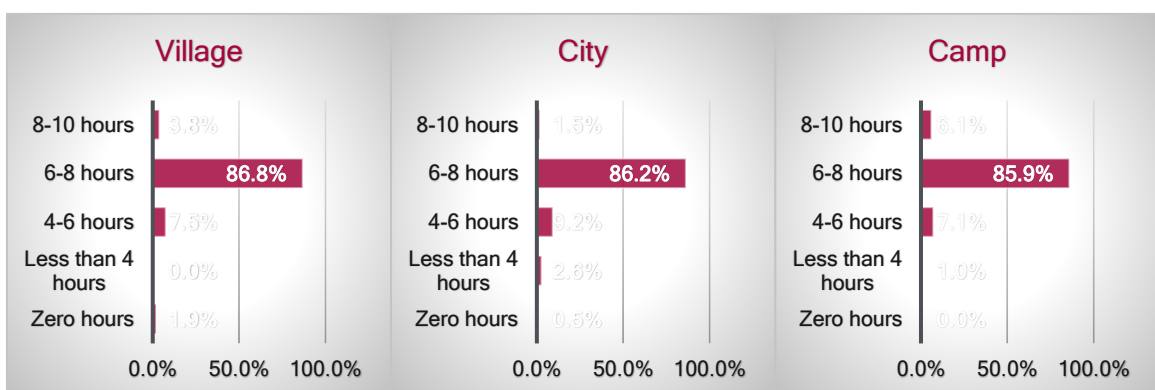


Figure 1.3 - The differences between the residents of the village, city and camp

- The results showed that Khan Younis governorate was the most conservative which got (6 - 8) hours of electricity compared to other Gaza Strip governorates (as stated by 92.9% of Khan Younis governorate's sample), followed by the governorate of middle Gaza, the governorate of Rafah, and finally, the governorate of Gaza was the least governorate that got (6 - 8 hours) of electricity.

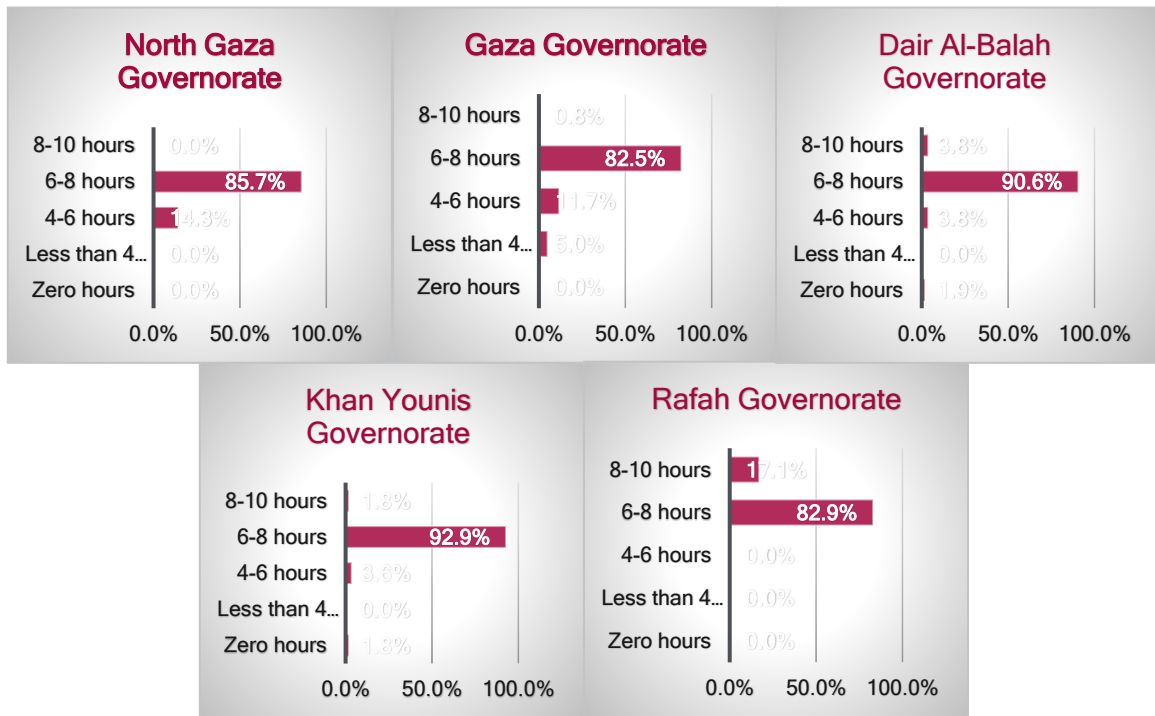


Figure 1.4 - Differences between governorates

2. Alternative sources of electricity from the public network, access to it, and reasons why citizens are prevented from obtaining it:

- Figure 2.1 shows that 26.8% of the sample population reported that they could not access any alternative power source either at high or low power, while 73.2% indicated that they could access one or more alternative energy sources.

