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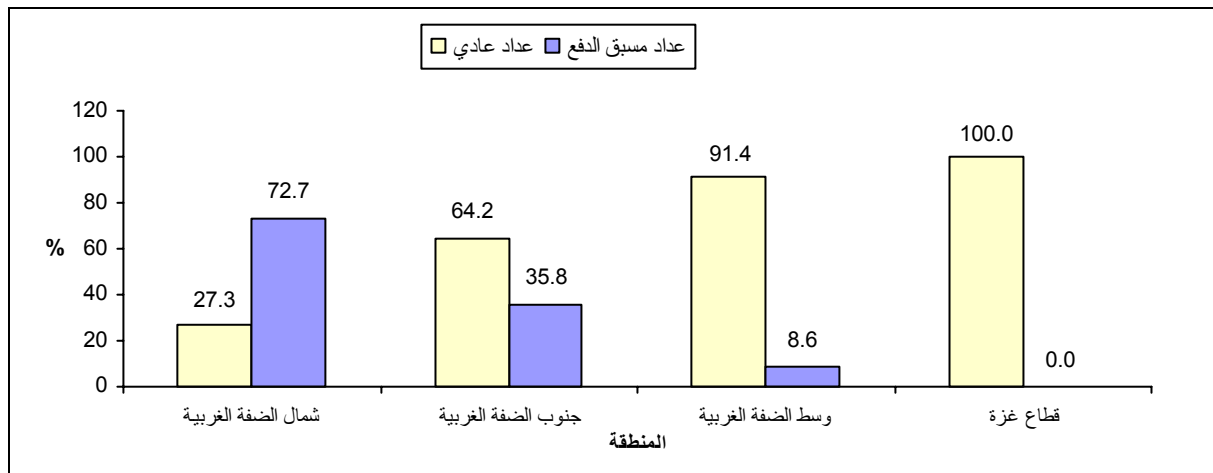
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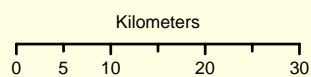
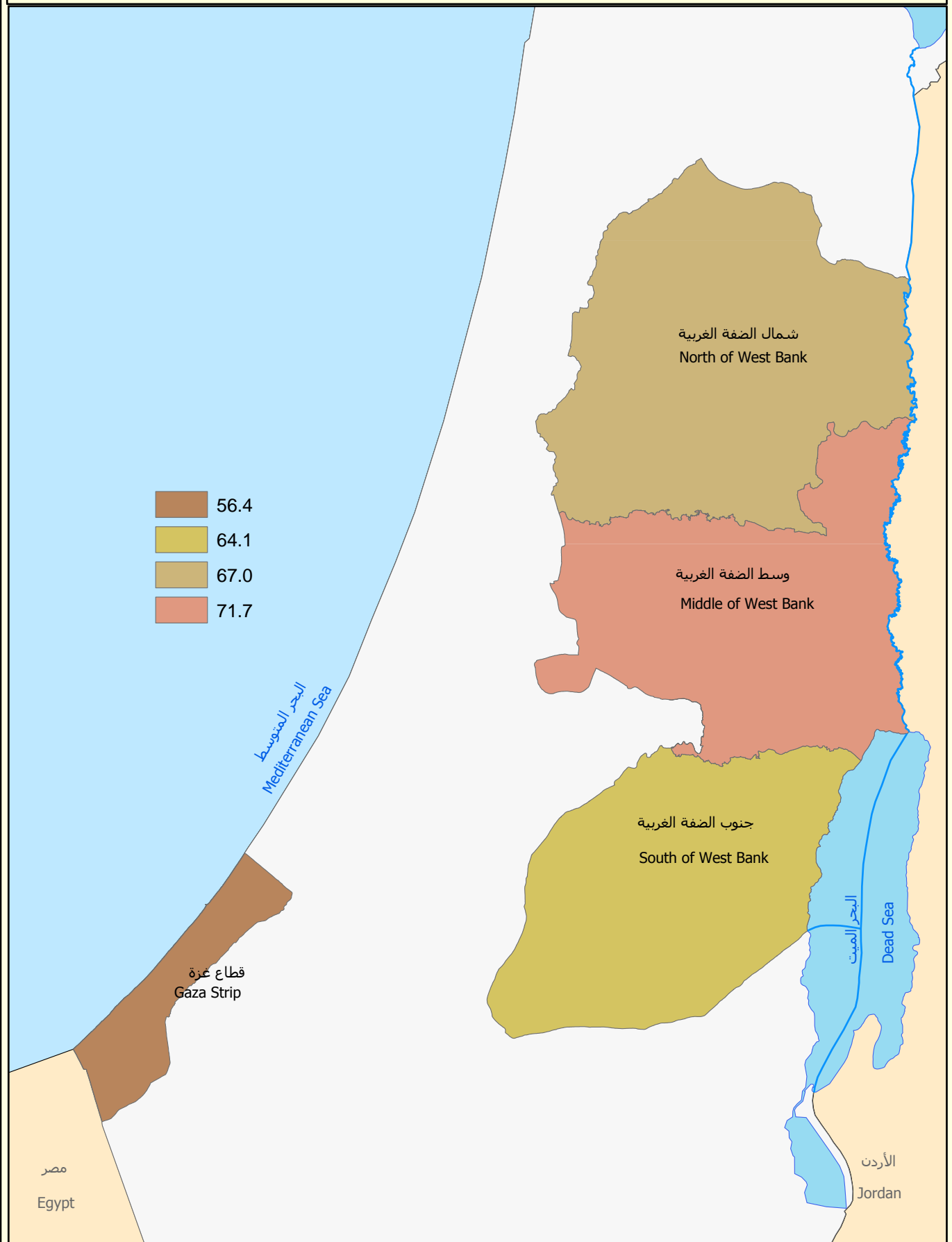


