



The Hashemite Kingdom of Jordan

جائزة الملك عبد الله الثاني
لتميز الأداء الحكومي والشفافية
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المرحلة البرونزية
المركز الأول

Ministry of Energy and Mineral Resources

Annual Report 2011



His Majesty
King Abdullah II Bin Al Hussein



H.R.H Crown Prince
Hussein bin Abdullah II

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Vision

Achieving a secure sustainable supply of energy.

Mission

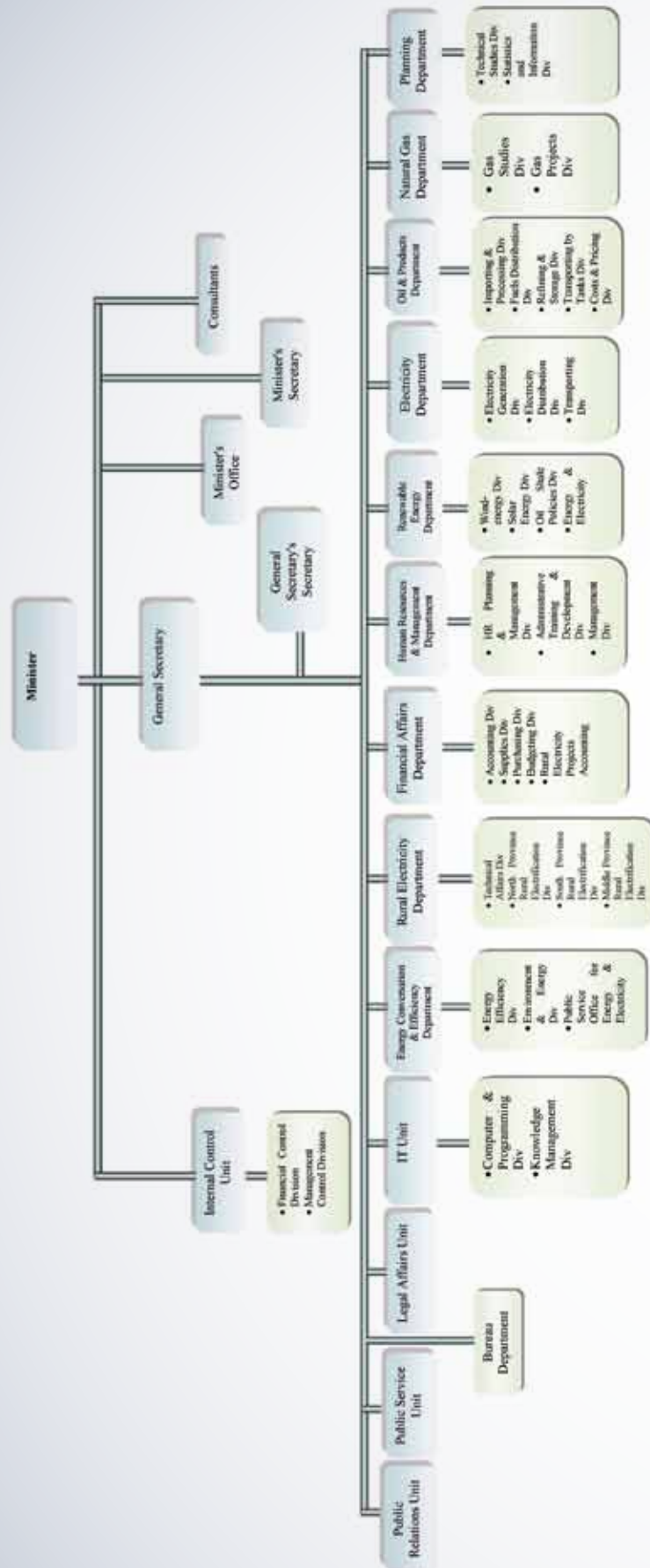
Ensuring the required energy supply for sustainable development, with the least cost and best quality through enhancement and implementation of proper policies, legislation and plans.