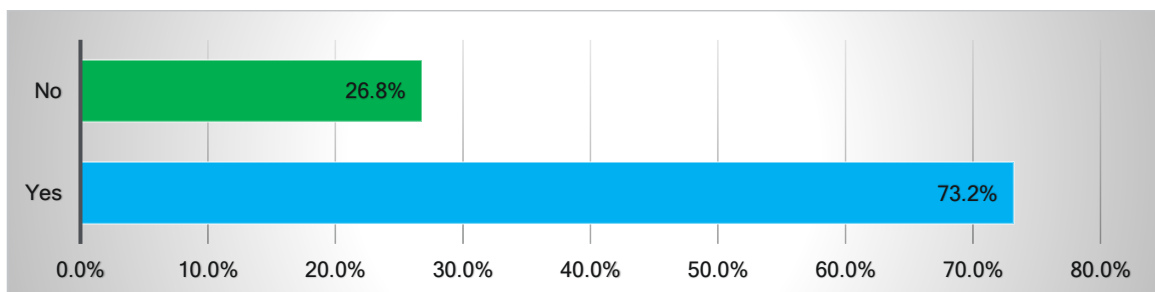


Figure 2.1 - Access to alternative energy sources

- Figure 2.2 shows that 91.4% of those who reported that they cannot access any alternative power source are because they are unable to pay for additional energy, and 8.6% of them reported that there was a hesitant refusal to pay for additional energy.

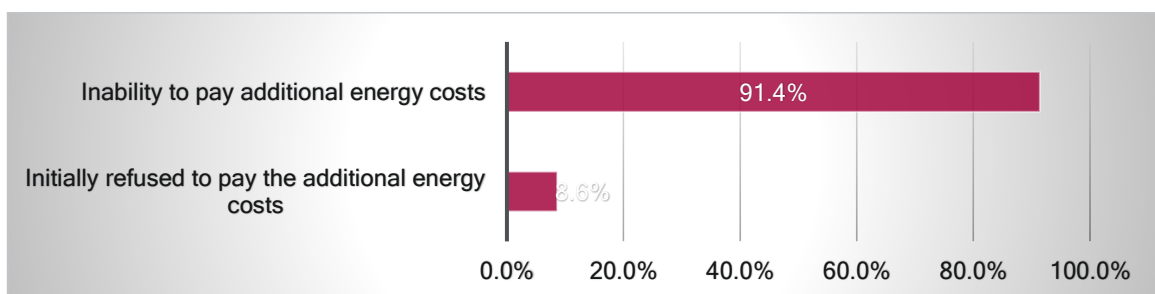


Figure 2.2 - Reasons for the inability to reach an alternative energy source

- Figure 2.3 shows that 57.1% of those with access to a replacement power source rely on a low-power replacement power source (a low-power grid and a 12-volt battery) as this system is the lowest-quality alternative energy source due to the low financial cost of this source compared to other power sources. But this source is not enough to meet their needs and work. While 22.0% of those with access to an alternative energy source report that they rely on commercial generators in residential neighborhoods as a high-capacity alternative energy source, as well as 8.7%, depending on solar systems as an alternative energy source.

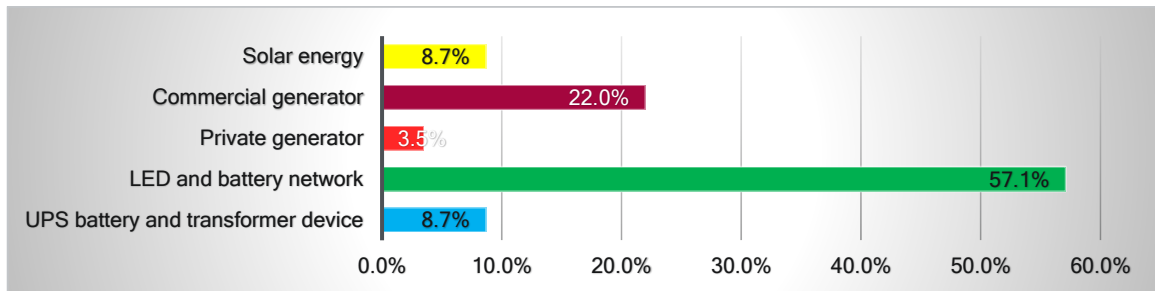


Figure 2.3 - Alternative energy sources for those who have access to them

- Figure 2.4 shows that villagers have less access to alternative energy sources than other residents of cities and camps.

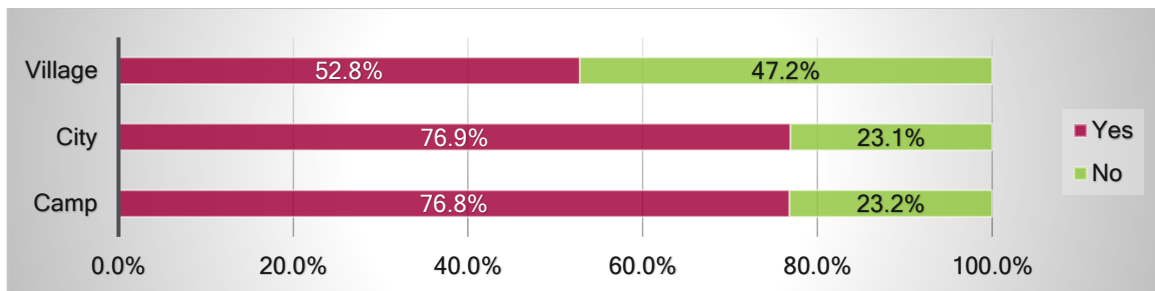


Figure 2.4 - Village residents' ability to access alternative energy sources

- According to figure 2.5, residents of Gaza governorate have more access to alternative energy sources, followed by the northern Gaza governorate, the middle governorate, Rafah governorate, and finally Khan Younis governorate, with less access to alternative energy sources.