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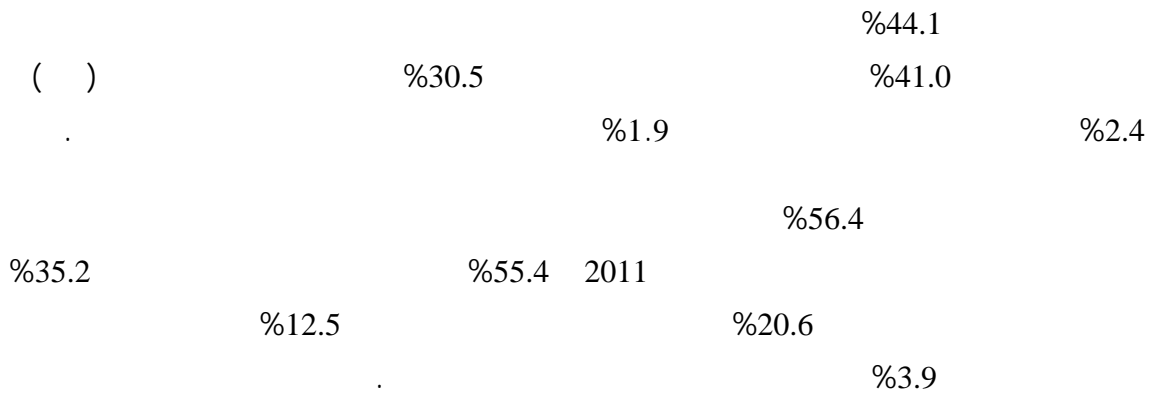
Percent of Households Which Use Solar Heater by Region, January 2011



المصدر: الجهاز المركزي للإحصاء الفلسطيني، 2011
 Source: Palestinian Central Bureau of Statistics, 2011



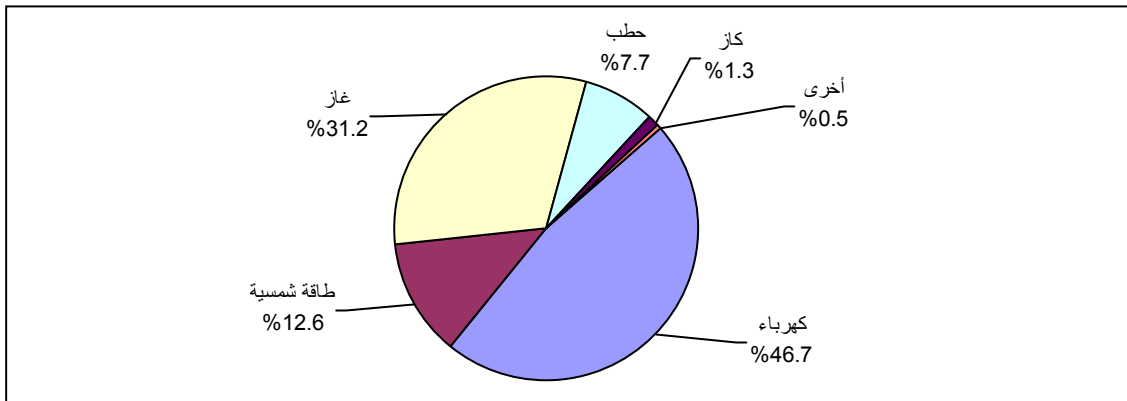
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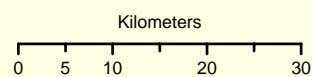
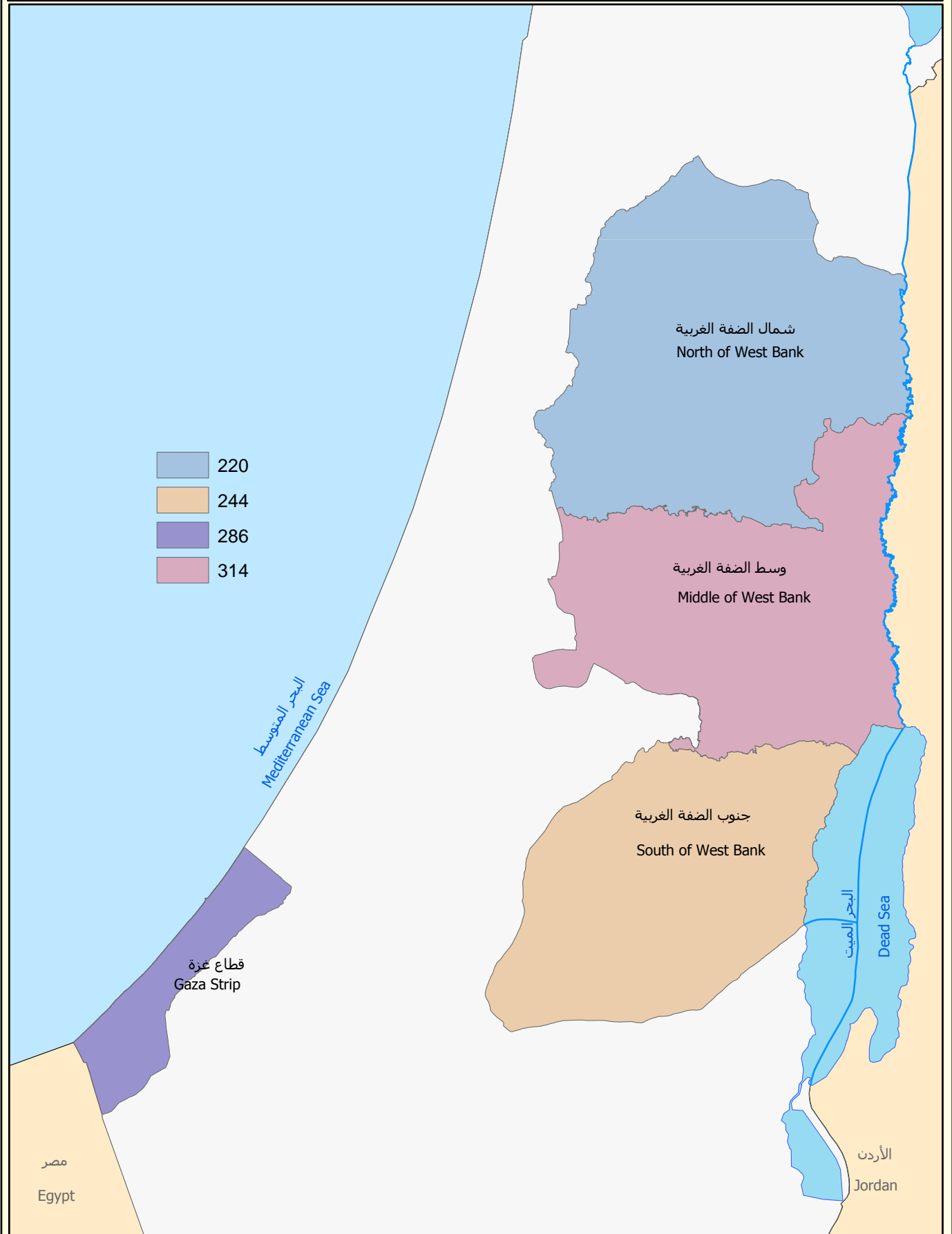


