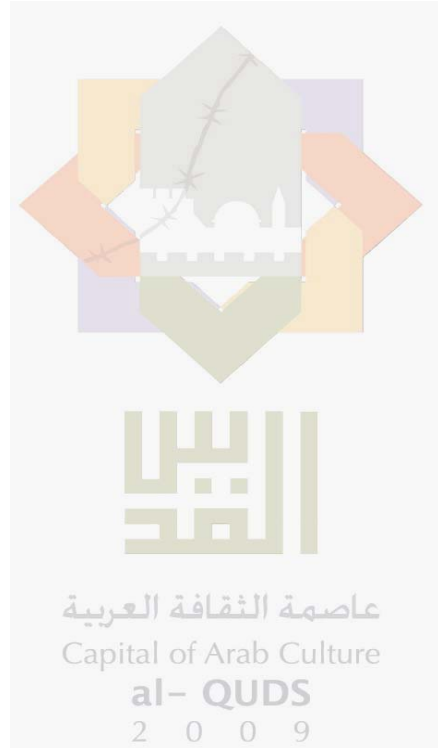
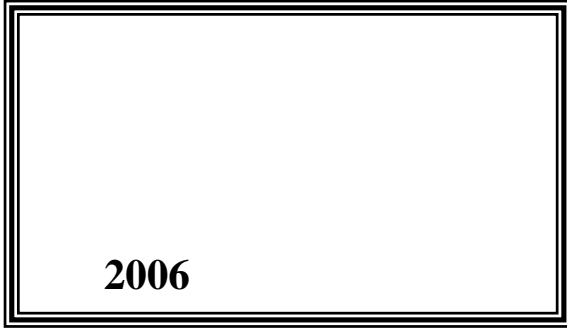


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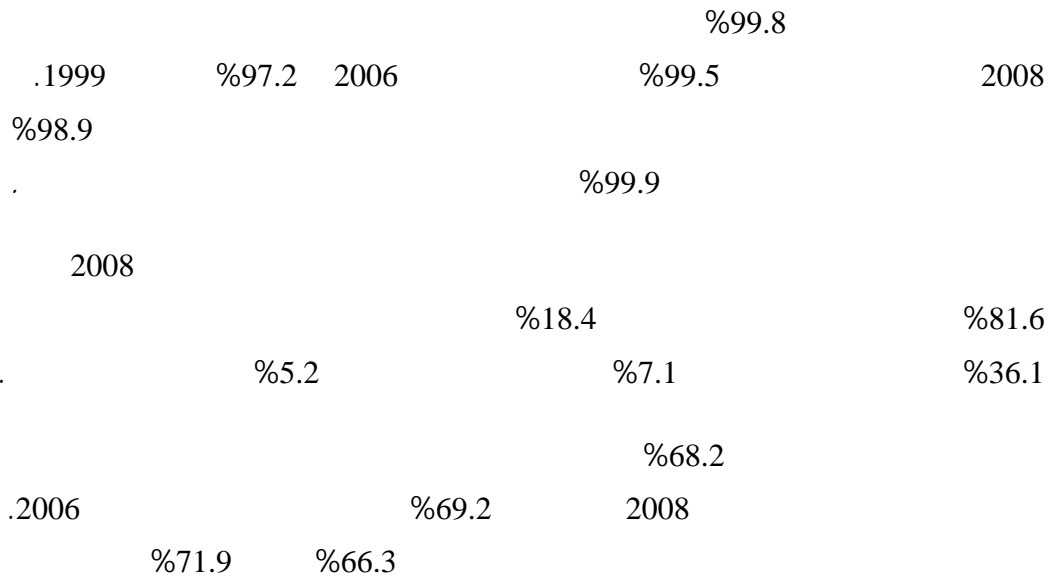
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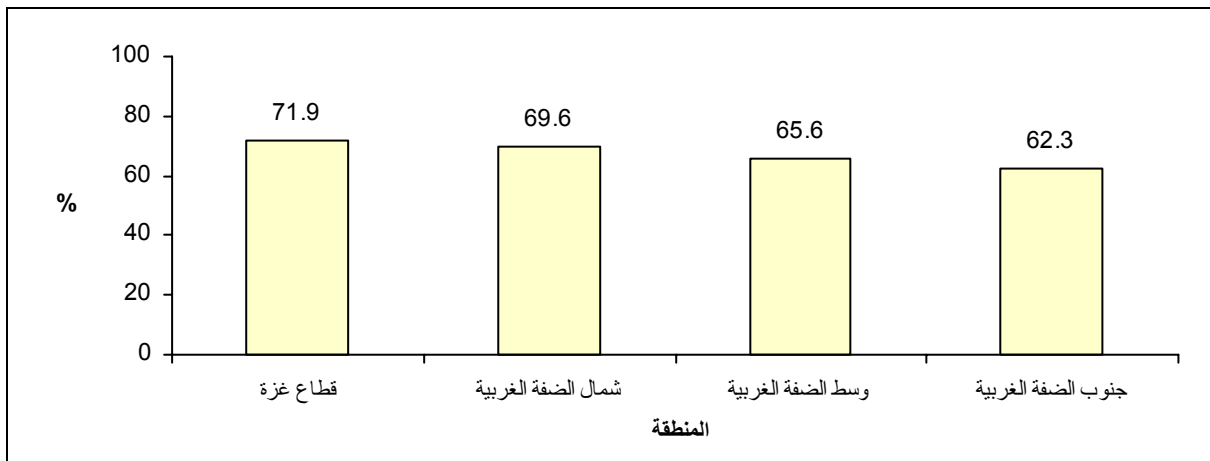
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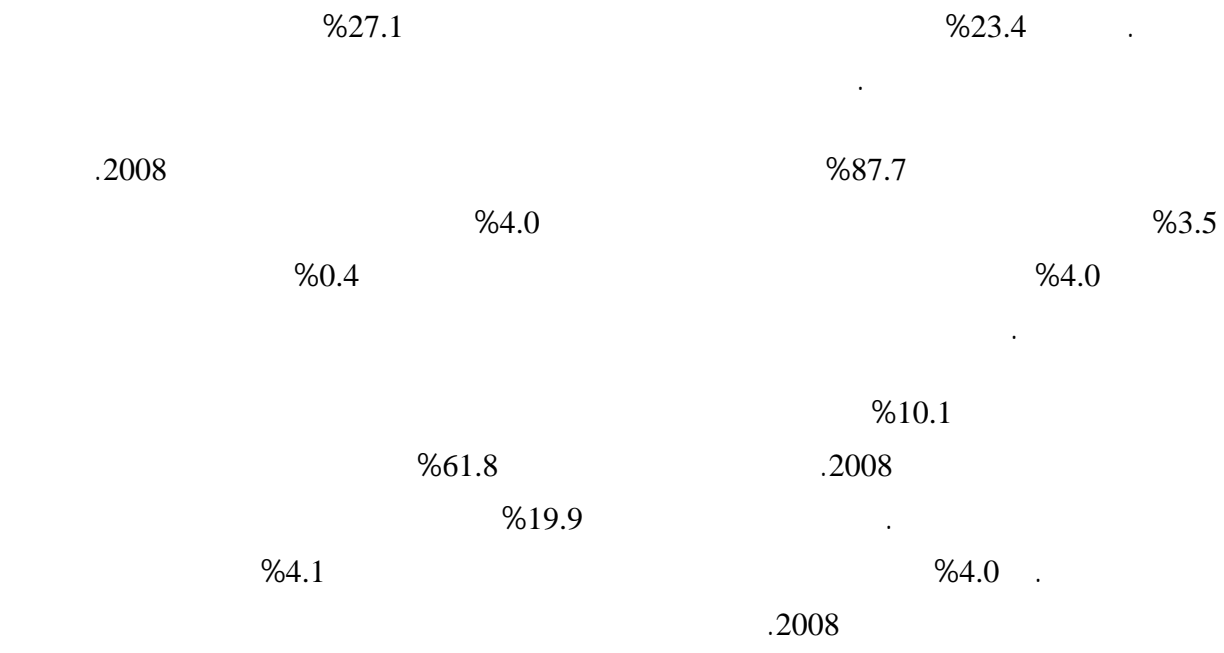