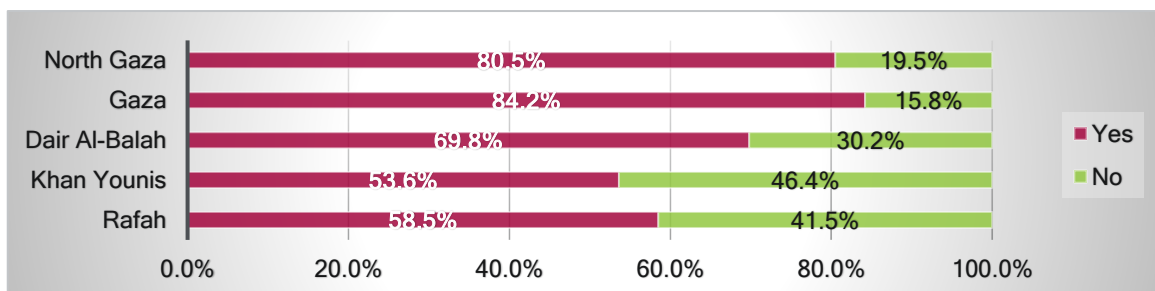


Figure 2.5 - Governorates residents' ability to access alternative energy sources

- In the same context, figure 6.2 indicated that the residents of the northern Gaza governorate rely more on a network of generators and a battery as an alternative energy source, followed by the governorates of Khan Younis and Rafah in the same proportion, then the middle governorate and finally Gaza governorate, which is the least governorate depending on the LED and battery network. Residents of Gaza and Rafah governorates rely more than others on a line of a commercial generator as a source of energy, followed by the middle governorate, the northern Gaza governorate, and finally, the southern Gaza governorate of Khan Younis, in which it came to the least governorates based on commercial power supply lines. The population of the middle governorate depends more than others on solar energy as a source, followed by Khan Younis governorate, Gaza governorate, and finally northern Gaza governorate, and the results showed no reliance on solar energy for Rafah governorate. The residents of Khan Younis governorate rely more on the UPS as a power source, followed by the central governorate, the Gaza governorate, and finally the northern Gaza governorate, and the results showed no reliance on the Rafah governorate on the UPS as a power source. The residents of the northern Gaza governorate rely more on special generators as a source of energy, followed by the Gaza governorate, Khan Younis governorate, and finally the middle governorate, and the results showed no reliance on private generators as a source of energy for the governorate of Rafah.

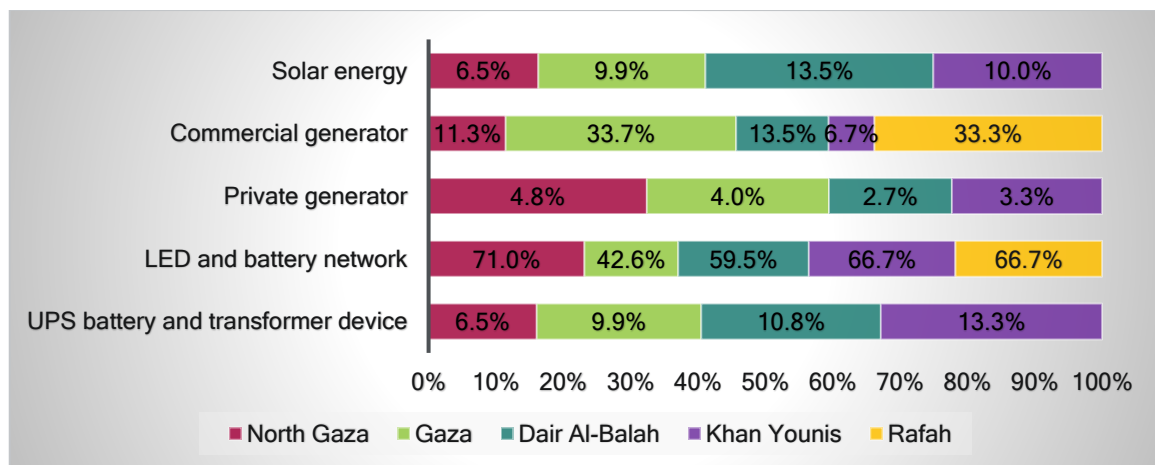


Figure 2.6 - Alternative energy sources for those who have access to it, by governorates

3. Everyday problems and impacts due to lack of electrical power:

- Figure 3.1 shows that 77.5% of citizens believe that the most important problems due to lack of electricity are "their inability to complete electricity-based household work", and 76.4% of citizens believe that the most important problems are "inability to store food and vegetables in the refrigerator for fear of spoilage". Also, 57.1% of citizens believe that the most important problems due to lack of electricity are "failure of electrical appliances in case of frequent and sudden power outages", and "suffering from heat during summer because of the inability to cool the environment", while 54.2% of citizens believe that the most important problems are "loss of water for domestic use".

