



# **ENERGY IN ISRAEL**

## **2003**

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
# CONTENTS

## INTRODUCTION

- A. Main Findings
- B. Explanatory Notes

## DIAGRAMS

## TABLES

-  1. Summary of Israel's Energy Balances (Thousands of t.o.e.)
-  2. Original Monthly Data, Seasonally Adjusted Data and Trend Data (Thousands of t.o.e.)
-  3. Israel's Energy Balance (Thousands of t.o.e.), 2002, 2003
-  4. Primary Energy Supply and Gross Domestic Product
-  5. Primary Energy Supply and Final Uses, per Capita (Monthly Average)
-  6. Import and Production of Crude Oil, Natural Gas and Oil-shales
-  7. Import and Export of Petroleum Products, by Type, and Import of Coal (Thousands of Metric Tons)
-  8. Final Consumption of Petroleum Products, by Type (Thousands of Metric Tons)
-  9A. Final Consumption of Petroleum Products, by Type (Thousands of t.o.e.)
-  9B. Final Consumption of Petroleum Products, by Type (Percentages)
-  9C. Final Consumption of Petroleum Products, by Type (Indices - Base: 1995=100.0)
-  10. Supply of Petroleum Products, by Type (Thousands of Metric Tons)
-  11. Consumption of Coal, Petroleum Products and other solid fuels, by Power Stations
-  12. Generation and Supply of Electricity, by Main Tariffs (Million kWh)
-  13. Generation and Supply of Electricity, by Main Industry (Million kWh)
-  14. Electricity Indicators

# **TABLES**

## **SPECIAL SYMBOLS**

Blank space	= irrelevant as a result of the table's structure
-	= no cases
..	= not known or not for publication

## INTRODUCTION

This publication presents data on the energy in Israel up to 2003, and includes information on imports, exports, production, supplies and consumption of energy. Most of the data are concentrated in the series of tables of the energy balance, which is a summary of energy sources and uses, by type.

The tables are compiled out of the CBS's energy databank.

The energy balance includes data on hydroelectric power stations and on the power station operating on oil shales. Other thermal power stations, which produce over 300 kWh of electricity, are included as well.

### A. MAIN FINDINGS

In 2003 the Total Primary Energy Supply (TPES) amounted to 20,025 thousand t.o.e. (tons of oil equivalent) – almost the same as in 2002.

The energy ratio (TPES divided by GDP) at the end of 2003 was 60.6 - a decrease of approximately 2% compared to the end of 2002.

The energy ratio provides an indication of the efficiency of energy in the economy. In developed economics the ratio is high, but in the long term, is in a downward trend. In Israel it can be seen that the energy ratio is on the increase.

Total imports of energy products amounted to 23,051 thousand t.o.e. in 2003, a 5.2% increase compared to the 2002 amount of 21,909 thousand t.o.e.. Imports of crude oil increased by 14.4%; imports of coal decreased by 4.5%. Total imports of petroleum products increased by 3%, mostly due to a sharp increase in imports of gasoline (27.4%) and gas/diesel oil (41%). Residual oil imports, which constituted 46% of all petroleum product imports in 2003, fell by 6.8%.

The exports of petroleum products in 2003 amounted to 3,109 thousand t.o.e., an increase of 8.4% compared to 2002. Exports of petroleum products had decreased steadily between 2000 and 2002. Exports of electricity increased by 5.8%, compared with 2002.

Total final consumption of residual oil (heavy and light) declined by 8% in 2003 compared to 2002. Gasoline and gas/diesel oil consumption remained almost unchanged. There was a decrease of up to 3% in the consumption of other petroleum products (kerosene, liquefied petroleum gas and other products); consumption of naphtha increased by 11.5%.

Electricity generation amounted to 47,048 million kWh in 2003; a 3.6% increase compared to 2002.

All electricity generation inputs showed an increase in 2003 compared to 2002. The main inputs are coal, which increased by 3.8%, and residual oil, which increased by 3.6%.

Electricity consumption amounted to 42,954 million kWh in 2003; a 3.7% increase compared to 2002.

There were 2,251 thousand electricity consumers in 2003; a 1.9% increase compared to 2002.

## B. EXPLANATORY NOTES

Table 1 contains multi-year data on energy in Israel according to main uses, such as refining crude oil, generating electricity and final consumption of energy products (for an explanation of terms - see "Structure of the Energy Balance" below).

Table 2 presents monthly data - original and seasonally adjusted data as well as trend data, beginning at 2000.

