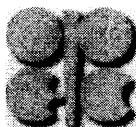




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ENERGY STATISTICS IN PALESTINE

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Energy Statistics in Palestine

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EXECUTIVE SUMMARY

Palestinian Central Bureau of Statistics

Palestinian Central Bureau of Statistics (PCBS) is the central statistical office in Palestine. Its main function is to provide truthful and impartial official statistics on demographic, social, economic and environmental states and trend to serve the Palestinian citizenry. To enlighten the public with information provided through the mass media, and cooperate with universities and research centers, and to serve the instrumental needs of businesses and their organizations for statistical information on states and trends. And to conduct population, housing, agriculture census. And to participate the international cooperation and exchange of official statistics.

Environment Statistics in Palestine

Environment statistics is an important issue especially in Palestine due to the limited natural resources and the damage of the environment caused by occupation. Providing and updating environmental statistics is highly essential for the purpose of the environment protecting.

The Environment and Natural Resources Statistics program has the responsibility of creating and updating data on the statistical indicators of the pressure on the environment and mainly in the following subjects:

1. Meteorology
2. Emissions to Air and Air Quality
3. Water and Wastewater
4. Noise
5. Solid Waste
6. Fresh Water (consumption, supply, quantity)
7. Mineral Reserves
8. Energy
9. Land Use

Energy Statistics in Palestine

Undoubtedly, availability of reliable statistical data on energy consumption is a major input in planning and development process. Most countries pay special attention for energy statistics due to the important role of energy in reflecting the situation of the 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.

Energy Situation in Palestine:

Palestine has very little production of energy. There is some production of biomass, solar heat and private generation of electricity; however most of the energy consumed is imported from other countries. About 95 percent of electricity consumed is imported from Israel through the Israeli Electricity Company.

Program Tasks:

Energy statistics program aims at providing accurate statistical data about the energy in the Palestinian Territory. The Energy Statistics Program is concerned with the continuation of energy flow in Palestine by preparing an energy balance according to international standards. In order to achieve this, the program must provide and compile high quality, periodic statistical data at different geographical levels., exports, stocks and prices of different types of energy carriers.

Achievements:

The Energy Statistics Program has accomplished many activities:

Preparing a list of Energy Statistics Indicators, sharing in the data user/producer dialogue, and workshops concerning energy and natural resources, implementing a Household Energy Survey, which is attached to LFS for many rounds, attaching surveys with the Economic Surveys Series, publishing a series of reports about Energy consumption in the Palestinian Territory, sharing in Implementing the Local Community Survey-1998, Receiving two missions from Norway Statistics about the Energy, and the Energy Statistics Program has published ten reports about Energy Consumption in the Palestinian Territory, and Household Energy survey.

Methodology:-

Energy Statistics indicators are derived from three different sources: Administrative Records, energy data is gathered through cooperation with the data providers. Field Surveys: energy statistics include indicators related to households and establishments.

The Energy Indicators

PCBS provide data on the following indicators:

Exported and re-exported energy, energy consumed by economic sectors, energy used for electricity generation in economic sectors, energy losses and stock change by economic activity, Total energy consumption in the Palestinian Territory. Energy consumption in the Household, Expenditures on different types of energy within Household, Energy uses within the Household by the end use, and Availability of the different facilities for consuming energy within households.

Data Quality

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

Future Plan

PCBS is engaged in preparing for the Palestinian energy balance, a renewable energy project, the second round of household energy survey 2003, and looking forward to publish reports about the energy consumption in the Palestinian Territory.

ENERGY STATISTICS IN PALESTINE

Palestinian Central Bureau of Statistics (PCBS)

Palestinian Central Bureau of Statistics (PCBS) is the central statistical office in Palestine. Its main function is to provide truthful and impartial official statistics on demographic, social, economic and environmental states and trend to serve the Palestinian citizenry. To enlighten the public with information provided through the mass media, and cooperate with universities and research centers, and to serve the instrumental needs of businesses and their organizations for statistical information on states and trends. And to conduct population, housing, agriculture census. And to participate the international cooperation and exchange of official statistics.