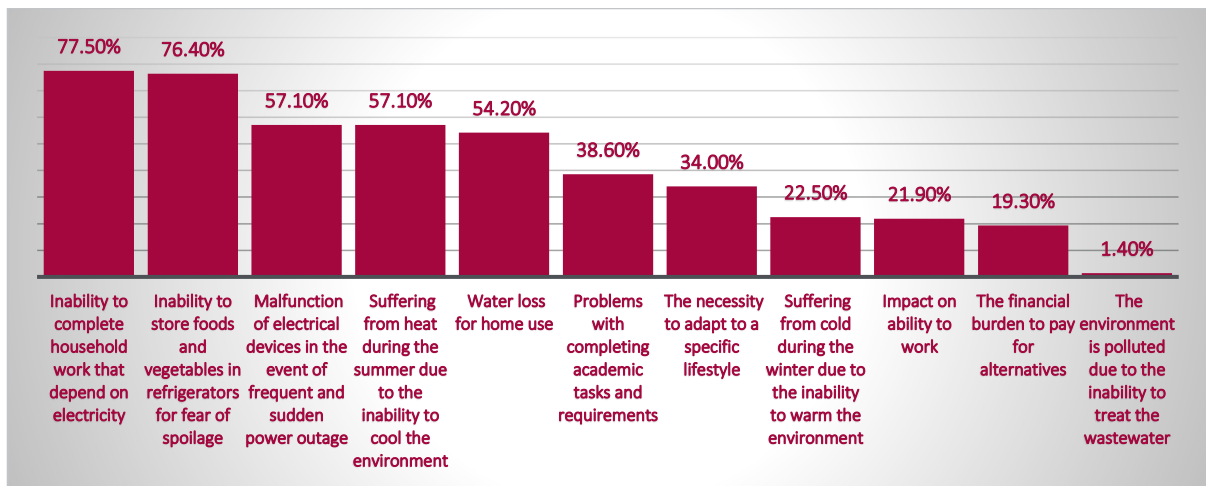


Figure 3.1 - Daily problems facing citizens

- Figure 3.2 indicates that males among the study population suffer and face daily problems as a result of less electricity than females, possibly because the responsibility for providing family needs and amenities, including alternative energy sources, lies primarily on males over females.

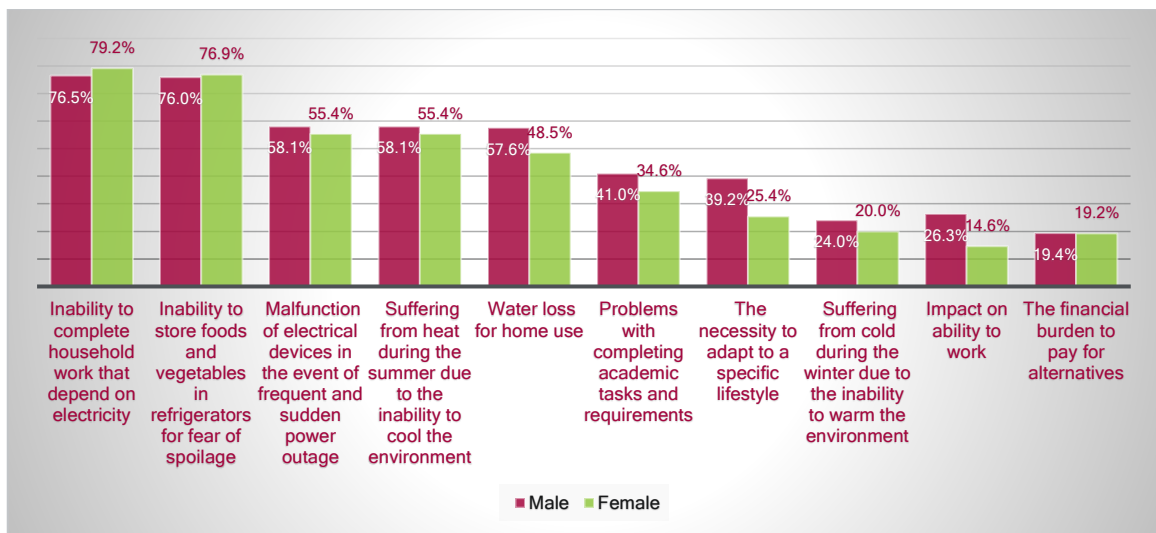


Figure 3.2 - A comparison of the problems caused by the lack of electrical energy by gender

- Figure 3.3 shows the alternative energy sources of the public network that citizens have access to, which have contributed to reducing some of the problems caused by the lack of electricity, and has not been able to reduce some problems; Where:
 - ✓ 77.6% of citizens who have access to an alternative energy source still suffer during the winter because they are unable to warm homerooms.
 - ✓ 76.0% of citizens who have access to an alternative energy source do not have the problem of the financial burden of paying for alternatives.
 - ✓ 75.2% of citizens who have access to an alternative energy source do not have the problem of being able to work and perform tasks.
 - ✓ 66.5% of citizens who have access to an alternative energy source do not have the problem of adapting to a specific lifestyle.

- ✓ 58.3% of citizens who have access to an alternative energy source do not have problems with the fulfillment of tasks and school requirements for their family members or their selves.
- ✓ 46.5% of citizens who have access to an alternative energy source do not have the problem of water loss for household use.
- ✓ 42.5% of citizens who have access to an alternative power source do not have the problem of electrical equipment failure in the event of frequent and sudden power outages.
- ✓ 41.3% of citizens who have access to an alternative energy source do not suffer during the summer from the heat due to the inability to cool the environment.
- ✓ 22.0% of citizens who have access to an alternative energy source do not have the problem of being unable to complete electricity-based household works.
- ✓ 20.5% of citizens who have access to an alternative energy source do not suffer from the problem of the inability to store food and vegetables in refrigerators for fear of spoilage.