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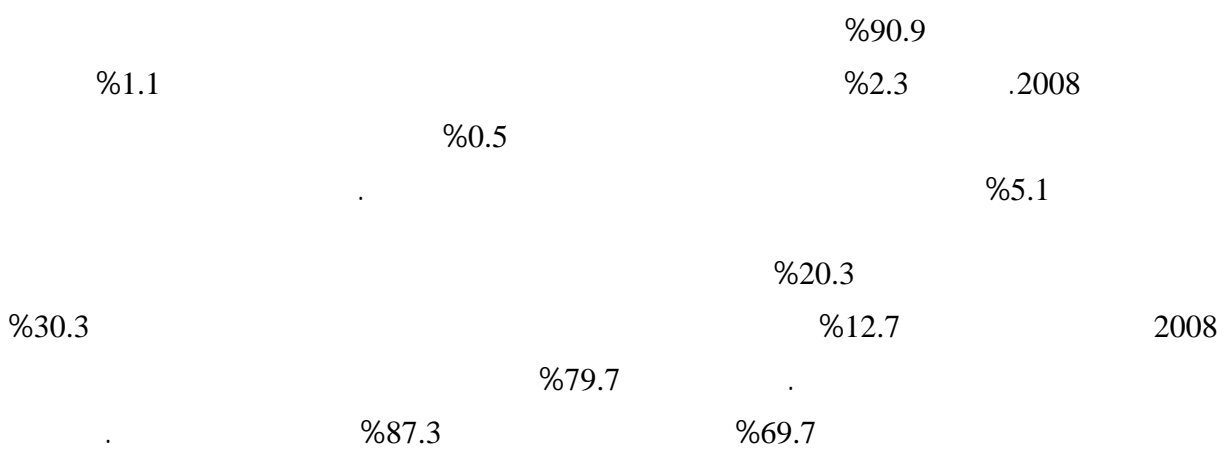
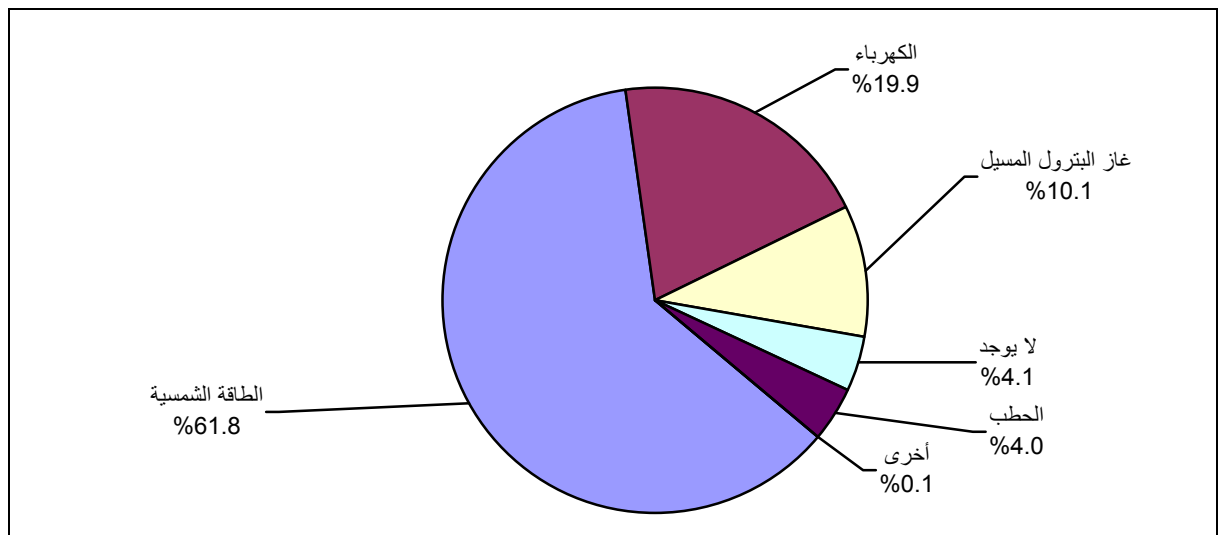
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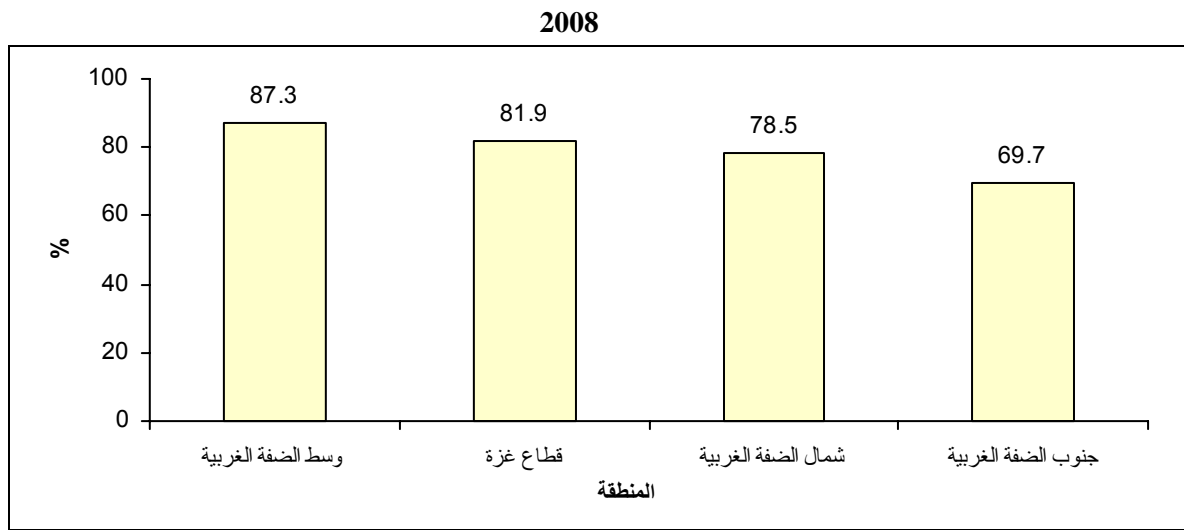


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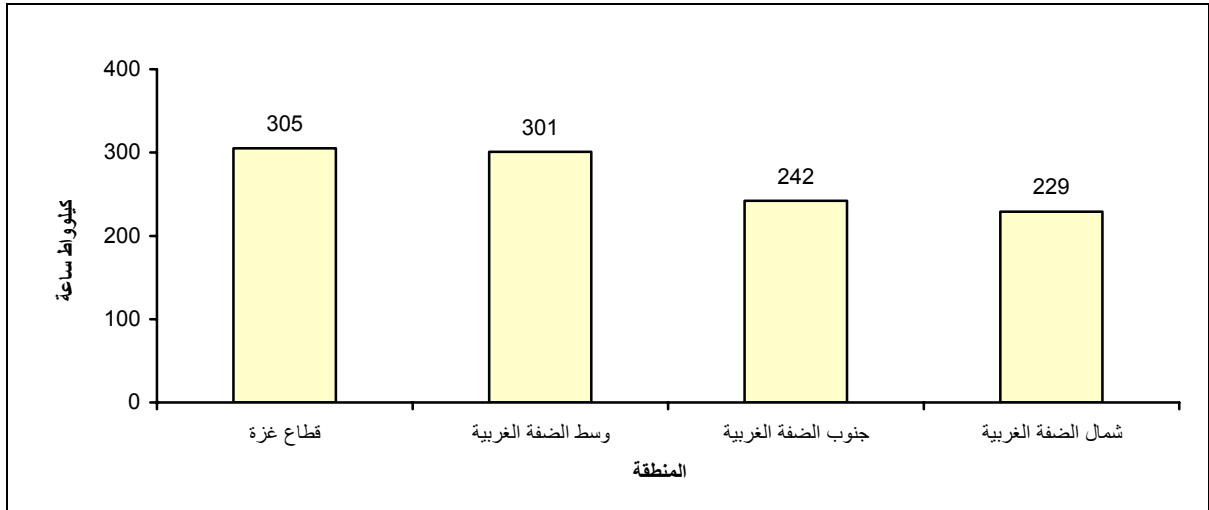
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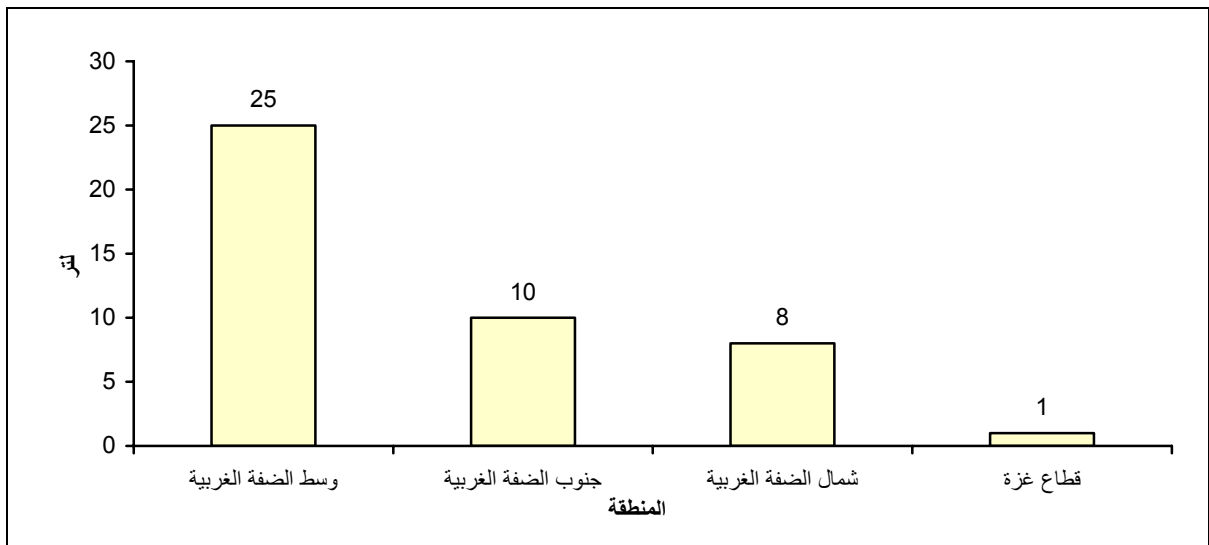
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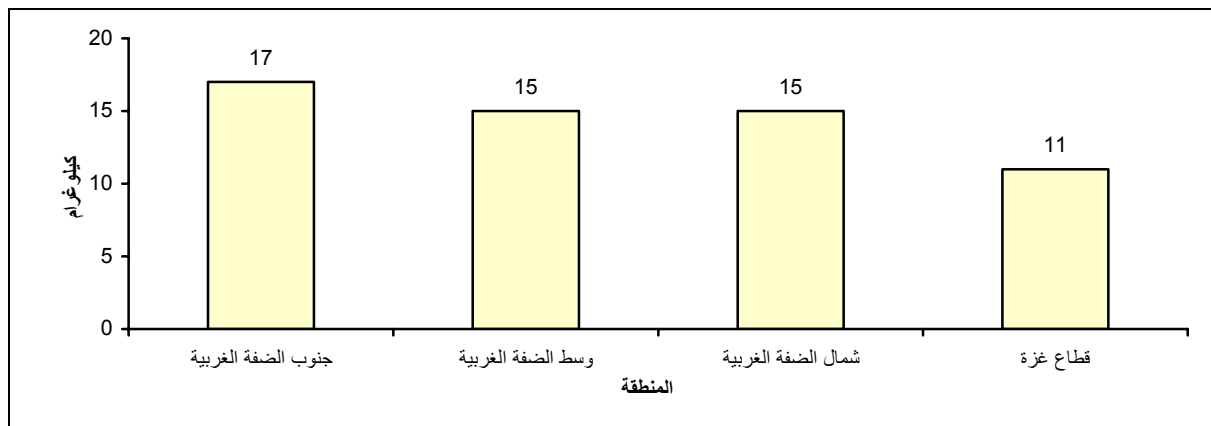