Core values

- *Working in team spirit*
- *Dissemination of knowledge*
- *Transparency and un-biasness*
- *Affiliation and discipline*
- *Excellence*
- *Justice and equal opportunities*

Strategic objectives

- *Diversify the sources and kinds of energy*
- *Develop and utilize the local conventional and renewable sources of energy, oil shale, and uranium*
- *Liberalize the energy market and open it for the competition.*
- *Create opportunities for the private sector and encourage this sector to invest in the infrastructure projects of the energy sector*
- *Reinforce the regional energy grid projects and maximize the benefits thereof*
- *Rationalize energy consumption in all the sectors and improve their efficiency*



Terms and abbreviations

Kw	kilowatt (10³ watt)
Gwh	Gegawatt-hour (10⁹ Watt-hour)
Kwh	Kilowatt-hour
Mw	Megawatt
Mwh	Megawatt-hour (10⁶ Watt hour)
b/day	Barrel/day
boe	Barrel oil equivalent
boe/day	Barrel oil equivalent /day
toe	Ton oil equivalent
MvA	Mega volt Ampere
kv	Kilovolt
Km	Kilometer
Kg	Kilograms
Kgoe	Kilogram oil equivalent
GDP	Gross Domestic Product
JD	Jordan Dinar (10³ Fils)
CF	Cubic Feet

Significant Figures of Energy and Economy in Jordan 2011

Population (millions)	6.25
Gross Domestic Product (GDP) at current prices (million JD)	20477
GDP per capita (JD)	3276
Energy Intensity (toe/1000 JD in 2002)	0.72
Per capita primary energy consumption (Kgoe)	1193
Per capita share of electricity consumption (kWh)	2166
Electricity generation (GWh)	14647
Electricity consumption (GWh)	13535
Percentage of population supplied with electricity (%)	99.9
Overall domestic energy production (crude oil and natural gas) (000 toe)	135
Imported Energy (000 toe)	7030
Primary energy consumption (000 toe)	7457
Cost of consumed energy (billion JD)	4.036
Cost of consumed energy as a percentage of:-	
Exports (%)	71
Imports (%)	31
Gross Domestic Product (%)	20
Jordan Dinar (JD) = 1000 Fils = US\$ 1.41 in 2011	

Introduction

The main goal behind using the energy is to achieve the sustainable development, as energy is considered to be one of the comprehensive development's tools and the main driver for all economic, social and service sectors. So the exerted national efforts in the energy sector are focused to enable the Jordanian society to enjoy the services of energy in order to increase the level of welfare and improve life standards. From this point, the mission of the Ministry of Energy and Mineral Resources is to achieve a safe sustainable supply of energy. Also, the Ministry has adopted a message to provide energy for comprehensive sustainable development with the least cost and best quality through enhancement and implementation of proper policies, legislation and plans, through the diversification of energy sources and its imported forms and to develop and improve local and renewable energy sources and to increase its efficiency in the various sectors. In this context, the Ministry of Energy and Mineral Resources and other sector's institutions were able to perform many achievements during 2011. **In the field of securing crude oil and its products**, the services agreement of importing, storing, securing, and distributing of oil products between the Government and the Jordan Petroleum Refinery Company on 25/2/2008 has been extended many times, to secure the Kingdom's needs of oil products, storage, and management of the carrier Jarash owned by the Government has been continued to provide storage capacity necessary for securing and handling crude oil in the Port of Aqaba. Sale and development agreement of the land chosen in coordination with Aqaba Development Company was also signed to build storage capacity of 100 thousand tons of crude oil and establishment and licensing of oil products companies was put forward.

In the field of natural gas, In 2011, there was a significant decline in natural gas quantities imported from Egypt because of damages on natural gas pipeline occurred within the Egyptian territories, which led to the cutoff of natural gas supplies for large periods of the year, which in turn led to use alternatives for natural gas, such as diesel and fuel oil to generate electricity.

In the field of electricity, Two gas units with a capacity of 142 MW was added in Al Samra electricity generation station in order to meet the demand of electricity in 2011. The first gas unit was commercially operated on 25/1/2011 and the second gas unit by the end of February 2011. The second IPP project in Al-Qatraneh was operated as a simple cycle on 31/12/2010 and the project was completed as a combined cycle by the end of 2011, including all acceptance checks. It is expected that the project will be run by the beginning of February 2012. Further, Electricity exchange agreement was renewed with Egypt and with Syria the agreement was extended.

In the field of exploitation of oil shale, The Government was able to attract most international companies with experience in oil shale surface restoration technologies, such as Estonian, Canadian, Brazilian and Russian. These companies are making economical banking feasibility studies to exploit oil shale in the production of oil. The International Shell company was also awarded a franchise to exploit the deep oil shale without mineral operations by using ICP technologies. Esti Energia, an Estonian company has submitted an initial offer to build an electricity generation station with a capacity of 430 MW by using direct incineration of oil shale, the company is evaluation the environmental impact of the project. Negotiation with the Chinese coalition HTG is being made with Jordanian and Emirati companies to sign a key principles agreement to provide a technical and financial offer for building a station to generate 900 MW of electricity by using direct incineration of oils shale.