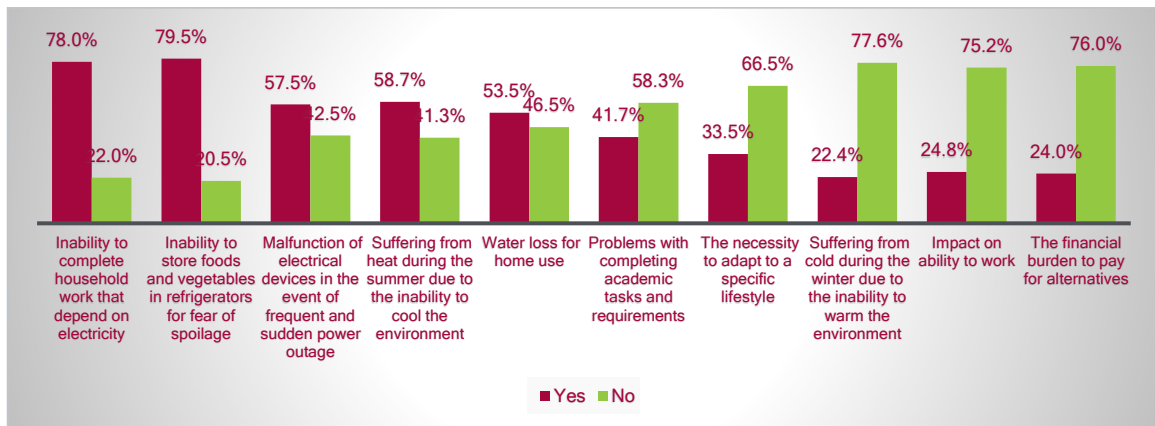


Figure 3.3 - The contribution of alternative energy sources to solve the problems caused by the lack of electric power

4. The effect of the lack of electric power on citizens' Mental health:

- Figure 4.1 shows that 94.0% of citizens believe that the lack of electricity is affecting their mental health.

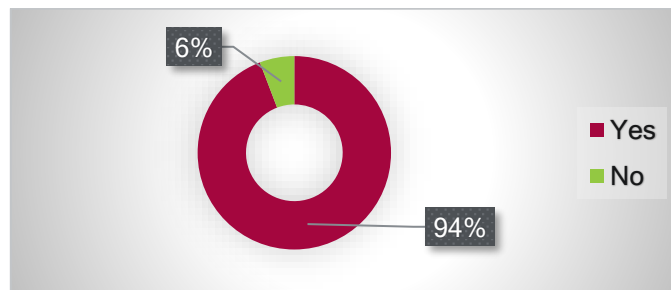


Figure 4.1 - The effect of the lack of electric power on the mental health of citizens

- Figure 4.2 shows that lack of electricity affects the mental health of both males and females.

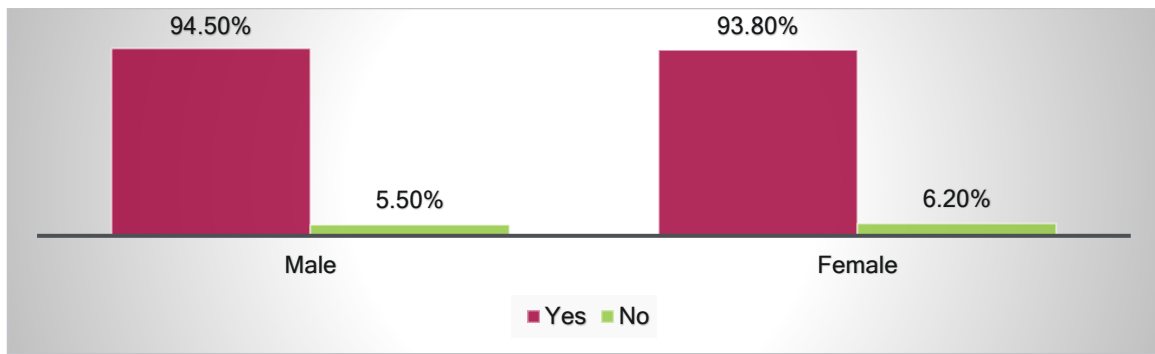


Figure 4.2 - Male and female comparison of the effect of energy on mental health

- Figure 4.3 shows that lack of electrical energy affects the mental health of all age groups, but the impact is greater on the age group between 36-55 years old.

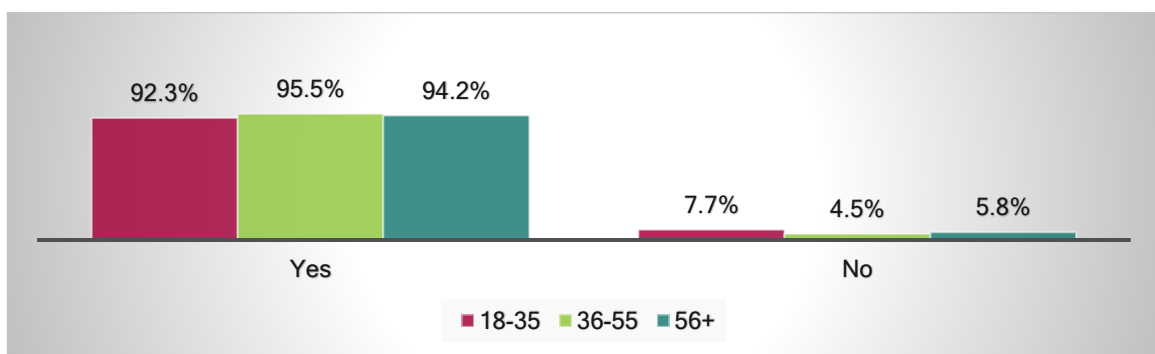


Figure 4.3 - Comparison of age groups

5. The impact of the lack of electricity on citizens' ability to refrigerate food:

- Figure 5.1 shows that 82.0% of citizens cannot refrigerate food due to lack of electricity.