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 في الأراضي الفلسطينية حسب المنطقة، كانون ثاني 2011
 Average Household Consumption of Energy (KWh) from the Households that
 Used Energy in the Palestinian Territory by Region, January 2011



المصدر: الجهاز المركزي للإحصاء الفلسطيني، 2011
 Source: Palestinian Central Bureau of Statistics, 2011



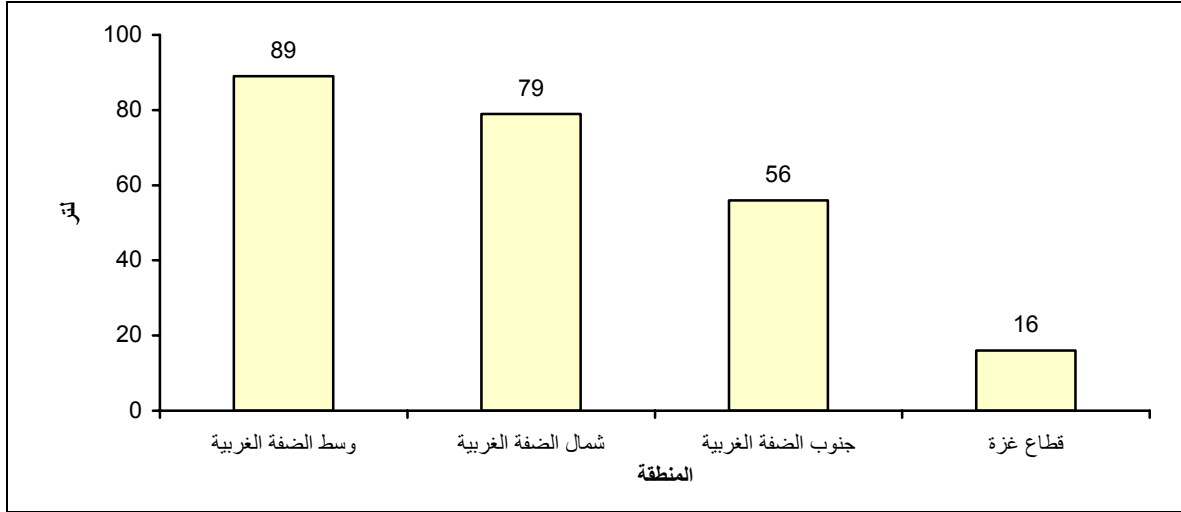
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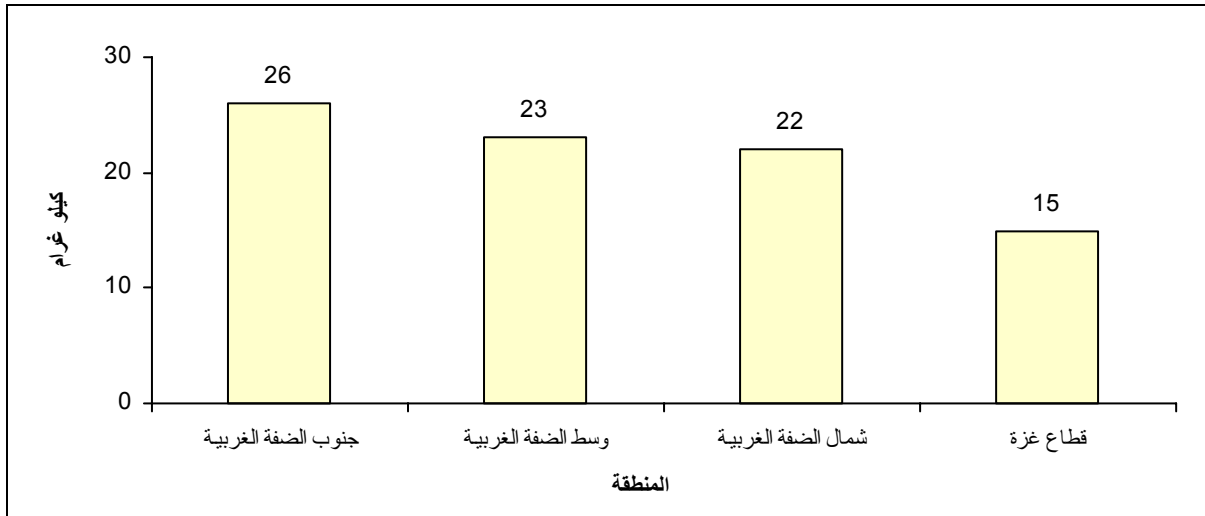
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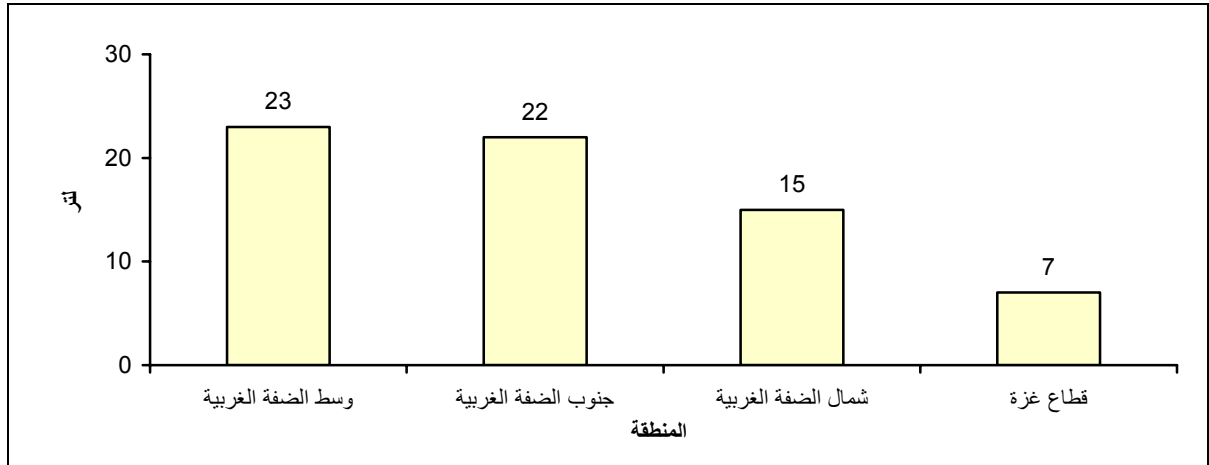


