



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

**Household Energy Survey
(April 2006)**

Table of Contents

Introduction

Concepts and Definitions

Survey Questionnaire

Target Population

Sample and Frame

Weight calculation and the estimation

Reference Period

Data Collection

Data Processing

Response Rate

Symbolization Instructions

Data Quality

Introduction

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

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. Energy statistics program implemented nine rounds of household energy survey during 1999-2005.

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 report 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, using type of fuel by different activities (cooking, Baking, conditioning, lighting, and water Heating).

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:** The household is defined as one person or a group of persons with or without a family relationship, who live in the same housing unit or part of the housing unit, share meals and make joint provision for 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).
International System of Units:	The International System of Units involves seven basic units, each of them has specific definition. It is possible to derive all remaining units from these basic seven units. It is common to use prefixes to indicate related representations and parts of the system. The following table presents the basic units of the International System of Units.

The Basic Units of the International System of Unit:

Quantity	Name	Symbol
Length	Meter	m
Mass	Kilogram	kg
Time	Second	S
Electric Current	Ampere	A
Thermodynamic Degree	Kelvin	K
Lighting Density	Candela	cd
Quantity of Matter	Mole	Mole

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 .
------------------------	---

Survey Questionnaire

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

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.

Target Population

All Palestinian households living in the Palestinian Territory.

Sample and Frame

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

Sampling Frame

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

Sampling Design

The sample of this survey is a sub-sample of 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 second quarter 2006 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 (3,148) Palestinian households in 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.

Weight Calculation and the Estimation

Because the sampling weight counteractive with the percentage sample from the frame, and as this ratio different from the percentage sample for the society in reference period, therefore the weight was adjusted to show number of population in the middle of 2006. And the weight was adjusted to make the distribution of people in the sample by region, sort, and structure age become identical to this distribution on census 1997. Finally, weight were adjusted to compensate for incomplete cases that occur during data collecting.

Reference Period

This file shows the main finding of household energy survey which executed on April 2006.

Data Collection

Field work started on 26/05/2006 and lasted until 06/07/2006. 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.

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 CSpro. Data entry was done decentralized in Nablus, Hebron, Gaza Strip in addition to the central office in Al-Bireh. 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.

Response Rate

During fieldwork 3,148 Households were visited in the Palestinian Territory, the end results for the interview become as following:

- (2,714) complete questioner
- (27) traveling households
- (58) housing unit not existed
- (78) cases no body in the house
- (31) objection cases
- (171) housing unit abandoned
- (26) household can't give data
- (43) other cases

Symbolization Instructions

The question that needs to symbolize is ENR04, the answer is the energy type that used as a main or secondary fuel in the different household activities and the following table explain the energy type and the used symbol:

Energy Type	Symbol
Electricity	1
Diesel	2
Gasoline	3
Gas	4
Kerosene	5
Coal	6
Wood	7
Solar Energy	8
Others	9
Olive Cake	10
Not existed	0

Data Quality

This section provides important notes concerning the statistical quality of the data. This includes data quality as compiled from different activities in this survey. Also, this section includes main technical notes for The results of Household Energy Survey.

The data of wood should be handled carefully, since the variance of these data is fairly high.

Sampling Errors

These types of errors evolved as a result of studying a part of the society and not all of it. For this survey, variance calculations were made for average household consumption and total consumption for the different types of energy in the Palestinian Territory.

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 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 in:

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

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 collect data about consumption of olive cake and coal in household, but because of less of data and since the variance of this data is fairly high we publish this data through others entry in the tables.
- We calculate the average consumption per capita of electricity and energy types in West Bank regions (North, Middle, and South of the West Bank) by using the average of household member in the West Bank.