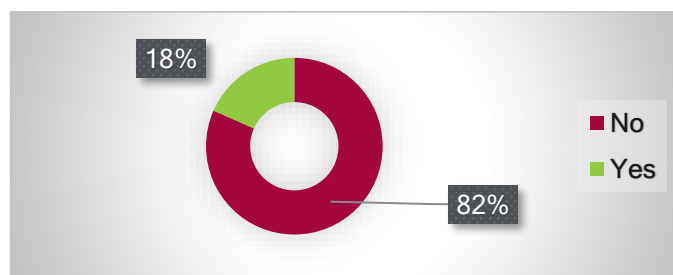


Figure 5.1 - The effect of electricity shortage on citizens' ability to refrigerate food

- Figure 5.2 the more hours of electricity citizens can get, the more they can refrigerate and store food, as only 3.4% of citizens can refrigerate food with 4-6 hours of electricity per day. While 18.7% of citizens can refrigerate food with 6-8 hours of electricity per day, while on the other hand, 54.5% of citizens can refrigerate food with 8-10 hours of electricity per day.

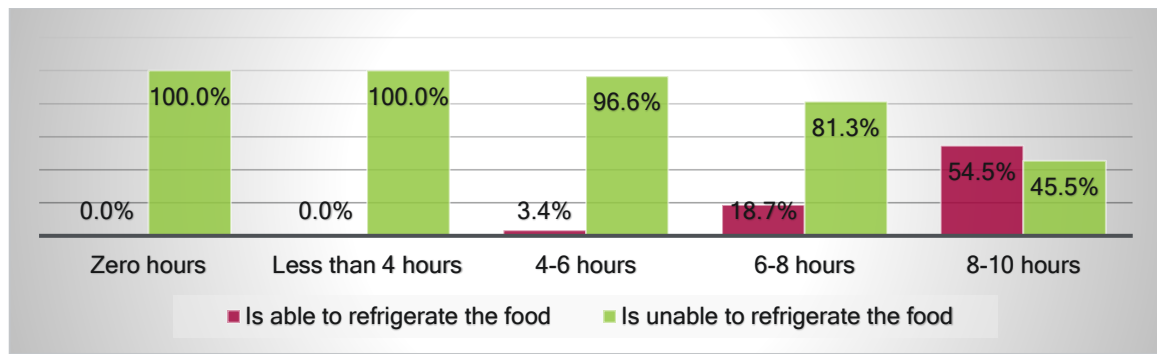


Figure 5.2 - A comparison between citizens' ability to refrigerate food and increase the number of hours of electric energy

- Figure 5.3 shows that the more alternative energy sources allow the operation of refrigerators and freezers used to refrigerate food, the more citizens can refrigerate food, as 36.4% of citizens with solar energy systems can refrigerate food. On the other hand, 14.3% of citizens with commercial power lines can refrigerate food, while 11.1% of citizens with special generators can refrigerate food, and only 9.1% of citizens with an inverter and a battery (UPS) can refrigerate food.

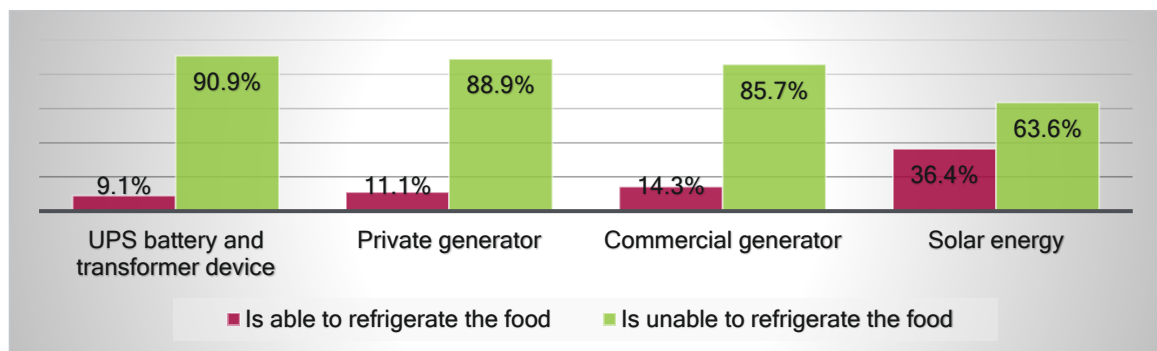


Figure 5.3 - A comparison between citizens' ability to refrigerate food and their ability to access an alternative energy source

6. Adaptation mechanisms in the event of food refrigeration failure

- Figure 6 shows the adaptations used in the event of food refrigeration failure, as 51.2% of them go to the market every day to buy daily food and drink needs, while 40.3% do not buy foods that need to be refrigerated for fear of spoilage. Therefore, 8.5% of them have to use someone else's refrigerator to refrigerate their food.