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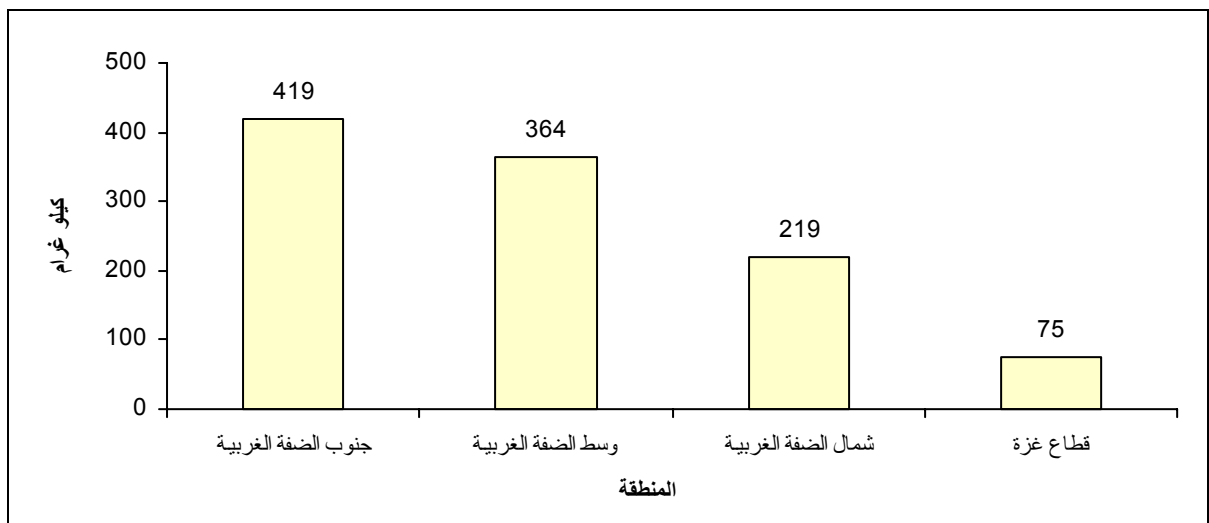
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Tables

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Table 1: Selected Indicators of Household Energy, January 1999, 2003-2005, 2009-2011

Indicator	2011	2010	2009	2005	2004	2003	1999	
Percentage of Households Connected to the Electricity Public Network	99.8	99.9	99.3	99.4	99.4	99.3	96.8	
Percentage of Households having Solar Heater	63.7	61.6	59.6	67.2	68.7	70.3	63.8	
Percentage of Households that doesn't Use Space Heating Facilities	27.8	32.0	32.2	13.3	13.6	14.0	24.8	
Percentage of Households Using Gas Burner for Cooking	96.0	82.3	68.4	99.3	99.7	99.6	98.0	
Average Household Consumption of Electricity (KW.h)*	266.0	254.0	275.0	256.0	264.7	268.0	264.6	*(.)
Average Household Consumption of LPG (kg)*	21.0	20.0	21.0	30.0	32.1	31.0	32.0	*()
Average Household Consumption of Kerosene (liter)*	10.0	14.0	24.0	22.0	23.2	17.0	11.9	*()()
Average Household Consumption of Wood (kg)*	228.0	209.0	287.0	236.0	207.2	259.0	86.5	*()

* For Households that Used Fuel

*

2011

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Table 2: Percentage Distribution of Households by Region, Availability of Electricity Status and the Main Electricity Source in Housing Unit, January 2011

Region	Availability of Electricity Status and Main Electricity Source in the Housing Unit			
	Total	No Electricity	Private Generator	Public Network
Palestinian Territory	100	0.2	0.0	99.8
West Bank	100	0.2	0.0	99.8
North of West Bank	100	0.2	0.0	99.8
Middle of West Bank	100	0.1	0.2	99.7
South of West Bank	100	0.2	0.0	99.8
Gaza Strip	100	0.2	0.0	99.8

2011

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Table 3: Percentage Distribution of Households by Region and Type of Electricity Meter Used, January 2011

Region	Type of Electricity Meter Used		
	Total	Prepaid Meter	Normal Meter
Palestinian Territory	100	27.8	72.2
West Bank	100	42.3	57.7
North of West Bank	100	72.7	27.3
Middle of West Bank	100	8.6	91.4
South of West Bank	100	35.8	64.2
Gaza Strip	100	0.0	100.0

2011

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Table 4: Percentage Distribution of Households by Region and Number of Hours of Electricity Service, January 2011

Region	Number of Hours of Electricity Service			
	Total	24 ساعة Hours 24	17-23 ساعة 17-23 Hours	
Palestinian Territory	100	65.3	0.0	34.7
West Bank	100	99.5	0.0	0.5
North of West Bank	100	99.2	0.0	0.8
Middle of West Bank	100	99.5	0.2	0.3
South of West Bank	100	99.6	0.0	0.4
Gaza Strip	100	0.0	0.0	100.0