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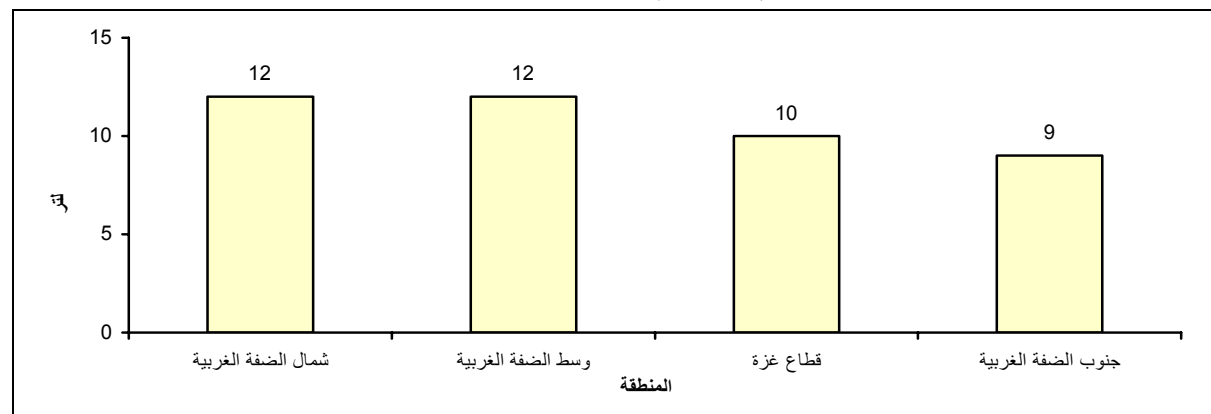
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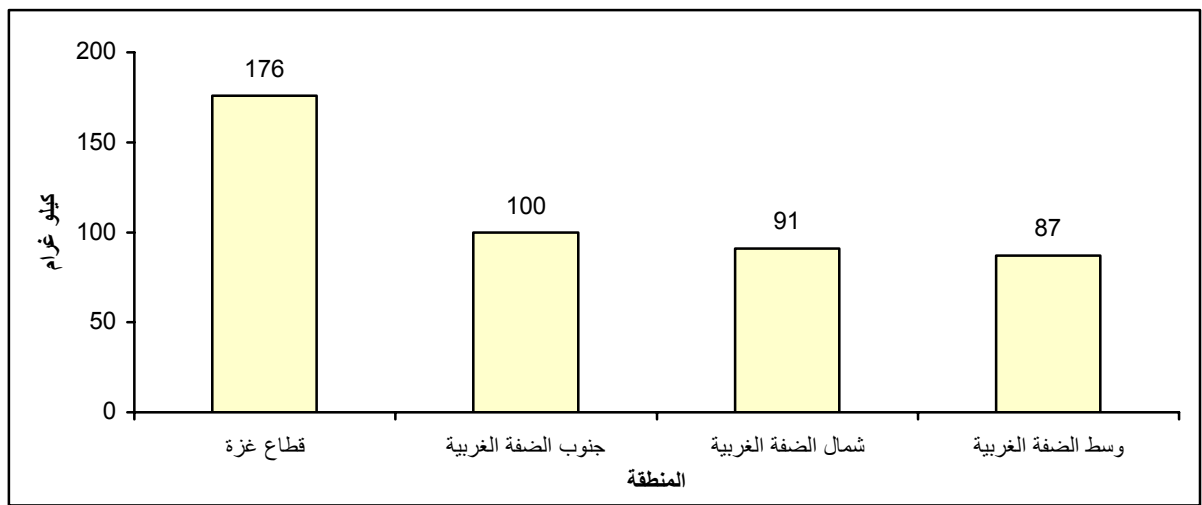


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Tables

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Table 1: Household Energy Indicators in the Palestinian Territory, July 1999, 2001, 2003 - 2006, 2008

Indicator	Year							
	2008	2006	2005	2004	2003	2001	1999	
Percent of Households Connected to the Electricity Public Network	99.8	99.5	99.6	99.5	99.4	99.1	97.2	
Percent of Households Using Solar Heater	68.2	69.2	69.2	71.2	71.2	72.5	68.0	
Percent of Households Using Space Conditioning Facilities	79.7	78.7	80.0	80.7	79.6	78.0	..	
Percent of Households Using Gas Burner for Cooking	..	98.8	99.1	99.7	99.6	99.4	99.1	
Average Household Consumption of Electricity (kw.h)	271	227.0	264.0	264.0	274.3	272.0	380.1	(.)
Average Household Consumption of LPG (kg)	14	17.0	18.0	20.0	20.0	21.0	21.0	()
Average Household Consumption of Kerosene (liter)	10	4.0	3.0	3.0	4.0	1.0	1.0	() ()

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2008

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Table 2: Percentage Distribution of Households in the Palestinian Territory by Region and the Main Electricity Source in Households, July 2008

Region	Main Electricity Source in the Housing Unit			
	Total	No Electricity	Public Network	
Palestinian Territory	100	0.2	99.8	
West Bank	100	0.3	99.7	
North of West Bank	100	0.1	99.9	
Middle of West Bank	100	0.1	99.9	
South of West Bank	100	1.1	98.9	
Gaza Strip	100	0.1	99.9	

2008

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Table 3: Percentage Distribution of Households in the West Bank by Region and Type of Electricity Meter Used, July 2008

Region	Type of Electricity Meter Used		
	Total	Prepayment Meter	Normal Meter
West Bank	100	18.4	81.6
North of West Bank	100	36.1	63.9
Middle of West Bank	100	5.2	94.8
South of West Bank	100	7.1	92.9

2008

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Table 4: Percentage Distribution of Households in the Palestinian Territory by Region and Number of Hours of Electricity Service, July 2008

Region	Number of Hours of Electricity Service				
	Total	24 ساعة 24 Hours	17-23 ساعة 17-23 Hours	8-16 ساعة 8-16 Hours	أقل من 8 ساعات Less Than 8 Hours
Palestinian Territory	100	65.3	14.4	17.0	3.3
West Bank	100	98.8	0.1	0.1	1.0
North of West Bank	100	99.1	0.2	0.2	0.5
Middle of West Bank	100	99.9	0.1	0.0	0.0
South of West Bank	100	97.1	0.3	0.0	2.6
Gaza Strip	100	0.3	42.0	49.8	7.9

2008

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Table 5: Percentage Distribution of Households in the Palestinian Territory by Region and Using Solar Heater, July 2008

Region	Using Solar Heater in the Housing Unit		
	Total	Not Using	Using
Palestinian Territory	100	31.8	68.2
West Bank	100	33.7	66.3
North of West Bank	100	30.4	69.6
Middle of West Bank	100	34.4	65.6
South of West Bank	100	37.7	62.3
Gaza Strip	100	28.1	71.9

2008

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Table 6: Percentage of Households in the Palestinian Territory by Region and Conditioning Facility Used, July 2008

Region	Conditioning Facility		
	Mobile Fan	Fixed Fan	Electrical Conditioner
Palestinian Territory	75.5	45.4	5.4
West Bank	84.0	34.9	6.6
North of West Bank	80.9	49.5	3.6
Middle of West Bank	83.3	28.3	11.6
South of West Bank	90.0	20.2	4.6
Gaza Strip	59.4	65.2	3.2

2008

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Table 7: Percentage Distribution of Households in the West Bank by Region and Cooking Facility Used, July 2008

Region	Cooking Facility			
	Total	Wood Burner	Gas Burner	Electrical Oven
West Bank	100	0.8	99.1	0.1
North of West Bank	100	0.2	99.6	0.2
Middle of West Bank	100	0.0	100.0	0.0
South of West Bank	100	2.5	97.4	0.1

2008

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Table 8: Percentage Distribution of Households in the Palestinian Territory by Region and the Main Fuel Used for Cooking, July 2008

Region	Main Fuel Used for Cooking					
	Total	Not Available	Others	Electricity	Wood	LPG
Palestinian Territory	100	0.4	0.3	9.2	8.6	81.5
West Bank	100	0.6	0.0	0.2	0.8	98.4
North of West Bank	100	0.2	0.0	0.3	0.1	99.4
Middle of West Bank	100	0.4	0.0	0.0	0.0	99.6
South of West Bank	100	1.6	0.1	0.1	2.6	95.6
Gaza Strip	100	0.0	0.6	27.1	24.2	48.1

2008

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Table 9: Percentage Distribution of Households in the Palestinian Territory by Region and the Secondary Fuel Used for Cooking, July 2008

Region	Secondary Fuel Used for cooking						
	Total	Not Available	Others	Wood	Kerosene	LPG	Electricity
Palestinian Territory	100	78.6	0.2	5.8	0.3	6.9	8.2
West Bank	100	92.7	0.1	3.4	0.0	1.0	2.8
North of West Bank	100	97.9	0.0	1.1	0.0	0.7	0.3
Middle of West Bank	100	97.6	0.0	0.9	0.0	0.1	1.4
South of West Bank	100	79.9	0.5	9.4	0.0	2.4	7.8
Gaza Strip	100	51.5	0.2	10.4	0.9	18.3	18.7

2008

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Table 10: Percentage Distribution of Households in the Palestinian Territory by Region and the Main Fuel Used for Baking, July 2008

Region	Main Fuel Used for Baking					
	Total	Not Available	Others	Wood	LPG	Electricity
Palestinian Territory	100	27.1	4.3	23.4	13.3	31.9
West Bank	100	39.6	5.7	19.4	19.4	15.9
North of West Bank	100	29.2	0.3	34.4	22.7	13.4
Middle of West Bank	100	67.0	0.3	11.9	12.6	8.2
South of West Bank	100	20.4	16.6	13.2	23.4	26.4
Gaza Strip	100	3.4	1.6	31.0	1.9	62.1

2008

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Table 11: Percentage Distribution of Households in the Palestinian Territory by Region and the Secondary Fuel Used for Baking, July 2008

Region	Secondary Fuel Used for Baking						
	Total	Not Available	Others	Olive Cake	Wood	LPG	Electricity
Palestinian Territory	100	87.7	0.4	0.4	3.5	4.0	4.0
West Bank	100	90.6	0.2	0.7	2.2	3.0	3.3
North of West Bank	100	93.0	0.0	0.0	1.6	3.6	1.8
Middle of West Bank	100	93.4	0.1	1.8	1.4	1.5	1.8
South of West Bank	100	85.3	0.8	0.0	3.5	4.0	6.4
Gaza Strip	100	82.5	0.4	0.0	5.9	5.9	5.3