PCBS plays a vital role in providing essential statistical information to the citizens and their organizations as well as elected representatives, scholars, governmental and non-governmental organizations, mass media, the private sector, and international organizations.

Environment Statistics in PCBS

Environment statistics is an important issue especially in Palestine due to the limited natural resources and the damage of the environment caused by occupation. Providing and updating environmental statistics is highly essential for the purpose of the environment protection.

The Environment and Natural Resources Statistics program has the responsibility of creating and updating data on the statistical indicators of the pressure on the environment and mainly in the following subjects:

- Meteorology
- Emissions to Air and Air quality
- Water and Wastewater
- Noise
- Solid Waste
- Fresh water (consumption, supply, quantity)
- Mineral reserves
- Energy
- Land use

Energy Statistics in PCBS

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. In December 1999, and in December 2001 a publication concerned with energy consumption in Palestinian Territory for 1996 was prepared.

Because of the importance of the household sector and due to it's large contribution to energy consumption in the Palestinian Territory, we were interested in energy statistics and try to cover all the indicators that give us a good database about the energy status in Palestine, we have started the energy statistics program in 1996 by issuing annual report containing main indicators, we have developed tools of the surveys such as improvement of questionnaire, put other detailed indicators, increasing the data quality.

Program Tasks:

Energy statistics program aims at providing accurate statistical data about the energy in the Palestinian Territory, the Tasks of the program are:

- 1- Creating and updating the statistical data about the Energy sector in the Palestinian Territory, according to local and international standers.
- 2- Creating and updating the Energy Statistics database.
- 3- Updating and unified the energy concepts and definitions in order to enable comparison with other countries.
- 4- Establishing the Palestinian Energy Balance according to international standards, taking into account the Palestinian Privacy.
- 5- Studying and analyzing the results of the Population and Housing Census that is related to Energy.
- 6- Providing data about energy economics.
- 7- Preparing the plans and budgets for the program.

The Energy Statistics Program is concerned with the continuation of energy flow in Palestine by preparing an energy balance according to international standards. In order to achieve this, the program must provide and compile high quality, periodic statistical data at different geographical levels. Statistical data includes:

- 1- Energy Sources: Production and utilization of different types of energy
- 2- Energy Consumption: consumption by sector and by end use for all types of energy carriers
- 3- Losses in different types of energy carriers
- 4- Energy conversion from one form to another
- 5- Energy industry efficiencies and power
- 6- Energy Economics: imports, exports, stocks and prices of different types of energy carriers.

Achievements:

The Energy Statistics Program has accomplished many activities:

1. Preparing a list of Energy statistics indicators
2. Sharing in the data user/producer dialogue, and workshops concerning energy and natural resources.
3. Implementing a Household Energy Survey, which is attached to LFS survey.
4. Attaching surveys with the Economic Surveys Series. To collect energy data about economic establishments
5. Publishing a series of reports about Energy consumption in the Palestinian Territory.
6. Sharing in implementing the Local Community Survey-1998.
7. Synergy with other departments in and outside of PCBS to benefit from the statistics available data about energy.
8. Receiving two missions from Norway Statistics on Energy Statistics.
9. The Energy Statistics Program has published ten reports:-
 - a. Report about Energy Consumption in the Palestinian Territory (Annual Report, 1996, 1997, 1998, 1999, 2000, and 2001).
 - b. Implementing Household Energy survey (January – March 1999).
 - c. Implementing Household Energy survey (July - September 1999).
 - d. Implementing Household Energy survey (July - September 2001).
 - e. Implementing Household Energy survey (January – March 2003).

Methodology:-

Energy statistics indicators are derived from three different sources:

- (1) **Administrative Records:** Here, energy data is gathered through cooperation with the mentioned data providers. The table below illustrates data providers and their needed data:

Data Provider	Expected Data
Palestinian Energy Authority (PEA)	<ol style="list-style-type: none"> 1. Monthly electricity imports 2. Electricity consumption by different sectors 3. Local electricity generation 4. Technical losses in electricity 5. Voltage and length of electricity distribution systems by governorate 6. Number of consumers 7. Power factor and peak load (by feeder)
Palestinian Energy and Environment Research Center (PEC)	<ol style="list-style-type: none"> 1. Forecast for utilized solar energy 2. Forecast for wood and coal consumption 3. Local electricity generation
Jerusalem District Electricity Company (JDECO)	<ol style="list-style-type: none"> 1. Monthly electricity imports 2. Electricity consumption by different sectors 3. Local electricity generation 4. Technical losses in electricity 5. Voltage and length of electricity distribution systems by governorate 6. Number of consumers 7. Power factor and peak load (by feeder)
General Petroleum Corporation (GPC)	<ol style="list-style-type: none"> 1. Monthly imports of petroleum products 2. Petroleum products price 3. Petroleum products stock 4. Sales for large consumers
Ministry of Local Governorate (MLG)	<p>The MLG provides the following data from local communities:</p> <ol style="list-style-type: none"> 1. Number of generators and their working capacity 2. Number of consumers 3. Main problems communities suffer from 4. Number of communities served by electricity
Palestinian Central Bureau of Statistics (PCBS)	<p>Energy data can be gathered from the following surveys and programs in PCBS :</p> <ol style="list-style-type: none"> 1) Economic Survey (Establishments): this survey can cover consumption, losses and stocks of different energy types in the main economic sectors (Industrial, Domestic Trade, and Services...) 2) Foreign Trade Department: covers data about imports and exports of the different energy types 3) Consumer Price Department: covers data about the price of different energy types 4) Population and Housing Census 1997: covers energy data related to the household conditions and the main use of energy in the household sector 5) Palestinian Expenditure and Consumption Survey: covers data related to the household expenditure on the different types of energy. 6) Local Community Survey: covers data about the electricity indicators in the localities.

(2) **Field Surveys:** Energy statistics include indicators related to households and establishments. In PCBS, two household surveys are executed periodically (The Palestinian Expenditure and Consumption Survey and Labor Force Survey). Also there is an Establishment Survey for the different economic sectors. The Energy Statistics Program covers most of the household's and establishment's energy indicators by attaching energy questionnaires with the mentioned surveys.

(3) **Cooperation with Other Related Institutes:** The Energy statistics program cooperates with the different institutes and research centers working in the field of energy through the use of joint energy questionnaires, workshops and conferences.

Energy statistics program had joined the international activities about energy, such as ESCWA activities and workshops, and UNSD activities. Also energy statistics program fill the UNSD questionnaire with the available data.

The Energy Indicators

1. Series of Annual Reports (Energy Consumption Reports)
 - Exported and Re-exported energy in the Palestinian Territory by type of energy and region.
 - Energy consumed by economic sectors in the Palestinian Territory.
 - Energy used for Electricity generation in economic sectors in the Palestinian Territory.
 - Energy losses and stock change by economic activity in the Palestinian Territory.
 - Total energy consumption in the Palestinian Territory.
2. Household Energy Survey
 - Energy consumption (electricity, petroleum products and renewable energy types) in the Household
 - Expenditures on different types of energy within Household.
 - Energy uses within the Household by the end use.
 - Availability of the different facilities for consuming energy within households.

Indicators

Electrical energy consumption	it is the consumed electrical energy in the various sectors: household, commercial, industrial and other sectors.
The imported electrical energy	it is the quantity of electrical energy bought from external sources.
Electrical energy losses	it is the quantity of electrical energy lost through the operation of generating, transmitting and distribution. Electrical energy is also lost (from the producer point of view by bad quality of used meters and consumer stealing electricity.
The generated electrical energy	It is the quantity of electrical energy produced by Palestinian through generator units. These units belong to the municipalities or village councils or any other local committee.
Electricity coverage	the Palestinian territory divided into group by electrical services into three main parties: Areas fully served. Areas partially served, Areas without electricity.
Petroleum products consumption by sector	it is the consumed petroleum products in the various sectors: household, commercial, industrial and other sectors.
Petroleum products imports	it is the quantity of petroleum products that are imported from external sources.