2011

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Table 5: Percentage Distribution of Households by Region and Availability of Solar Heater, January 2011

Region	Availability of Solar Heater in the Housing Unit		
	Total	Not Available	
Palestinian Territory	100	36.3	63.7
West Bank	100	32.4	67.6
North of West Bank	100	33.0	67.0
Middle of West Bank	100	28.3	71.7
South of West Bank	100	35.9	64.1
Gaza Strip	100	43.6	56.4

2011

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Table 6: Percentage Distribution of Households by Region and Using Fuel for Household Activities, January 2011

Region	Using Fuel for Household Activities											استخدام الوقود في الأنشطة المنزلية	
	Heating			Water Heating			Baking			Cooking			
	Total	Not Use	Use	Total	Not Use	Use	Total	Not Use	Use	Total	Not Use		Use
Palestinian Territory	100	27.8	72.2	100	0.2	99.8	100	44.4	55.6	100	0.4	99.6	
West Bank	100	12.0	88.0	100	0.2	99.8	100	58.4	41.6	100	0.3	99.7	
North of West Bank	100	14.7	85.3	100	0.1	99.9	100	65.8	34.2	100	0.2	99.8	
Middle of West Bank	100	6.4	93.6	100	0.2	99.8	100	64.6	35.4	100	0.1	99.9	
South of West Bank	100	14.1	85.9	100	0.4	99.6	100	41.8	58.2	100	0.9	99.1	
Gaza Strip	100	58.1	41.9	100	0.3	99.7	100	17.6	82.4	100	0.4	99.6	

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Table 7: Percentage of Households by Region and Heating Facilities Used, January 2011

Region	Heating Facility					المنطقة
	Wood Heater	Central Heater	Kerosene Heater	Gas Heater	Electric Heater	
Palestinian Territory	30.5	1.9	2.4	41.0	44.1	
West Bank	29.3	2.2	2.4	50.1	39.9	
North of West Bank	39.2	0.9	2.7	46.9	32.1	
Middle of West Bank	15.1	4.0	2.8	54.4	47.0	
South of West Bank	31.9	1.9	1.6	49.6	42.4	
Gaza Strip	35.3	0.9	2.2	4.3	61.1	

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Table 8: Percentage Distribution of Households by Region and the Main Fuel Used for Cooking, January 2011

Region	Main Fuel Used for Cooking					الوقود الرئيسي المستخدم في الطبخ
	Total	Others	Wood	LPG	Electricity	
Palestinian Territory	100	1.2	1.6	96.4	0.8	
West Bank	100	0.0	1.0	99.0	0.0	
North of West Bank	100	0.0	1.0	99.0	0.0	
Middle of West Bank	100	0.0	0.5	99.5	0.0	
South of West Bank	100	0.0	1.4	98.6	0.0	
Gaza Strip	100	3.8	2.7	91.3	2.2	

2011

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Table 9: Percentage Distribution of Households by Region and the Main Fuel Used for Baking, January 2011

Region	الوقود الرئيسي المستخدم في الخبز				
	المجموع	أخرى	حطب	غاز البترول المسيل	كهرباء
	Total	Others	Wood	LPG	Electricity
Palestinian Territory	100	3.4	32.0	16.1	48.5
West Bank	100	4.0	42.6	29.9	23.5
North of West Bank	100	3.7	58.9	24.7	12.7
Middle of West Bank	100	0.0	49.4	20.8	29.8
South of West Bank	100	6.8	25.1	39.9	28.2
Gaza Strip	100	2.7	21.7	2.9	72.7

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Table 10: Percentage Distribution of Households by Region and the Main Fuel Used for Water Heating, January 2011

Region	الوقود الرئيسي المستخدم في تسخين المياه						
	المجموع	أخرى					
	Total	Others	Kerosene	Wood	LPG	Solar Energy	Electricity
Palestinian Territory	100	0.5	1.3	7.7	31.2	12.6	46.7
West Bank	100	0.4	0.4	6.5	37.5	13.5	41.7
North of West Bank	100	0.2	0.4	5.9	41.3	0.3	51.9
Middle of West Bank	100	0.6	0.2	2.7	16.5	36.7	43.3
South of West Bank	100	0.4	0.6	11.3	54.2	7.6	25.9
Gaza Strip	100	1.0	3.2	9.9	19.1	10.7	56.1

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Table 11: Percentage of Households by Region and Facilities Used for Water Heating, January 2011

Region	Facilities Used for Water Heating الوسائل المستخدمة لتسخين المياه						المنطقة
	Electric Atmor	Electric boiler	Solar Heater	Wood Burner	Kerosene Burner	Gas Burner	
Palestinian Territory	35.2	20.6	56.4	12.5	3.9	55.4	
West Bank	37.3	21.1	56.8	11.1	0.8	59.9	
North of West Bank	47.0	9.1	55.2	11.7	0.6	64.6	
Middle of West Bank	45.5	38.8	71.5	3.7	0.3	43.5	
South of West Bank	15.3	19.2	43.6	18.2	1.7	70.6	
Gaza Strip	31.1	19.7	55.6	15.1	9.7	46.9	

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Table 12: Percentage Distribution of Households by Region and the Main Fuel Used for Heating, January 2011

Region	Main Fuel Used for Heating الوقود الرئيسي المستخدم في التدفئة						
	المجموع Total	Others	Kerosene	Wood	LPG	Electricity	
Palestinian Territory	100	2.1	1.7	26.0	35.5	34.7	
West Bank	100	2.4	1.7	24.4	43.7	27.8	
North of West Bank	100	4.3	2.0	29.8	41.8	22.1	
Middle of West Bank	100	1.3	1.5	13.8	47.8	35.6	
South of West Bank	100	1.5	1.4	29.0	41.4	26.7	
Gaza Strip	100	0.2	2.0	32.4	2.7	62.7	

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Table 13: Percentage of Households that Used Energy by Region, and Energy Type, January 2011