2008

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Table 12: Percentage Distribution of Households in the Palestinian Territory by Region and the Main Fuel Used for Water Heating, July 2008

Region	Main Fuel Used for Water Heating						
	Total	Not available	Others	Wood	LPG	Solar Energy	Electricity
Palestinian Territory	100	4.1	0.1	4.0	10.1	61.8	19.9
West Bank	100	2.0	0.0	2.7	13.4	61.1	20.8
North of West Bank	100	0.1	0.0	1.3	15.0	65.6	18.0
Middle of West Bank	100	3.7	0.0	0.6	6.7	55.3	33.7
South of West Bank	100	2.8	0.1	7.0	18.1	60.8	11.2
Gaza Strip	100	9.8	0.2	7.3	1.7	63.5	17.5

2008

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Table 13: Percentage Distribution of Households in the Palestinian Territory by Region and the Secondary Fuel Used for Water Heating, July 2008

Region	Secondary Fuel Used for Water Heating						
	Total	Not Available	Others	Wood	LPG	Solar Energy	Electricity
Palestinian Territory	100	90.9	0.1	0.5	2.3	1.1	5.1
West Bank	100	88.2	0.1	0.4	3.0	1.6	6.7
North of West Bank	100	79.8	0.0	0.2	3.6	3.3	13.1
Middle of West Bank	100	97.2	0.0	0.0	0.3	0.3	2.2
South of West Bank	100	90.6	0.2	1.2	5.1	0.5	2.4
Gaza Strip	100	97.9	0.0	0.5	0.5	0.0	1.1

2008

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Table 14: Percentage Distribution of Households in the Palestinian Territory by Region and the Main Fuel Used for Conditioning, July 2008

Region	Main Fuel Used for Conditioning		
	Total	Not Available	Electricity
Palestinian Territory	100	20.3	79.7
West Bank	100	21.3	78.7
North of West Bank	100	21.5	78.5
Middle of West Bank	100	12.7	87.3
South of West Bank	100	30.3	69.7
Gaza Strip	100	18.1	81.9

2008

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Table 15: Percentage Distribution of Households in the Palestinian Territory by Region and the Main Fuel Used for Lighting, July 2008

Region	Main Fuel Used for Lighting			
	Total	Others	Kerosene	Electricity
Palestinian Territory	100	0.3	0.1	99.6
West Bank	100	0.2	0.2	99.6
North of West Bank	100	0.0	0.0	100.0
Middle of West Bank	100	0.0	0.0	100.0
South of West Bank	100	0.7	0.7	98.6
Gaza Strip	100	0.5	0.0	99.5

2008

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Table 16: Percentage Distribution of Households in the Palestinian Territory by Region and the Secondary Fuel Used for Lighting, July 2008

Region	Secondary Fuel Used for Lighting				
	Total	Not Available	Others	Kerosene	LPG
Palestinian Territory	100	77.6	14.8	3.7	3.9
West Bank	100	99.4	0.4	0.1	0.1
North of West Bank	100	99.6	0.1	0.0	0.3
Middle of West Bank	100	100.0	0.0	0.0	0.0
South of West Bank	100	98.6	0.9	0.4	0.1
Gaza Strip	100	35.2	42.7	10.8	11.3

Table 17: Percentage of Households that Use Energy in the Palestinian Territory by Region, Type of Locality and Energy Type, July 2008

Region and Type of Locality	Energy Type				
	Kerosene	LPG	Solar Energy	Wood	Electricity
Palestinian Territory	4.7	88.7	68.2	28.5	99.8
Urban	4.6	87.3	68.2	26.2	99.9
Rural	1.3	94.4	66.4	35.7	99.5
Camps	11.8	83.0	71.8	23.5	99.6
West Bank	0.5	99.3	66.3	21.5	99.7
Urban	0.1	99.6	67.3	14.4	99.9
Rural	1.0	99.0	66.8	32.6	99.6
Camps	0.0	99.7	55.0	9.6	98.7
North of West Bank	0.1	99.7	69.6	23.9	100.0
Urban	0.0	100.0	68.9	15.6	100.0
Rural	0.1	99.6	72.0	32.9	100.0
Camps	0.0	99.4	58.5	14.1	100.0
Middle of West Bank	0.4	100.0	65.6	13.5	100.0
Urban	0.0	100.0	64.3	4.0	100.0
Rural	1.1	100.0	71.0	30.8	100.0
Camps	0.0	100.0	50.9	8.9	100.0
South of West Bank	1.2	98.1	62.3	26.5	98.9
Urban	0.4	98.6	68.8	24.0	99.6
Rural	2.8	96.9	52.3	33.9	98.4
Camps	0.0	100.0	53.3	0.0	93.3
Gaza Strip	13.0	67.8	71.9	42.2	99.9

Table 18: Average Household Consumption of Electricity, Petroleum Products and Wood in the Palestinian Territory in July 2008 by Region and Type of Locality

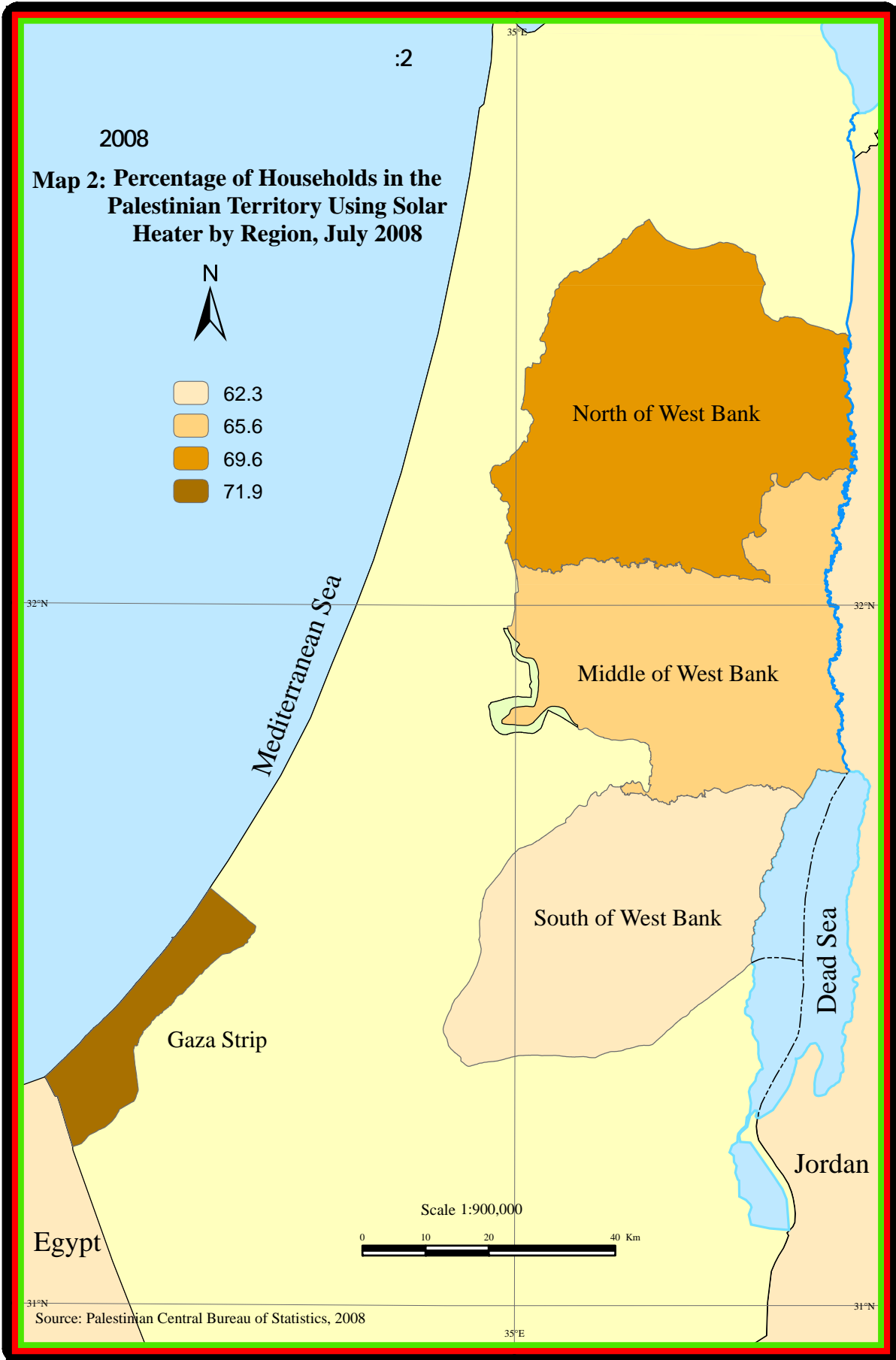
Region and Type of Locality	Average Household Consumption of Electricity, Petroleum Products and Wood					
	() Diesel (Liter)	() Gasoline (Liter)	() Kerosene (Liter)	() LPG (Kg)	() Wood (kg)	(.) Electricity (KWh)
Palestinian Territory	3	9	10	14	135	271
Urban	3	12	11	14	154	282
Rural	4	7	9	16	108	226
Camps	1	3	9	13	132	296
West Bank	4	14	10	15	93	233
Urban	3	19	20	15	96	244
Rural	5	8	8	16	92	220
Camps	0	11	0	15	78	250
North of West Bank	3	8	12	15	91	229
Urban	1	8	0	15	116	241
Rural	5	7	12	15	82	217
Camps	0	4	0	15	66	234
Middle of West Bank	4	25	12	15	87	301
Urban	5	36	0	13	45	350
Rural	4	8	12	17	95	261
Camps	0	21	0	16	107	496
South of West Bank	4	10	9	17	100	242
Urban	4	12	20	17	91	244
Rural	4	8	6	18	111	225
Camps	0	11	0	12	0	342
Gaza Strip	1	1	10	11	176	305

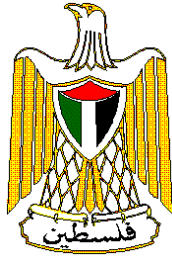
Table 19: Average Consumption Per Capita of Electricity, Petroleum Products and Wood in the Palestinian Territory in July 2008 by Region

Region	Average Consumption Per Capita of Electricity, Petroleum Products and Wood			
	() Kerosene (Liter)	() LPG (Kg)	() Wood (kg)	() Electricity (KWh)
Palestinian Territory	1.7	2.4	23.3	46.7
West Bank	1.8	2.7	16.9	42.4
North of West Bank	2.2	2.8	16.9	42.4
Middle of West Bank	2.3	2.9	16.7	57.9
South of West Bank	1.5	2.9	16.9	41.0
Gaza Strip	1.5	1.7	27.1	46.9

Maps







**Palestinian National Authority
Palestinian Central Bureau of Statistics**

**Household Energy Survey: Main Results
(July, 2008)**

December, 2008

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Preface

Most countries give special attention to providing statistics on energy due to its important role in reflecting the situation of infrastructure, the economy and the level of living standards of a society. In Palestine, additional special attention is given to energy statistics due to the shortage of natural resources, the high cost of energy and the high population density. All of these factors create a need for comprehensive and high quality statistics in this field of study.