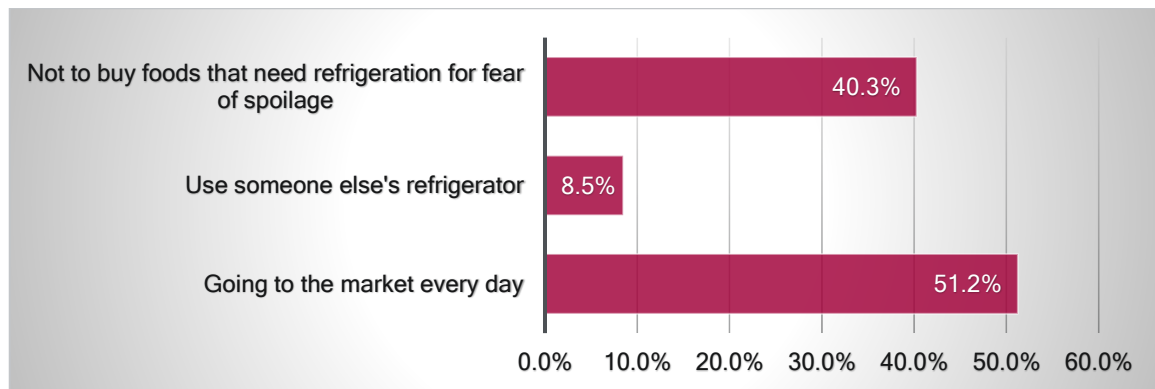


Figure 6 - Coping mechanisms used when food cannot be refrigerated

7. Actions by citizens on the return of the electric current

- Figure 7 shows that citizens conduct several acts upon the return of electricity; where such as:
 - ✓ More than half of the sample (53.0%) operates the necessary household appliances such as (fan, air conditioning, fridge, washing machine, iron, electric oven, TV, etc..) as the first act they take when the power is restored.
 - ✓ Approximately one-quarter of the sample (24.2%) operates the water pump to fill the tanks as their first action when the electrical current returns.
 - ✓ 15.3% of the sample will charge the batteries to replace the power as the first action they will take when the electrical current returns.
 - ✓ 7.5% of the sample only charge the cellular devices as their first act when the electrical current returns.

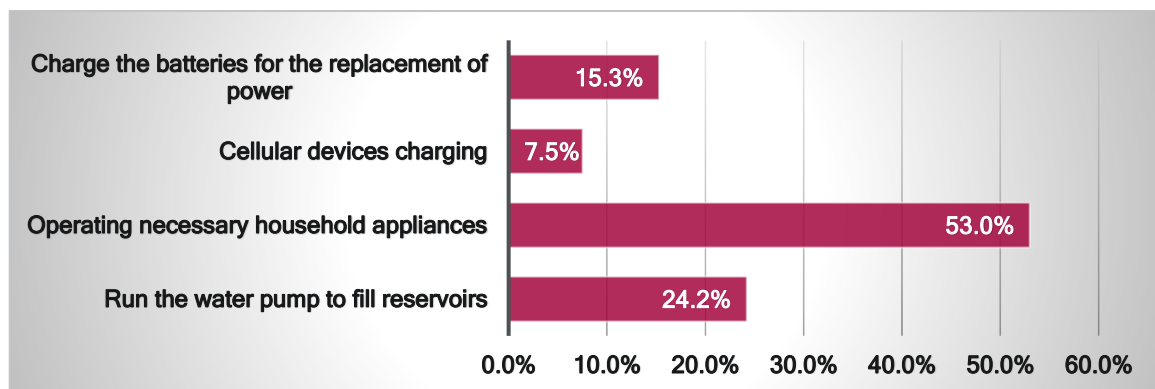


Figure 7 - Actions by citizens on the return of the electric current

8. The impact of the lack of electricity on citizens' daily business

- Figure 8 shows that the lack of electricity has a significant and varied impact on the daily work of citizens, according to the sample members who do daily work during the time of the study. The effects of a lack of electricity on them were as follows:
 - ✓ 37.9% reported that a lack of electricity caused the daily routine of life (sleeping, wake-up, study, and homework hours) to change.
 - ✓ 35.9% reported that the lack of electricity caused a change in working hours.

- ✓ 15.9% reported that the lack of electricity caused a loss of livelihood to depend on electricity.
- ✓ 10.3% reported that the lack of electricity caused a decrease in working hours, which affected their low wages.

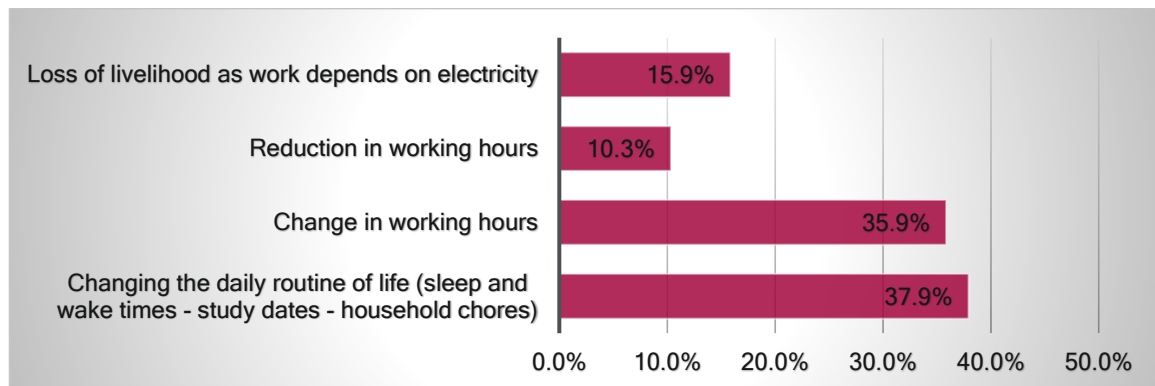


Figure 8 - The impact of the shortage of electricity on the daily business of citizens

9. Power shortage affects citizens' lives

- Figure 9 shows that the lack of electricity has had a significant negative impact on the lives of citizens in the Gaza Strip, which has contributed to the worsening of humanitarian and economic conditions caused by the blockade. The most important effects were:
 - ✓ 24.0% reported that the lack of power caused damage to electrical equipment.
 - ✓ 18.0% reported that a lack of electricity caused a financial cost increase in life.
 - ✓ 15.0% reported that the lack of electricity caused the poor state of health of some patients.
 - ✓ 10.1% reported that the lack of electricity caused the poor state of mental health for people.
 - ✓ 7.9% reported that lack of electricity led to incapacity to do personal business.
 - ✓ 7.5% reported that lack of electricity led to an inability to follow up on education and study.
 - ✓ 7.5% reported that the lack of electricity caused an increase in home workloads.
 - ✓ 4.5% reported that lack of electricity led to food spoilage.
 - ✓ 3.7% reported that a lack of electricity had led to an inability of PWD to charge their wheelchair and do some work related to their lives which is based on electricity.
 - ✓ 1.9% reported that the lack of electricity led to the loss of opportunities for enrollment in scholarships.