Region	Energy Type						
	Diesel	Gasoline	Kerosene	LPG	Solar Energy	Wood	Electricity
Palestinian Territory	3.8	25.9	10.8	98.1	63.7	30.3	99.8
West Bank	5.2	19.5	3.1	99.7	67.6	29.6	99.8
North of West Bank	4.7	15.2	3.1	99.9	67.0	34.5	99.8
Middle of West Bank	5.5	25.9	3.5	99.7	71.7	20.4	99.7
South of West Bank	5.4	18.5	2.8	99.4	64.1	32.5	99.8
Gaza Strip	1.3	38.1	25.6	95.0	56.4	31.6	99.8

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Table 14: Average Household Consumption of Energy from the Households that Used Energy by Region, January 2011

Region	Average Household Consumption of Energy					
	() Diesel (Liter)	() Gasoline (Liter)	() Kerosene (Liter)	() LPG (Kg)	() Wood (kg)	() Electricity (KWh)
Palestinian Territory	102	46	10	21	228	266
West Bank	113	77	20	24	313	256
North of West Bank	95	79	15	22	219	220
Middle of West Bank	170	89	23	23	364	314
South of West Bank	74	56	22	26	419	244
Gaza Strip	19	16	7	15	75	286



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

**Household Energy Survey: (January, 2011)
Main Results**

June, 2011

PAGE NUMBERS OF ENGLISH TEXT ARE PRINTED IN SQUARE BRACKETS.
TABLES ARE PRINTED IN THE ARABIC ORDER (FROM RIGHT TO LEFT)

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Suggested Citation:

**Palestinian Central Bureau of Statistics, 2011. *Household Energy Survey: (January 2011)*
*Main Results. Ramallah - Palestine.***

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Acknowledgments

The Palestinian Central Bureau of Statistics (PCBS) extends its deep appreciations to all Palestinian families who contributed to the success of collecting the survey data and to all workers in the survey for being well dedicated in performing their duties.

The survey of Household Energy Survey in the Palestinian territory (January 2011) has been planned and conducted by a technical team from PCBS and with joint funding by the Palestinian National Authority (PNA) and the Core Funding Group (CFG) for the year 2011 represented by the Representative Office of Norway to PNA and the Swiss Development and Cooperation Agency (SDC).

Moreover, PCBS very much appreciates the distinctive efforts of the Core Funding Group (CFG) for their valuable contribution to funding the project.

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Mahmoud Jaradat
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Introduction

Most countries produce official statistics on energy due to its importance to shed light on the infrastructure, economic situation and standards of living in a given country.

In the Palestinian territory, additional special attention is given to energy statistics due to shortage of natural resources, high cost of energy and high population density. All of these factors create a need for a comprehensive and high quality statistics in this regard.

As households are considered the highest energy-consuming sector, PCBS decided to conduct a special Household Energy Survey to provide high quality data about energy consumption by type, different energy consuming facilities used at the households' level, and the behavior of consumption of energy. To implement this, a questionnaire was attached as a module within the Labor Force Survey.

PCBS conducts the Household Energy Survey twice a year. This survey was conducted to cover the month of January 2011 to know the energy consumption behavior.

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

The survey presented data on energy indicators pertaining to households in the Palestinian territory. This includes statistical data on electricity and other fuel consumption by households covering type of fuel for different activities as cooking, baking, heating, lighting, house and Water heating.

The Report of the Household Energy Survey (January 2011) consisted of three chapters: the first chapter described briefly the main findings; the second chapter presents the methodology used in the survey, the questionnaire design, sampling design, fieldwork operations data processing; data quality and technical notes; while the third chapter, describes the concepts and definitions.

PCBS hopes that the results of this survey will contribute towards providing the necessary data required for developing energy situation at households' level ,as well as, bridging the gap in energy statistics and providing useful data for decision makers, researchers and other users.

June, 2011

**Ola Awad
President of PCBS**

Chapter One

Main Findings

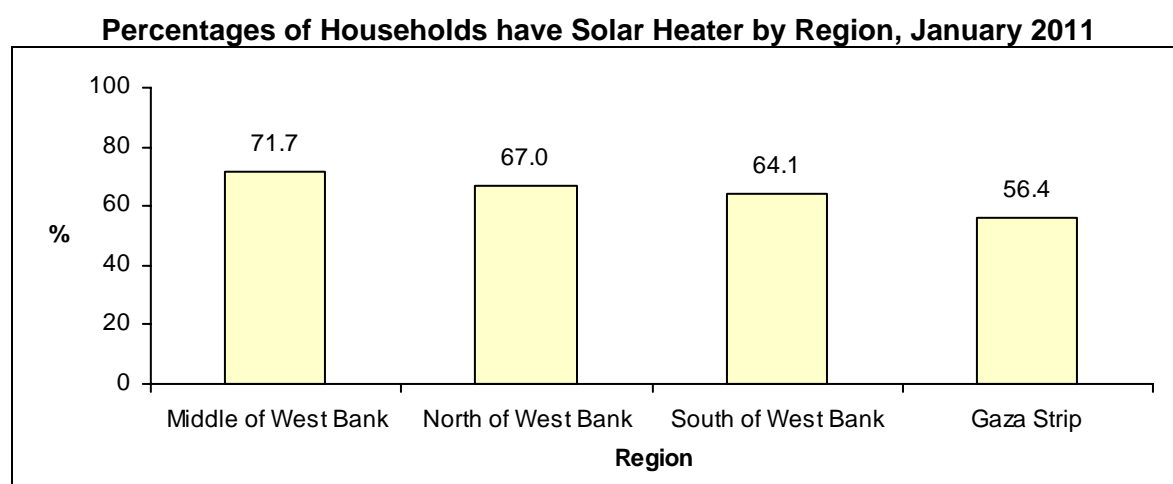
This chapter presents the main findings of the Household Energy Survey. These results are divided into four sections: the first section introduces the results related to energy sources in the residential sector during January 2011; the second one introduces the results related to the used means of house and water heating; the third section presents the usage purposes of energy types in the different activities of the households and finally, the fourth one presents the household consumption of the different energy types.