In spite of the attention on providing statistical data on household activities, which were found to be the highest energy-consuming sector, PCBS decided to conduct a special household energy survey that provides high quality data about energy consumption by type, different energy consuming facilities used at the household level, and the behavior of this important sector.

PCBS conducts energy household survey twice a year. This survey was conducted during the period from 24/08/2008 to 02/10/2008 to cover July in order to know the energy consumption behavior in Summer Season.

PCBS hopes that the results of this report will contribute towards providing the necessary data needed for developing the energy situation in households. In addition, PCBS hopes that this report will contribute to bridging the data gap in energy statistics and to provide useful data for the main data users and decision makers.

December, 2008

Luay Shabaneh, Ph.D
President

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Executive Summary

PCBS implemented the household energy survey (July 2008). This survey collected data on household energy indicators (electricity, petroleum fuel) in the household activities (cooking, baking, water heating, lighting, and conditioning). Data collection took place during the period 24/08/2008 - 02/10/2008.

The results of the survey indicated that 99.8% of households in the Palestinian Territory were connected to the public electricity network in July 2008, while this percentage was 99.5% in July 2006. From the results, it is noted that the South of West Bank has the lowest percentage of households connected to electricity network 98.9%.

It is noted that 81.6% of households in the West Bank used normal Electricity Meter. 18.4% of households used pre-paid Electricity Meter, this percentage was about 36.1% in the North of West Bank, 7.1% in the South of West Bank, and 5.2% in the Middle of West Bank during July 2008.

The survey showed that 68.2% of households in the Palestinian Territory utilized solar energy by using solar energy heaters in July 2008, whereas this percentage was 69.2% in July 2006. It is noted that this percentage differs within the Palestinian regions in July 2008; it was about 71.9% in Gaza Strip and 66.3% in the West Bank.

The results of the survey indicated that the average household electricity consumption (from the households that used electricity) in the Palestinian Territory during July 2008 was 271 KWh, where this average was 227 KWh during July 2006. This average varied by region and type of locality in July 2008: it reached 301 KWh in the Middle of West Bank and did not exceed 229 KWh in the North of West Bank. The average was about 282 KWh in urban localities and 226 KWh in rural localities, and 296 KWh in refugee camps. The average per capita electricity consumption in the Palestinian Territory during July 2008 was 46.7 KWh.

The main findings of the survey indicate that the average household gasoline consumption in the Palestinian Territory during July 2008 was 9 liters. This average ranged by type of locality and region, it reached 12 liters in urban localities, 7 liters in rural localities and 3 liters in refugee camps. This average was about 25 liters in the Middle of West Bank and didn't exceed 8 liters in the North of West Bank, and 1 liter in Gaza Strip.

The survey indicated that 88.7% of households in the Palestinian Territory used liquefied petroleum gas; the average household liquefied petroleum gas consumption was 14 kg (from the households that used liquefied petroleum gas), while it was 17 kg in July 2006. This average varies by region and type of locality in July 2008; it reached 17 kg in the South of West Bank, and did not exceed 11 kg in Gaza Strip.

79.7% of households used conditioning facilities in July 2008, distributed as 78.7% in the West Bank, and 81.9% in Gaza Strip. The main results of the survey indicate that 5.4% of households in the Palestinian Territory have used electrical conditioner, 45.4% of the households used fixed fan, and 75.5% of the households used mobile fan in July 2008.

Chapter One

Introduction

Energy has great importance due to its role in reflecting the country's economy, the people's welfare and their living standards. In addition, energy data reflects the status of infrastructure.

In 1996, PCBS established an energy statistics program in order to develop a national plan for energy statistics and to provide data about energy in the Palestinian Territory. Taking into consideration the international recommendations of the United Nations in the field of energy and the special situation of the Palestinian Territory, energy indicators were formulated through a user-producer dialogue workshop held in March 1998. The energy statistics program implemented thirteen rounds of the household energy survey during 1999-2008.

Because of the importance of the household sector and due to its large contribution to energy consumption in the Palestinian Territory, PCBS decided to conduct a special household energy survey to cover energy indicators in the household sector. To achieve this, a questionnaire was attached to the Labor Force Survey.

This survey aimed to provide data on energy consumption in the household sector and to provide data on energy consumption behavior in the society by type of energy.

This survey presents data on various energy households indicators in the Palestinian Territory, and presents statistical data on electricity and other fuel consumption for the household sector, by type of fuel for different activities (cooking, baking, conditioning, lighting, and water heating).

The household energy survey (July 2008) report consists of five chapters: the first chapter presents the survey objectives and the report structure; the second chapter describes the definitions and explanations; the third chapter briefly describes the main findings; the fourth chapter presents the methodology used in the survey, consisting of the questionnaire design, sampling design, fieldwork operations and data processing; and the last chapter includes an assessment of data quality and technical notes.

Chapter Two

Concepts and Definitions

This section presents the main concepts and definitions used to derive the main indicators of energy consumption from different sources. These concepts and definitions are based on international recommendations in the field of energy statistics, and they are the same in all subjects in Palestinian Central Bureau of Statistics. The main concepts and expressions mentioned in this report were as follows:

Household

One person or a group of persons with or without a household relationship, who live in the same housing unit, share meals and make joint provision of food and other essentials of living.

Fuel

Any matter used for producing energy via thermal, chemical or nuclear interaction.

Gasoline

Gasoline is a hydrocarbon fuel used mainly in internal- combustion engines. This fuel is obtained via filtration of crude oil. The quality of this type of fuel is measured by the octane number (from 0 to 100), which points to its resistance of early burning. This number is obtained by comparing the performance of its resistance of early burning with a mixture of C^7H^{16} and C^8H^{18} . For instance, the performance of "Gasoline 95" equals the performance of a mixture of 95% C^8H^{18} and 5% C^7H^{16} .

Diesel

Diesel is a hydrocarbon fuel mainly used in several types of internal- combustion engines and furnaces. This fuel is obtained via filtration of crude oil.

Liquefied Petroleum Gas (LPG)

It is mainly used in conditioning as well as a fuel in some types of engines and as a raw material for chemical industries. Usually it is marketed in cylinder metallic packages. This gas is comprised of a mixture of gases, e.g. C^3H^8 and C^4H^{10} . It is obtained from natural gas or by fracture of crude petroleum.

Kerosene

Liquid Hydrocarbon fuel obtained by filtration of crude oil, and used as a heating fuel, and as a solvent

Charcoal

The solid residue, consisting mainly of carbon, obtained by the destructive distillation of wood in the absence of air.

Olive Cake

The olive cake (jeft) is the olive solid remainder after the olive pressing. It is considered as a byproduct.

Wood

Refers to all wood used in rough used for fuel purposes.

Household Consumption

Consumption by Households in the different activities within Households (Conditioning, Cooking, Lighting, Water heating and other activities).

Electric Energy

Work done to move an electric charge in a conductor. It is measured in kilowatt-hour.

Electric Energy = Power (KW) X Time (Hours).

Kilo Watt-Hour

Energy unit, a 1 kWh = $1000 \text{ W} \times 3600 \text{ Second} = 3.6 \times 10^6 \text{ Watt-second}$

Other prefixes are used for referring to this unit, e.g. Mega which equals 10^6 , and Giga, which equals 10^9 .

Main Findings

This chapter presents the main findings of the household energy survey. These results were divided into four sections: the first section introduces the results related to energy sources in the domestic sector during July 2008; the second introduces the results related to the facilities used in conditioning and cooking; the third section presents the use purposes of energy types in the different activities in the households; and the fourth presents the household and per capita consumption of the different energy types.

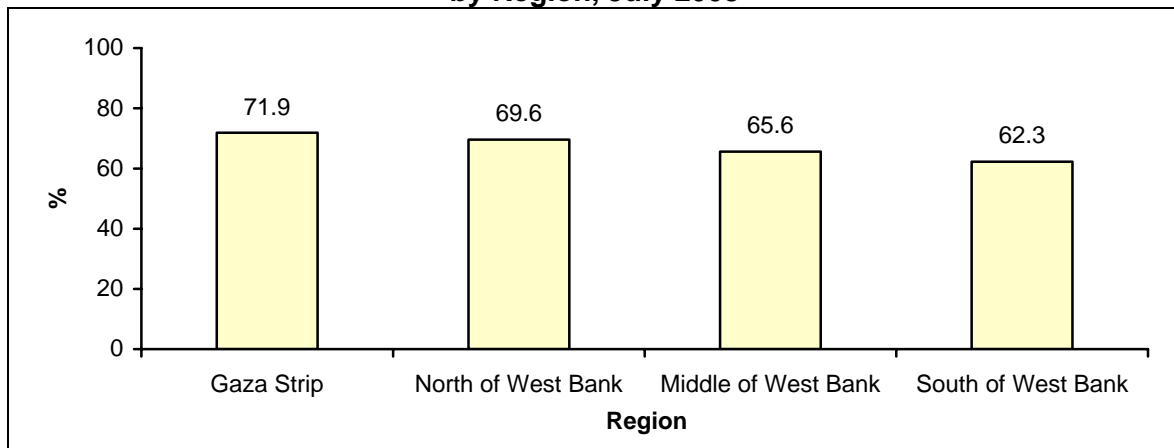
3.1 Energy Sources

The main results of the survey indicate that 99.8% of households in the Palestinian Territory were connected to the public electricity network in July 2008; this percentage was 99.5% in July 2006, and 97.2% in July 1999. It is noted that the South of West Bank has the lowest percentage of households connected to electricity network with 98.9%, while Almost all households In the North and Middle of the West Bank and in Gaza Strip are connected to electricity network with a percentage of 99.9%.