Table 3 gives detailed information on uses of energy in Israel.

Tables 4 and 5 present data on the uses of energy per capita and relative to the gross domestic product (GDP). The tables enable analysis of the developments in energy utilization.

### Structure of the Energy Balance (Table 3)

1. In international statistics, a number of versions for the calculation of the **Energy Balance** have been developed. The versions differ, depending on the time and place of calculation. However, these differences are not substantive. The balance presented here is close to that used by the Organization for Economic Cooperation and Development (OECD), with adjustments to conditions prevailing in Israel. The format developed by the OECD enables comparison of Israel's energy characteristics with those of other countries.

The rows in the table present information on sources and uses, while the columns specify the various types of energy.

The quantities in the table can be summed up due to the use of a uniform unit, which expresses the caloric value of the various types of energy. The unit is called "Tons of Oil Equivalent", and is equal to  $10^7$  kilo-calories (see below – "unit of account").

#### Columns in the Table

The table's columns specify the various types of energy: crude oil, petroleum products, natural gas, coal, oil shales, hydroelectric and solar power, electricity, heat and steam.

#### Rows in the Table

Rows 1 - 7 show the TPES (Total Primary Energy Supply) during the period under review - from imports, from domestic production or from use of stocks. Data on exports of energy or supply to marine bunkers are recorded with a minus sign, to indicate that the amount stated is subtracted from the Total Primary Energy Supply. "Marine bunkers" include data on Israeli and foreign ships. Israeli bunkers abroad are not listed in the energy balance. In row 6, change in stocks is recorded with a plus sign in case of a decrease, since a decrease in stocks is the source of the various uses. Conversely, an increase in stocks is recorded with a minus sign, since such a change indicates a decrease in the energy at the disposal of the local market.

Rows 9 through 13 point to inputs and outputs of oil refining or electricity generation. In these rows, negative data indicate losses or inputs, while positive data indicate outputs of the energy sector. Row 14 represents the use of energy within Israel, other than use by energy producers (the oil refineries or the electricity producers).

## 2. *Unit of Account*

Since the balance sheet contains different types of energy sources (crude oil, gas, electricity, coal, etc.), each of which is measured in a typical unit (m<sup>3</sup>, kW, etc.), the values of the various products were translated into a uniform unit of measurement. Because Israel's most important form of energy is crude oil, all the forms of energy in the balance sheet have been converted into the unit entitled "Tons of Oil Equivalent" (t.o.e.), which is defined as the amount that produces 10<sup>7</sup> kilocalories<sup>1</sup> upon its combustion.

The account unit is based on net caloric values. The difference between net and gross caloric value lies in the latent heat of condensation of the water vapor produced during combustion of the fuel. This difference is usually presented as 5 percent of the gross value for coal; for natural gas and crude oil the difference is approximately 10 percent and for electricity there is no difference between net and gross caloric values.

It should be noted that a ton of crude oil does not always render the same amount of calories, because of differences in technical and physical composition, which lead to differences in characteristics (sulphur content, viscosity, density etc.). However, in most cases the conversion coefficient from crude petroleum to t.o.e. does not exceed 2.5 percent.

Tables 4-11 contain data on imports, exports, production and supplies of crude oil, coal, natural gas and petroleum products. Some of the tables provide also seasonally adjusted data and trends in monthly uses.

Tables 12, 13 and 14 include data and indicators of the electricity sector, according to Israel Electric Corporation reports. The indicators include:

**Capacity coefficient:** the ratio between the average demand and nominal capacity during the period. (Nominal capacity: the sum of nominal capacities of the units of electricity generation).

**Peak load:** the highest demand for the specified period. (Load: demand for electricity).

**Load coefficient (percentages):** the ratio between average demand and peak load in the period, multiplied by 100.

### **Sources**

Data on **crude oil and petroleum products** - Israel Fuel Authority, the Ministry of National Infrastructure, the Oil Refineries, importers and exporters of crude oil and petroleum products (according to Israeli Foreign Trade data).

Data on **electricity** - Israel Electric Corporation and other electricity producers with thermal power stations generating over 300 kWh and hydroelectric power stations.

Comment: Beginning from this publication, data on final consumption of propylene by manufacturing industries is shown in tables 8-10 with the LPG data, rather than with the "other products" data, as in previous publications.

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<sup>1</sup> This approach is taken in spite of the fact that not all forms of energy are interchangeable. For example, crude oil cannot operate electrical home appliances, and coal cannot be used in motor vehicles.