1.1 Energy Sources

The results of the survey indicated that 99.8% of households were connected to the public electricity network as of in January 2011.

Moreover, it is noted that 72.2% of households used a normal electricity meter; while 27.8% of households used a prepaid electricity meter as of in January 2011.

The results of the survey indicated that 63.7% of households have solar energy heaters in January 2011; while this percentage was 61.6% in January 2010.



1.2 Energy Consumption Facilities

The results of the survey indicated that 44.1% of households used an electrical heater for house heating, 41.0% of the households used a gas heater, 30.5% of the households used a wood heater, 2.4% of the households used kerosene heaters, and 1.9% of the households used a central heater in January 2011.

These results also indicated that 56.4% of the households used solar energy for the purpose of water heating, 55.4% of households used gas burner, 35.2% of the households used fast electric water heater “atmor”, 20.6% used electric boiler, and 12.5% of the households used wood burner, while 3.9% of the households used kerosene burner as of in January 2011.

1.3 Energy Uses

The results of this survey indicated that 0.4% of households didn't use any types of fuel for cooking, but as for the households that do the process of cooking, the results showed that 96.4% of households depended on liquefied petroleum gas as a main fuel for cooking, 1.6%

of households depend on wood; while 0.8% of households depended on electricity as a main fuel for cooking.

Also, the results indicated that 44.4% of households didn't use any types of fuel for baking, but as for the households that do the process of baking, the results showed that 48.5% of households depended on electricity as a main energy source for baking, 32.0% of households depended on wood; while 16.1% of households depended on liquefied petroleum gas as a main fuel for baking.

Moreover, the results also indicated that 0.2% of households didn't use any types of fuel for water heating. As for the that heating water ,the results showed that 46.7% of households depended on electricity as a main source for heating water, 12.6% of households depended on solar heaters, 31.2% of households depended on liquefied petroleum gas, 7.7% depended on wood and 1.3% of the households depended on kerosene as a main source for heating water.

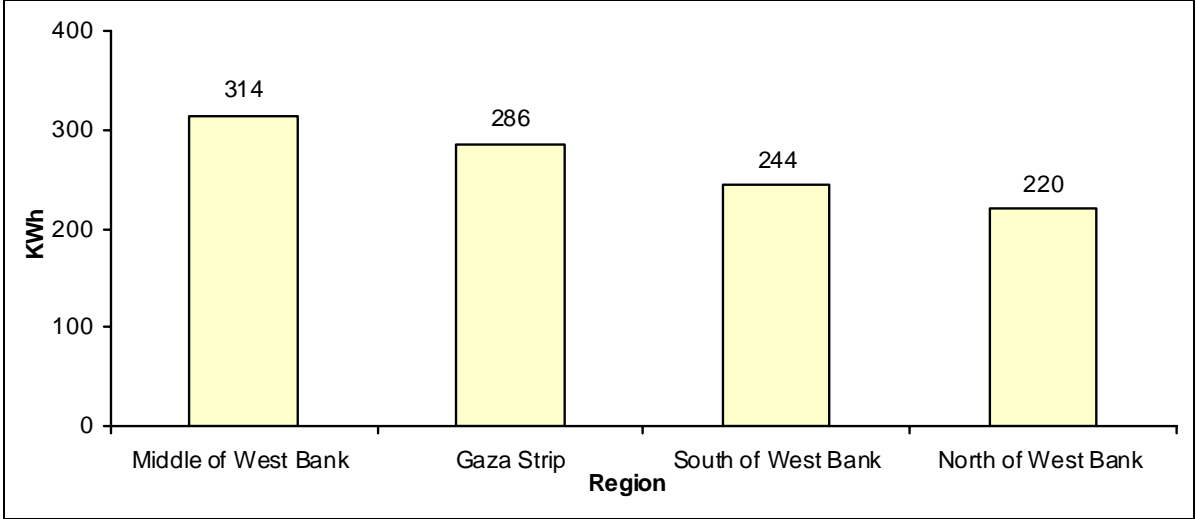
The findings of the survey indicated that 27.8% of households didn't use any types of fuel for heating. As for houses' heating, it showed that 35.5% of households depended on liquefied petroleum gas as a main source for heating, 34.7% of households depended on electricity, 26.0% depended on wood, while 1.7% of the households depended on kerosene as a main source for heating in cold season.

1.4 Household Energy Consumption

Consumption of electricity:

The findings of the survey indicated that the average of electricity consumption of a household (among those households using electricity) during was 266 KWh in January 2011, compared to 254 KWh in January 2010; while it reached 314 KWh in the Middle of the West Bank and did not exceed 220 KWh in the North of the West Bank.

Average Household Electricity Consumption from the households that used electricity by Region, January 2011



Gasoline Consumption:

The findings of the survey indicated that the average of household consumption of gasoline (among those households using gasoline) was 46 liters in January 2011. It was 89 liters in the Middle of West Bank and did not exceed 16 liters in Gaza Strip.

Liquefied Petroleum Gas Consumption:

The findings indicated that the average of household consumption of liquefied petroleum gas (among those households using liquefied petroleum gas) was 21 kgs as of in January 2011.

Kerosene Consumption:

The findings of the survey indicated that the average of household consumption of kerosene (among those households using kerosene) was 10 liters in January 2011. It reached 23 liters in the Middle of West Bank, 15 liters in the North of West Bank, 22 liters in the south of the West Bank; while it was 7 liters in Gaza Strip.

Wood Consumption

The results indicated that the average of household consumption of wood (among those households using wood) was 228 kgs in January 2011. It reached 419 kgs in the South of West Bank and 75 kgs in Gaza Strip.

Chapter Two

Methodology and Data Quality

This section presents a documentation of the methodology used in conducting the household energy survey including the design of the survey's instruments, data collection, data processing, and data tabulation; it also presents data quality from very beginning of preparations to launching the survey to data dissemination.

2.1 Questionnaire

The design of the questionnaire was based on the experiences of similar countries as well as on international standards and recommendations for the most important indicators, taking into account the special situation of the Palestinian territory.

2.2 Sample Frame

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

Target Population:

The target population was all Palestinian households whom are living in the Palestinian territory.