From the results, it is noted that 81.6% of households in the West Bank used a normal Electricity Meter, while 18.4% of households used a Prepayment Electricity Meter. This percentage was about 36.1% in the North of West Bank, 7.1% in the South of West Bank, and 5.2% in the Middle of West Bank during July 2008.

The main results of the survey indicate that 68.2% of households in the Palestinian Territory are utilizing solar energy by using solar energy heaters in July 2008; this percentage was 69.2% in July 2006. It is noted that this percentage differs within the Palestinian regions in July 2008 when it was about 66.3% in the West Bank and 71.9% in Gaza Strip.

Figure 1: Percentage of Households in the Palestinian Territory Using Solar Heater by Region, July 2008

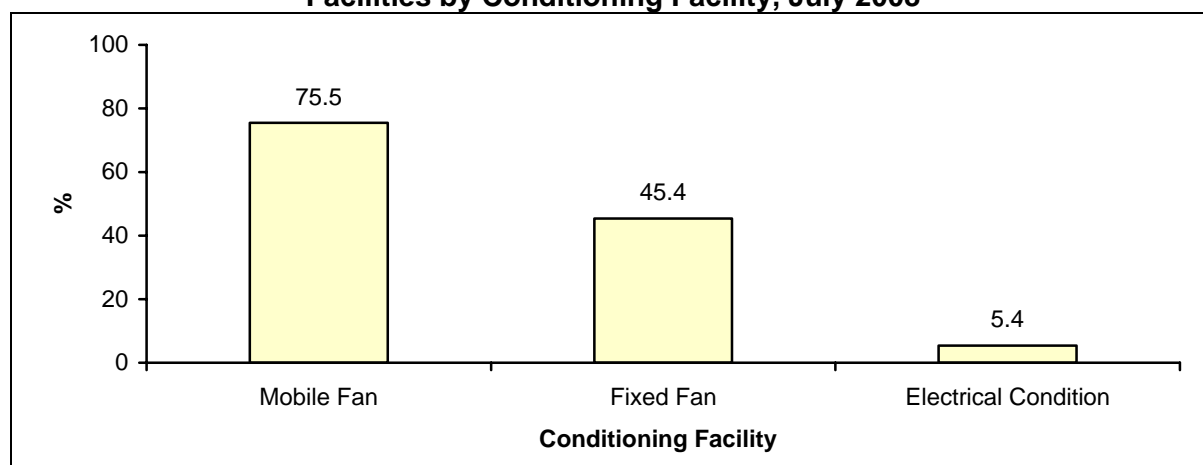


3.2 Energy Consumption Facilities

This section introduces the results on the use of conditioning and cooking facilities by the households during July 2008.

The main results of the survey indicate that 5.4% of households in the Palestinian Territory have used an electrical conditioner for the purpose of air conditioning, 45.4% of the households used fixed fan, and 75.5% of the households used a mobile fan in July 2008.

Figure 2: Percentage of Households in the Palestinian Territory Using Conditioning Facilities by Conditioning Facility, July 2008



The main results of the survey indicate that 99.1% of households in the West Bank have used gas ovens for the purpose of preparing food (cooking) in July 2008, 0.8% of the households used a wood burner, and 0.1% of the households used electrical ovens.

3.3 Energy Uses

This section presents the uses of energy types in different household activities during July 2008.

The main results of the household energy survey indicate that 81.5% of households in the Palestinian Territory depend on liquefied petroleum gas as a main fuel for preparing food (cooking) in July 2008, This average varied by region; it reached to 98.4% of households in the West Bank, and did not exceed 48.1% in Gaza Strip. The results indicate that 8.6% of the households depend on wood, 9.2% depend on electricity as a main fuel for preparing food (cooking).

Also, the results indicate that 78.6% of households in the Palestinian Territory have no secondary fuel for preparing food (cooking) in July 2008, while 5.8% of the households depend on wood as a secondary fuel, 8.2% of the households depend on electricity as a secondary source, 6.9% of the households depend on liquefied petroleum gas, and 0.3% of the households depend on kerosene as a secondary fuel for preparing food (cooking).

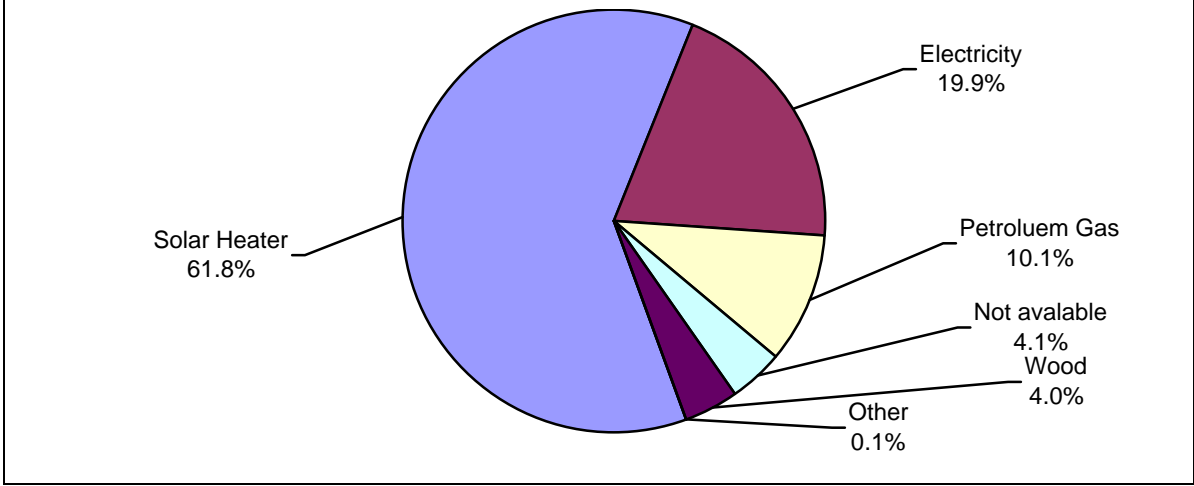
The main results of the household energy survey indicate that 13.3% of households in the Palestinian Territory depend on liquefied petroleum gas as a main fuel for baking in July 2008, 31.9% of households in the Palestinian Territory depend on electricity as a main fuel for baking, 23.4% of the households depend on wood as a main fuel for baking. 27.1% of the households did not use any fuel for baking in July 2008.

Also, the results indicate that 87.7% of households in the Palestinian Territory have no secondary fuel for baking in July 2008, while 3.5% of the households depend on wood as a secondary fuel, 4.0% of the households depend on electricity as a secondary source, 4.0% of the households depend on liquefied petroleum gas as a secondary fuel, and 0.4% of the households depend on olive cake as a secondary fuel for baking.

The main results of the survey indicate that 10.1% of households in the Palestinian Territory depend on liquefied petroleum gas as a main fuel for water heating in July 2008, and 61.8% of households in the Palestinian Territory depend on solar heaters as a main source for water

heating, while 19.9% of the households depend on electricity as a main source and 4.0% of the households depend on wood as a main fuel. 4.1% of the households did not use any fuel for water heating in July 2008.

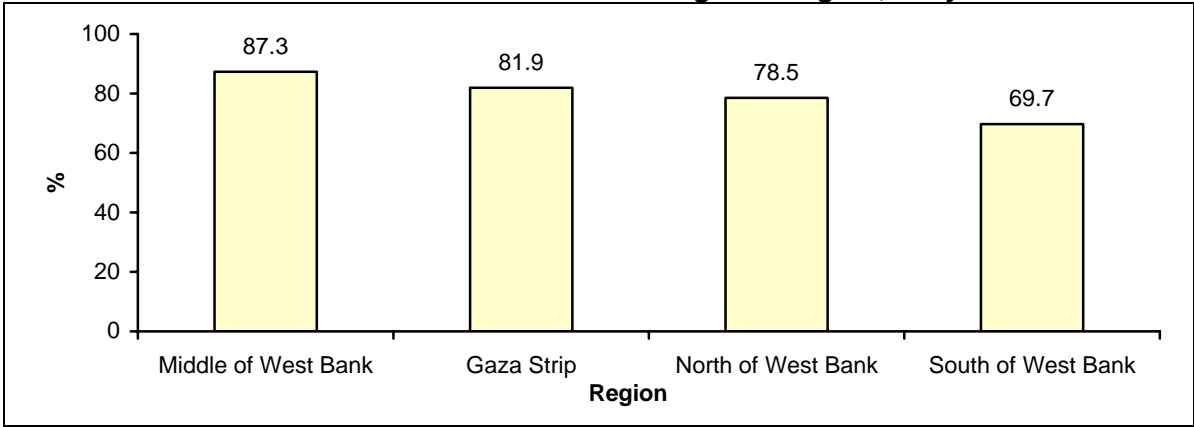
Figure 3: Percentage Distribution of Households in the Palestinian Territory by Main Fuel Used in Water Heating, July 2008



Also, the results indicate that 90.9% of households in the Palestinian Territory have no secondary fuel for water heating in July 2008, while 2.3% of the households depend on liquefied petroleum gas as a secondary source, 1.1% of the households depend on solar heaters as a secondary fuel, 0.5% of the households depend on wood as a secondary fuel, and 5.1% of households depend on electricity as a secondary fuel.

The main results of the survey indicate that 20.3% of households in the Palestinian Territory did not condition their houses in July 2008; this percent reached to 30.3% in the South of West Bank, and did not exceed 12.7% in the Middle of West Bank. 79.7% of households in the Palestinian Territory depend on electricity as a main fuel for household conditioning; this percent reached to 69.7% of households in the South of West Bank, and 87.3% in the Middle of West Bank.

Figure 4: Percentage of Households in the Palestinian Territory by Using Electricity as A Main Fuel in Household Conditioning and Region, July 2008



The main results of the survey indicate that 99.6% of households in the Palestinian Territory depend on electricity as a main source for lighting in July 2008, while 0.1% of the households depend on kerosene as a main source for lighting.

The results indicate that 77.6% of households in the Palestinian Territory have no secondary fuel for lighting in July 2008, while 3.7% of the households depend on kerosene as a secondary source, and 3.9% of the households depend on liquefied petroleum gas as a secondary fuel.