Per capita electrical energy consumption	it is the average consumption per capita from electricity through the year. This indicator is considered as a very important indicator because it gives evidences for the welfare and civilization level in the society and strength or weakness of the infrastructure in the electrical energy sector
Petroleum stocks	The quantity of petroleum products stored in the Palestinian territory in the end of the month and the year.
Per Capita total energy consumption	it is the average consumption per capita from total energy through the year. It is calculated by converting the different types of the consumed energy into a common energy unit (Joule or T.O.E).

Data Quality

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

1- Sampling Errors:

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

2- Non Sampling Errors:

These errors are due to non-response cases as well as the implementation of surveys. In surveys, 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).

Several procedures were considered to minimize the effect of non-sampling errors a sample survey is household energy survey, the procedures taken in this survey concern the following:

1. Filed workers: Suitable, trained, and qualified team is chosen to collect data from households. This team pass a training course on the questionnaire construction, and provided by a training book for more details.
2. Editing: In order to reduce the above errors, an editing team is trained for this purpose.
3. Data entry: A data entry program is designed with conditional entries to reduce the data entry errors.
4. Data processing: Multi checks were made on the data after receiving it from data shows a good harmony and good quality.

Future Plan

1. Preparing the Palestinian Energy balance
2. Preparing a renewable energy project.
3. Preparation of the second round of household energy survey ٢٠٠٣ (semi annual survey).
4. Publishing annual reports about the energy consumption in the Palestinian Territory

Special Notes:

Energy Situation in Palestine:

Palestine has very little production of energy. There is some production of biomass, solar heat and private generation of electricity; however most of the energy consumed is imported from other countries. About 95 percent of electricity consumed is imported from Israel through the Israeli Electricity Company. Also, all petroleum products are imported through Israeli petroleum companies. There is some private generation of electricity in industry and some communities. Many communities have problems with the electricity. Many are suffering from weak electrical connection, and some have no connection to any electrical distribution system at all.

The main energy sources in Palestinian households are electricity, gas and biomass. In addition, solar heaters are widely used (solar heaters are water boilers on the house-ceilings; the sun heats the water and energy from the heated water is then used for heating and hot water in the dwelling).

The Ministry of Finance estimated the illegal imports of petroleum products to constitute about 20 per cent of total imports in 1996. According to the General Petroleum Corporation, the quantities of illegal petroleum imports that are not registered are considerably reduced and constituted only 1-2 percent of the total imports of petroleum products in 1998/1999. The problem with Jerusalem might be solved by making an estimate for the imports of petroleum products on basis of the energy consumption in Jerusalem, because all consumption of petroleum products in Jerusalem comes from imports.

Energy Source

Palestine is a net importer of energy; almost 95% of energy consumed is imported from Israel. In many cases, Israel delivers energy carriers (Electricity and Petroleum oil) directly to the distributors or customers, rendering the data compilation process very costly, and time consuming.

Administrative records

Palestinian institutes (governmental and semi-governmental) who are potential sources for energy data are still in the establishing stage and most of their plans are not implemented. Hindering factors are not only internal but also have to do with their access to these data.

Data gaps

The available energy statistical database has lots of geographical gaps (under coverage) and informational data gaps, this is due to several reasons one of which is the occupation policy.

Classifications and Definitions

Many of the data producers do not have fixed definitions of the terms they use in the data, and all the data producers do not necessarily use the one term, the thing that prevents comparability between the data.

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SOME INDICATORS IN PALESTINE

Energy Imports in the Palestinian Territory:

Data show that the total energy imports in the Palestinian Territory in 1996 is 11,309 TJ, 16,728 TJ in 1997 and increase to 25,942 in 1998, 25,736 in 1999 and increase to 32,791 in 2000, where it decrease to 27,416 in 2001 because of the Israeli measures during Al-Aqsa Intifada . (Table 1)

Table 1: Total Energy Imports in the Palestinian Territory by Region and Year

Region	Total Energy Imports					
	1996	1997	1998	1999	2000	2001
Palestinian Territory	11,309	16,728	25,942	25,736	32,791	27,416
West Bank	8,209	14,286	18,221	17,690	22,258	18,460
North of the West Bank	4,000	0,786	6,728	6,984	8,786	6,007
Middle of the west Bank	698	3,197	0,490	4,988	6,160	0,702
South of the west Bank	3,511	0,303	0,998	0,723	7,307	6,206
Gaza Strip	3,000	2,442	7,721	8,046	10,533	8,951

• Total Energy in Tera Joule

• **Palestinian Central Bureau of Statistics.** *Energy Consumption in the Palestinian Territory: Annual Reports (1996-2001).* Ramallah - Palestine.