Sampling Frame:

The sampling frame is a master sample was chosen from the Master Sampling frame of the Population, Housing and Establishment Census 2007. The sampling frame consists of a list of enumeration areas used as PSU's in the first stage of selection, and the households frame was used to choose households in the second level.

Sampling Design:

The sample of this survey is a sub-sample of the Labor Force Survey (LFS) sample, which has been conducted periodically since September 1995. The sample of LFS is distributed over 13 weeks. The sample of the survey occupies six weeks of the first quarter of 2011 within implementing LFS.

Stratification:

In designing the sample of the 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 enumeration areas (clusters) from the master sample. In the second stage, the sampling units are households.

Analysis Unit:

The unit of analysis is the household.

Sample Size:

The sample size is comprised of (3,313) Palestinian households in the West Bank and Gaza Strip, where this sample was distributed according to locality type (urban, rural and refugee camps).

2.3 Fieldwork

Training Fieldworkers

Fieldworkers were trained on the main skills relevant to the survey before the start of data collection. Instructions for filling the questionnaire were made available for the interviewers. The training provided fieldworkers with aims and definitions of the different indicators of the survey.

Data Collection:

Fieldwork activities started on 20/02/2011 and lasted until 31/03/2011. This survey was conducted to cover the month of January 2011. Fieldworkers were distributed to all governorates accordance to the sample size of each governorate. The fieldwork team consisted of 24 members, including one fieldwork coordinator, 4 supervisors, 4 editors and 15 interviewers.

During fieldwork 3,313 households were visited and 3,029 questionnaires were completed in the Palestinian territory.

2.4 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 entry template developed in Access. The data entry program was prepared to satisfy a number of requirements such as:

- To prevent the duplication of the questionnaires during data entry.
- To apply integrity and consistency checks of entered data.
- To handle errors in user friendly manner.
- The ability to transfer captured data to another format for data analysis using statistical analysis software such as SPSS.

2.5 Weight Calculation and the Estimation

Since the sampling weight is inversely proportional with the percentage of the sample from the frame, and as this ratio is different from the percentage sample for the population in the reference period, the weight was adjusted to show the total population at the beginning of 2011. The weights were also adjusted to make the distribution of persons in the sample by region, sex, and age structure to become identical to the distribution in the census 2007. Finally, weights were adjusted to compensate for incomplete cases that occur during data collection.

2.6 Data Quality

The concept of data quality is constructed from many aspects starting from planning of the survey to disseminating the findings. The main principles of quality in statistics include Accuracy, Comparability, and Data Quality Assurance Procedures.

2.6.1 Accuracy

It includes many aspects of the survey, mainly statistical errors due to the sample, and non statistical errors referring to the workers and tools of the survey. It includes also the response rates in the survey and their effect on the assumptions. This section includes:

2.6.1.1. Sampling Errors

These types of errors evolved as a result of studying a part of the population and not all of it. Because this is a sampled survey, the data will be affected by sampling errors due to using a sample and not the whole frame of the population. Differences appear compared to 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 gasoline, wood, charcoal and olive cake suffer 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 are no problems in publishing the data at the geographical level (North of the West Bank, Middle of the West Bank, South of the West Bank and Gaza Strip). However, publishing data at the governorate level is not possible due to the high variance, especially for wood, charcoal and olive cake. The variances 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	%	63.7	1.3	0.020	61.2	66.2
Use of LPG	%	98.1	0.2	0.003	97.5	98.5
Average Electricity Consumption	KWh	266	3.44	0.013	259	273
Average wood Consumption	Kg	228	18.47	0.081	191	264
Average Gasoline Consumption	Liter	46	2.19	0.047	41.8	50.5

2.6.1.2 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, where some parts depend partially on estimation, (b) diversity of sources (e.g., the interviewers, respondents, 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 give attention to the questions in 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.

None response rate = $\frac{\text{Sum of none response cases}}{\text{Net sample}} \times 100\%$

$$= \frac{22}{3.313} \times 100\% = 0.66\%$$

$$\begin{aligned} \text{Response rate} &= 100\% - \text{none response rate} \\ &= 100\% - 0.66\% = 99.34\% \end{aligned}$$

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

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

Where

- $\sum_{ng} wi$ Total weights in g group
- $\sum_{o.c.g} wi$ Total weights over coverage
- $\sum_{rg} wi$ Total weights responding in the survey

$$w' gi = wi * fgi$$

2.6.2 Comparability

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

2.6.3 Data Quality Assurance Procedures

Several measures had been taken to ensure the efficiency of quality controls in the survey, such as: the training of fieldworkers on the main skills before the start of data collection, conducting field visits to fieldworkers to ensure the integrity of data collection, editing of questionnaires before data entry, using data entry application that does not allow any mistakes during the process of data entry, and then examining the data. This was done to ensure that data is error free; while cleaning and inspection of the anomalous values have been made to ensure harmony between the different questions on the questionnaire.

2.6.4 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, the average of all available types of gasoline was used.
- In this survey, data was collected about consumption of olive cake and coal in households, but due to lack of relevant data and fairly high variance, the data was grouped with others in the statistical tables.
- The increase in consumption of electricity and the decrease in the consumption of the other types of fuel in Gaza Strip reflected the Israeli siege imposed there.

Chapter Three

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:

It refers to 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:

It is a liquid hydrocarbon fuel obtained by the distillation of crude petroleum. It is heavy oil distilled between 200°C and 380°C. Its point is always above 50°C, and its specific gravity is higher than 0.82.

Liquefied Petroleum Gas (LPG):

It is mainly used in Heating 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:

It is medium oil distilling between 150°C and 300°C. Its specific gravity is around 0.80 and the flash point above 38°C. It is used in sectors other than aircraft transport.

Charcoal:

It is a 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 for fuel purposes.

Household Energy Consumption:

It refers to consumption by households in the different activities within households (Heating, 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) * Time (Hours).

Kilo Watt-Hour:

Energy unit, a 1 KWh = 1000 W * 3600 Second = $3.6 * 10^6$ Watt-second

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

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