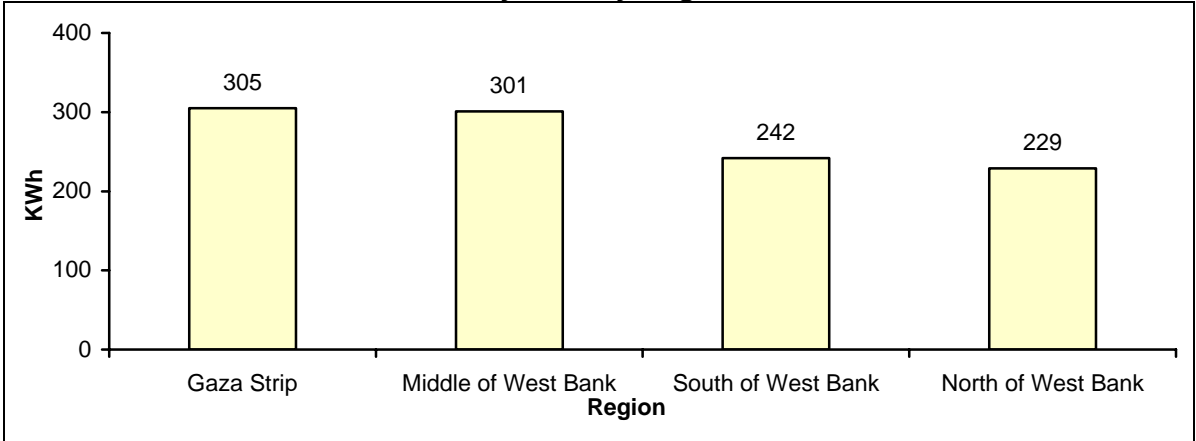
3.4 Household Energy Consumption

This section presents the main results related to household, per capita and total consumption of the different types of energy used in Palestinian Territory during July 2008.

Electricity Consumption:

The main findings of the survey indicate that the average household electricity consumption in the Palestinian Territory during July 2008 was 271 KWh, while it was 227 KWh in July 2006. This average ranges by region and type of locality in July 2008; it reached 305 KWh in Gaza Strip and did not exceed 229 KWh in the North of West Bank. This average was about 282 KWh in urban localities and 226 KWh in rural localities, and 296 KWh in refugee camps.

Figure 5: Average Household Electricity Consumption in the Palestinian Territory in July 2008 by Region

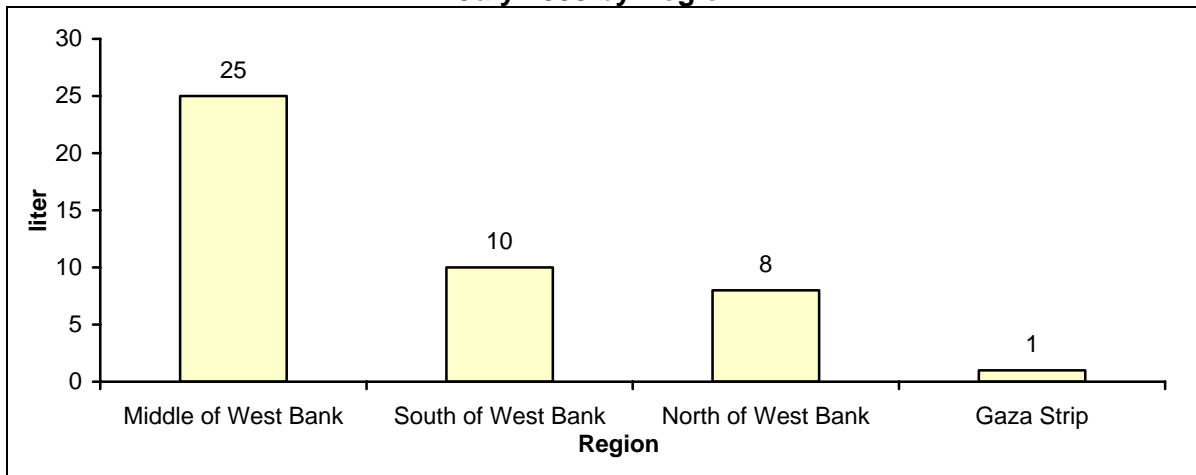


The main findings indicate that the average per capita electricity consumption in the Palestinian Territory during July 2008 was 46.7 KWh. It reached 57.9 KWh in the Middle of West Bank and 41.0 KWh in the South of West Bank in July 2008.

Gasoline Consumption:

The main findings of the survey indicate that the average household gasoline consumption in the Palestinian Territory during July 2008 was 9 liters. This average ranged by type of locality and region; it was 12 liters in urban localities, 7 liters in rural localities and 3 liters in refugee camps. This average was about 25 liters in the Middle of West Bank and did not exceed 8 liters in the North of West Bank, and 1 liter in Gaza Strip.

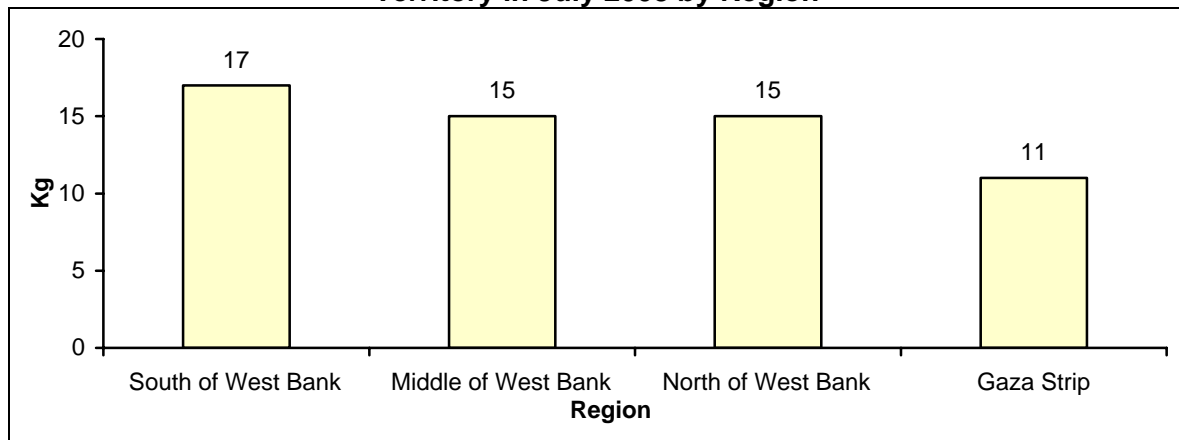
Figure 6: Average Household Gasoline Consumption in the Palestinian Territory in July 2008 by Region



Liquefied Petroleum Gas Consumption:

The main findings of the survey indicate that the average household liquefied petroleum gas consumption in the Palestinian Territory during July 2008 was 14 kg; this average was 17 kg in July 2006. This average ranges by region and type of locality in July 2008. It reached 17 kg in the South of West Bank, and did not exceed 11 kg in Gaza Strip. This average reached 14 kg in urban localities, 16 kg in rural localities and 13 kg in refugee camps.

Figure 7: Average Household Liquefied Petroleum Gas Consumption in the Palestinian Territory in July 2008 by Region

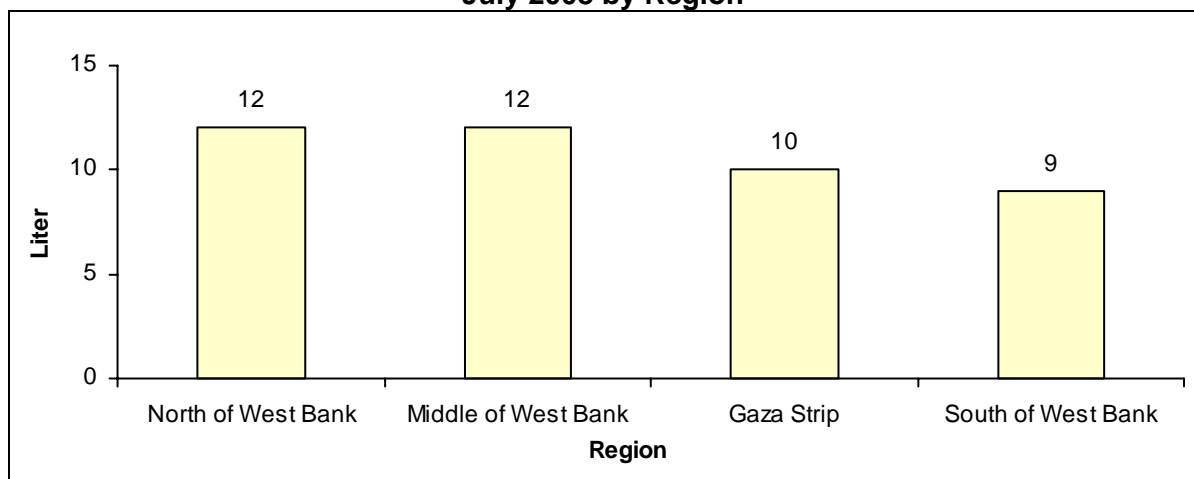


The average per capita liquefied petroleum gas consumption in the Palestinian Territory was 2.4 kg. This average was about 2.8 kg in the North of West Bank, 2.9 kg in the middle and South of West Bank, and 1.7 kg in Gaza Strip in July 2008.

Kerosene Consumption:

The main findings of the survey indicate that the average household kerosene consumption in the Palestinian Territory during July 2008 was 10 liters, while this average was 4 liters in July 2006. This average ranges by region and type of locality; it reached 12 liters in the North and Middle of West Bank, 9 liters in the South of West Bank and 10 liters in Gaza Strip. This average was about 11 liters in urban localities, 9 liters in rural localities and refugee camps.