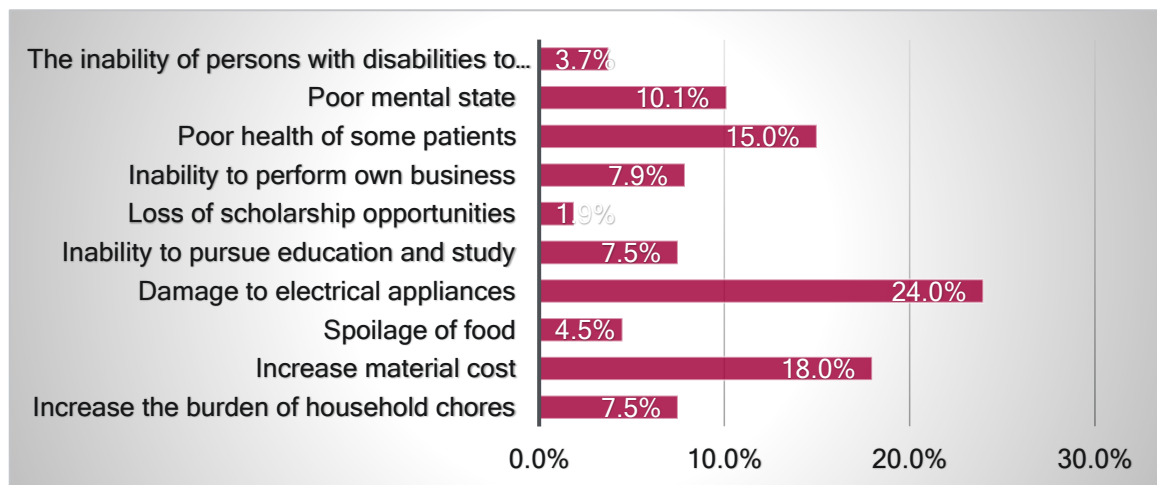


Figure 9 - The impact of electricity shortages on the lives of citizens

10. Can owning 24 hours of energy a day change the lives of individuals?

- Figure 10 shows that 99.42% of citizens believe that having 24 hours of energy a day can change their lives.

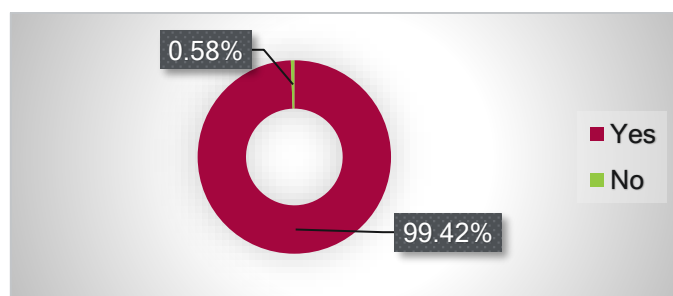


Figure 10 - Changing the lives of people in the event of possession of energy 24 hours a day

Conclusion

Based on the previous review and after analysis of the data, it can be argued that the study found that the majority of the sample had access to electricity for (6-8 hours per day, on average during the year, and that the lowest amount of electricity that citizens received in one day last year was less than 4 hours). The findings also indicate that three-quarters of Gaza's citizens have access to one or more alternative energy sources, whether low-capacity, such as an 18-volt LED network or high capacity such as relying on commercial generators available in residential neighborhoods. While about a quarter of citizens have no access to an alternative energy source because they are unable to pay for additional energy or have a primary refusal to pay for additional energy, this means that they should be assisted.

The results also indicated that villagers have less access to alternative energy sources than other residents of the cities and camps, as residents of the Gaza governorate have more access to alternative energy sources, followed by the northern Gaza governorate, the central governorate of Rafah, and finally the Khan Younis governorate which have less access to alternative energy sources. This means that if assistance is provided, it should be allocated to the villagers.

Besides, more than three-quarters of citizens suffer from many problems resulting from lack of electricity, such as "their inability to complete electricity-based household work" and "inability to store food and vegetables in the refrigerator for fear of spoilage. Apart from electrical failure in the event of frequent and sudden power outages, severe heat suffering during the summer due to an inability to cool the environment, and loss of water for household use. One problem caused by the lack of electricity also is its negative impact on the mental health of the vast majority of citizens. In addition to the daily negative impact of the lack of electricity, such as changing working hours, the loss of livelihoods to depend on electricity, and a reduction in working hours.

The above justifies the need to intervene to help, especially if we know that the more hours of electricity citizens have, the more they can refrigerate and store food, and that is, the less alternative energy systems that allow the operation of refrigerators and freezers used to refrigerate and preserve food.

List of sources and references

- The Palestinian Central Bureau of Statistics, <http://www.pcbs.gov.ps/site/lang>
- EuroMed Human Rights Watch <https://euromedmonitor.org/ar/gaza>
- United Nations Office for the Coordination of Humanitarian Affairs in the Occupied Palestinian Territory (OCHA): Overview of the humanitarian needs for 2020, Occupied Palestinian Territory - Follow-up Panel.
https://www.ochaopt.org/sites/default/files/dashboard_in_arabic.pdf
- United Nations Office for the Coordination of Humanitarian Affairs in the Occupied Palestinian Territory (OCHA): Impact of the Gaza electricity and fuel crisis on humanitarian conditions July 2015.