Total Energy Purchases in Economic Activities:

Data show that the total energy purchases in economic activities in the Palestinian Territory in 1996 were estimated to be 6,532 TJ, 9,829 TJ in 1997, which increase to 12,761 TJ in 1998, and 13,073 TJ in 1999, and decrease to 7,508 TJ in 2000, and 5,892 TJ in 2001. (Table 2)

Table 2: Total Energy Purchases in Economic Activities by Activities During 1996-2001

Economic Activities	Total Energy Purchases					
	1996	1997	1998	1999	2000	2001
Industry	3,141	4,631	5,924	6,430	3,931	2,956
Construction	484	1,334	1,817	620	660	175
Internal Trade	1,490	1,243	1,345	2,836	1,510	1,721
Services	818	805	1,191	1,247	954	718
Transport, Storage and Communicaions	599	1,816	2,484	1,940	453	322
Total	6,532	9,829	12,761	13,073	7,508	5,892

• Total Energy in Tera Joule

• **Palestinian Central Bureau of Statistics.** *Energy Consumption in the Palestinian Territory: Annual Reports (1996-2001).* Ramallah - Palestine.

Energy Sources:

Data show That 96.8% of households connected to the public network in the Palestinian Territory in 1999, while 99.1% of households connected to the public network in 2001, and 99.3% of households connected to the public network in 2003. (Table 3)

Table 3: Percent Distribution of Households Connected to the Public Network by Region and year

Region	Percent Distribution of Households		
	1999	2001	2003
Palestinian Territory	96.8	99.1	99.3
West Bank	98.0	99.7	99.7
North of the West Bank	97.4	99.9	99.6
Middle of the west Bank	99.4	99.6	99.9
South of the west Bank	97.3	99.6	99.6
Gaza Strip	94.6	97.8	98.5

* Palestinian Central Bureau of Statistics. *Household Energy Surveys: Main Results (1999-2003)*. Ramallah - Palestine.

Average Household Consumption of Energy Types:

Data show that average household consumption of electricity in the Palestinian Territory in July 1999 is 257.5 Kw.H, while it is 272 Kw.H in July 2001. And average household consumption of gasoline in July 1999 is 32 Liters and 20 Liters in July 2001. And average household consumption of LPG in July 1999 is 21 Kg and 21 Kg in July 2001. And average household consumption of cool & wood in July 1999 is 26 Kg and 43 Kg in July 2001. (Table4)

Table 4: Monthly Household Average Consumption of Energy Types in the Palestinian Territory, July 1999-2001.

Energy Type	Average Consumption of Energy Types	
	1999	2001
Electricity	٢٥٧,٤	٢٧٢,٠
Gasoline	٣٢	٢٠
Kerosene	١	١
LPG	٢١	٢١
Cool & Wood	٢٦	٤٣

* Kerosene, Gasoline & Diesel in Liter, Wood & LPG in Kg & Electricity in KWA

* Palestinian Central Bureau of Statistics. *Household Energy Surveys: Main Results (July 1999-2001)*. Ramallah - Palestine.

Solar energy:

Data show that 68% of household in the Palestinian Territory where using solar heater in 1999, while 72.5% of household where using solar heater in 2001, and 70.3% of household where using solar heater in 2003. (Table 5)

Table 5: Percent Distribution of Household Using Solar Heater by Region, 1999-2003.

Region	Using Solar Heater in the Household		
	1999	2001	2003
Palestinian Territory	68.0	72.5	70.3
West Bank	63.6	69.3	67.8
North of the West Bank	67.6	68.8	66.9
Middle of the West Bank	66.9	74.8	77.9
South of the West Bank	54.4	63.8	61.9
Gaza Strip	77.4	78.8	74.6

* Palestinian Central Bureau of Statistics. *Household Energy Surveys: Main Results (1999-2003)*. Ramallah - Palestine.