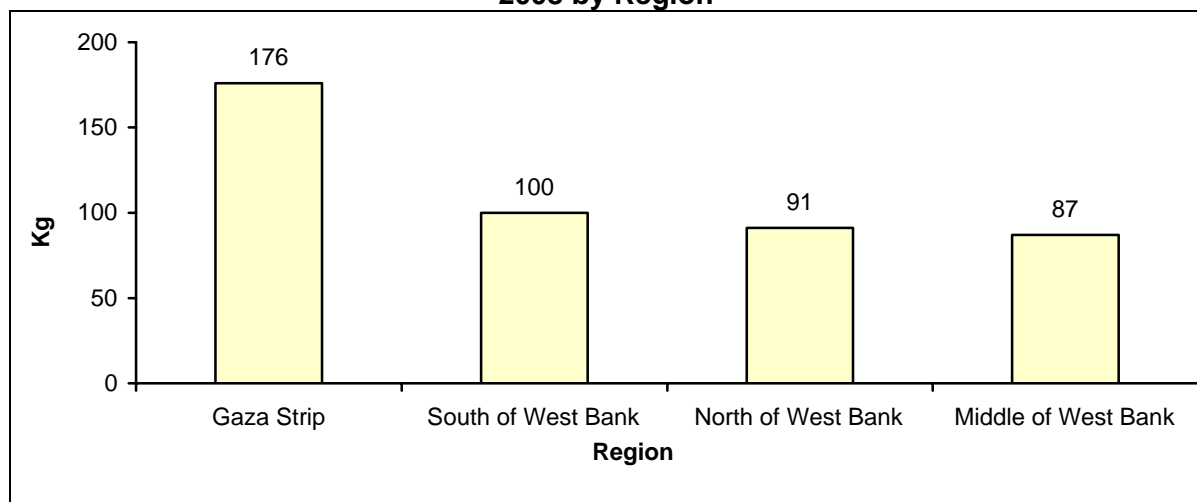
Figure 8: Average Household Kerosene Consumption in the Palestinian Territory in July 2008 by Region



Wood Consumption

The main findings of the survey indicate that the average household wood consumption in the Palestinian Territory during July 2008 was 135 kg. This average ranges by region and type of locality; it reached 176 kg in Gaza Strip, and 87 kg in the Middle of West Bank. This average was about 154 kg in urban localities, 108 kg in rural localities, and 132 kg in refugee camps.

Figure 9: Average Household Wood Consumption in the Palestinian Territory in July 2008 by Region



The average per capita wood consumption in the Palestinian Territory in July 2008 was 23.3 kg. This average was about 16.9 kg in the North and South of West Bank, and 16.7 kg in the Middle of West Bank, and 27.1 kg in Gaza Strip.

Chapter Four

Methodology

This section presents a documentation of the methodology used in preparing this report.

4.1 Questionnaire

The household energy survey questionnaire was designed in accordance with similar country experience and with international standards and recommendations for the most important indicators, taking into account the special situation of the Palestinian Territory.

4.2 Sample and Frame

The sample is a two-stage stratified cluster random sample.

Target Population

The target population was all Palestinian households living within the Palestinian Territory.

Sampling Frame

Sampling frame is a master sample from the Population, Housing and Establishment Census 1997. It consists of a list of enumeration areas used as PSU's in the first stage of selection.

Sampling Design

The sample of this survey is a sub-sample of the Labour Force Survey (LFS) sample, that is conducted every 13 weeks. The total sample of LFS is about 7,559 households distributed over 13 weeks. The sample of the Household Energy Survey occupies six weeks of the third quarter 2008 of LFS.

Stratification:

In designing the sample of LFS, three levels of stratification were made:

1. Stratification by governorate.
2. Stratification by place of residence which comprises:
(a) Urban (b) Rural (c) Refugee camps
3. Stratification by locality size.

Sample Unit:

In the first stage, the sampling units are the enumerator areas (clusters) in the master sample. In the second stage, the sampling units are households.

Analysis Unit:

Analysis units are composed of households.

Sample Size:

The sample size is of (3,069) Palestinian households in the West Bank and Gaza Strip, where this sample has been distributed according to the locality in urban areas, in rural areas and in refugee camps.

4.3 Fieldwork

Training Fieldworkers

Fieldworkers were trained on the main skills before the start of data collection. The interviewers were trained on the Household Energy Survey by implementing the training course in Ramallah for the West Bank trainees. Instructions for filling the questionnaire were made available for the interviewers. The training provides the participant with aims and definitions of the different indicators and expressions of the survey and how to fill in the questionnaire.

Data Collection

Field work started on 24/08/2008 and lasted until 02/10/2008. Field work teams were distributed to all districts proportional to the sample size of each governorate. The field work team consisted of 24 members, including one field work coordinator, 4 supervisors, 4 editors and 15 interviewers.

During fieldwork 2,773 Households were visited in the Palestinian Territory, the end results for the interview become as following:

(2,456)	complete questioner
(32)	traveling households
(21)	housing unit not existed
(55)	cases no body in the house
(33)	objection cases
(139)	housing unit abandoned
(14)	household can't give data
(23)	other cases

4.4 Data Processing

The data processing stage consisted of the following operations:

1. Editing and coding before data entry: All questionnaires were edited and coded in the office using the same instructions adopted for editing in the field.
2. Data entry: At this stage, data was entered into the computer using a data entered template written in Access. The data entry program was prepared to satisfy a number of requirements such as:
 - Duplication of the questionnaires on the computer screen.
 - Logical and consistency check of data entered.
 - Possibility for internal editing of question answers.
 - Maintaining a minimum of digital data entry and fieldwork errors.
 - User friendly handling.
 - Possibility of transferring data into another format to be used and analyzed using other statistical analytic systems such as SPSS.

4.5 Weight Calculation and the Estimation

Since the sampling weight is counteractive with the percentage sample from the frame, and as this ratio is different from the percentage sample for the society in reference period, the weight was adjusted to show the number of population in the middle of 2008. The weights were also adjusted to make the distribution of people in the sample by region, sort, and structure age to become identical to this distribution in the census 1997. Finally, weights were adjusted to compensate for incomplete cases that occur during data collecting.

Data Quality

The concept of data quality is constructed of many aspects starting from the planning to the survey up to publishing method and understand the data. The main principles of the statistical quality are Accuracy, Comparability, and Data Quality Assurance Procedures.

5.1 Accuracy

It includes many aspects of the survey. mainly statistical errors due to the sample, and not statistical errors referring to the workers and survey tools. It includes also the response rates in this survey and their effect on the assumptions. This section includes:

1. Sampling Errors

These types of errors evolved as a result of studying a part of the society and not all of it, and because this survey is a sample, the data of this survey will be affected by sampling errors due to using a sample and not the whole frame of the society, and so differences appear compared with the actual values that could be obtained through a census. For this survey, variance calculations were made for average household consumption and total consumption for the different types of energy in the Palestinian Territory.

The results of wood, charcoal and olive cake suffers from a high variance. This problem should be taken into consideration when dealing with the average household consumption of these types of fuel, keeping in mind that there is no problem in publishing the data among the geographical level (North of the West Bank, Middle of the West Bank, South of the West Bank and Gaza Strip). However, publishing data for the governorate level is not possible due to the high variance especially for wood, charcoal and olive cake. the variance for the main indicators of this survey are as follows

Variable	Estimate		Standard Error	C.V %	Confidence %95 Interval	
	Unit	Value			Lower	Upper
Main Electricity Source	%	99.8	0.1	0.001	99.5	99.9
Use of Solar Heaters	%	68.2	1.6	0.024	64.9	71.4
Average Electricity Consumption	KWh	271	4.85	0.018	261	280
Average wood Consumption	Kg	135	7.02	0.052	121	149
Average Gasoline Consumption	Liter	9	0.9	0.096	7.6	11.2

2. Non Sampling Errors

These errors are due to non-response cases as well as the implementation of surveys. In this survey, these errors emerged because of (a) the special situation of the questionnaire itself which depends on a type of estimation, (b) diversity of sources (e.g. the interviewers, respondent, editors, coders, data entry operator ... etc).

The sources of these errors can be summarized as:

1. Some of the households were not in their houses and the interviewers could not meet them.
2. Some of the households did not show attention toward the questionnaire.
3. Some errors occurred due to the way the questions were asked by interviewers.
4. Misunderstanding of the questions by the respondents.
5. Answering the questions related to consumption by making estimations.

$$\begin{aligned} \text{None response rate} &= \frac{\text{Sum of none response cases}}{\text{Net sample}} \times 100\% \\ &= \frac{317}{2,773} \times 100\% = 11.4\% \end{aligned}$$

$$\begin{aligned} \text{Response rate} &= 100\% - \text{none response rate} \\ &= 100\% - 11.4\% = 88.6\% \end{aligned}$$

The none response cases were treated using adjustment groups (strata) and the following equation shows this

$$fg = \frac{\sum_{ng} wi - \sum_{o.c} wi}{\sum_{rg} wi}$$

Where

$$\begin{aligned} \sum_{ng} wi &\text{ Total weights in g group} \\ \sum_{o.c.g} wi &\text{ Total weights over coverage} \\ \sum_{rg} wi &\text{ Total weights responding in the survey} \end{aligned}$$

Each unit is given fg value for the interval lies in and finally we get $w'i$ using the following equation

$$w'gi = wi * fgi$$

5.2 Comparability

The data of the household energy survey is comparable geographically and over time by comparing the data between different geographical areas and comparing the data of this survey with the data of previous surveys and census 2007.

5.3 Data Quality Assurance Procedures

Several measures have been made to ensure quality control in the survey, such as: the training of the fieldworkers on the main skills before the start of data collection, conducting field visits to field researchers to ensure the integrity of data collection, auditing of questionnaires before data entry, using a program that does not allow any mistakes during the process of data entry, and then examining the data. This was done to ensure that they are free from errors that have not been discovered earlier, after the receipt of the raw data file, cleaning and inspection of

the anomalous values have been made, and also inspection of the harmony between the different questions on the questionnaire.

5.4 Special Technical Notes

This part presents the important technical notes on the indicators presented in the results of the survey:

- In all calculations related to Gasoline, we dealt with the average of all available types of Gasoline.
- In this survey we collected data about consumption of olive cake and coal in household, but because of lacking data and since the variance of this data is fairly high we published this data through other entries in the tables.
- We calculated the average consumption per capita of electricity and energy types in the West Bank regions (North, Middle, and South of the West Bank) by using the average household members in the West Bank.
- According to the average household consumption of electricity, kerosene, LPG and wood, this represents the households that use these energy types.
- The increase in consumption of electricity and the decrease in the consumption of the other types of fuel in Gaza Strip reflects the Israeli siege imposed there.

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