In the field of renewable energy,

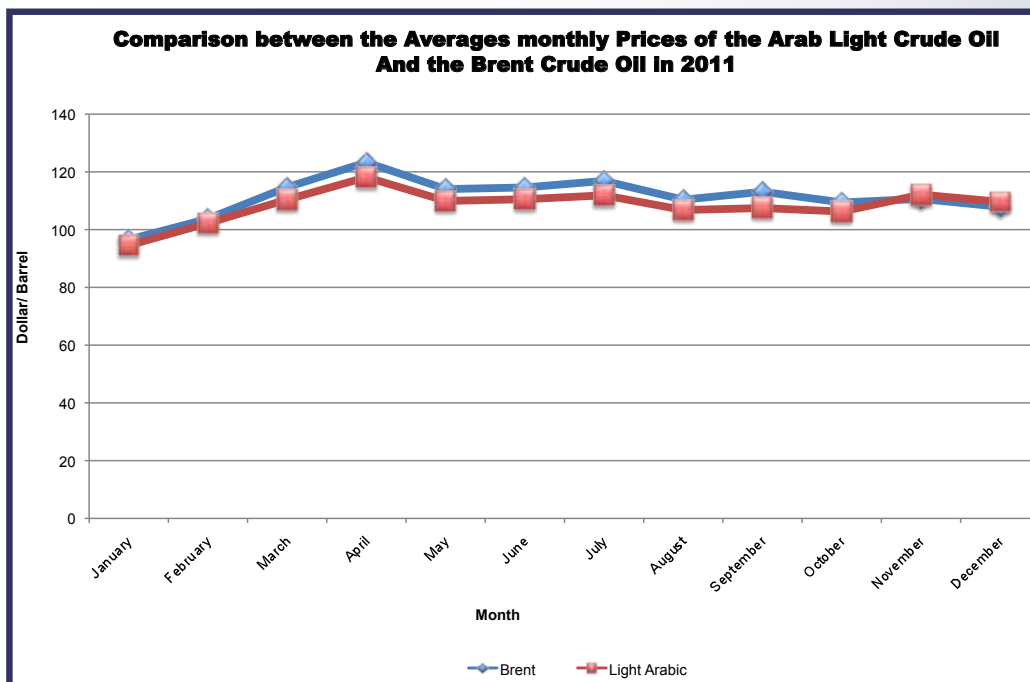
Four technical and financial offers were received from qualified companies for wind energy project in Al Fejeij. These offers are currently under evaluation and study by the Consultant and technical committees of the project. The coalition of the Greek company (Tirana) has been chosen for the wind project in the area of Alkamsha. The offer submitted by the company includes the recent environmental developments for noise levels, and the offer is under final evaluation by the project's committees. IES, Spanish government institution is providing consultation for a project at Azraq of solar energy for electricity generation by using solar cells systems with a capacity of 1 MW, and preparing tender documents to be offered on Spanish companies. There is another project for concentrated thermo-solar energy (CSP) with a capacity of 100 MW by partial support of clean technology und. Through an international consultation company and funded by AFD, further available financial opportunities are being studied to complete funding of the project then commencing taking actions for tendering, which is expected during the second half of 2012.

In the field of energy conservation, The work has continued on implementing the decision by the Council of ministers regarding the exemption of energy saving devices and renewable energy from the custom duties and the sale tax in order to encourage the citizens to buy the energy saving and renewable energy equipment and devices. Further, cooperation with international institutions and programs was made to apply the site map of energy efficiency. The Ministry has also made a proposal for supporting energy-saving lights project at the national level and a project for supporting the use of solar energy for water-heating. This report includes many of the achievements that are accomplished in other areas such as, mining, electric Interconnection project, Rural Electrification Project and others.

The Development of Oil and Natural Gas

On the Arab and International Level:

In 2011, the average daily world production of crude oil reached around 87.5 million b/d showing a growth of 0.4% over the 2010 oil production level. However, the proven world oil reserves in 2011 were nearly 1322.5 billion barrels. On the Arab level, the Arab countries produced an average of nearly 27 million b/d in 2011, which represented 30% of the world production. Arab crude oil reserves in the same year were 615.5 billion barrels, i.e. (46.5 %) of the world oil reserves. Brent oil prices in 2011 have fluctuated to reach 123 US dollars/ barrels in April, the lowest price for oil were 97 US dollars/ barrels in January. The following diagram compares between the average monthly prices of the Arab light crude oil and the Brent crude oil that Jordan has imported in 2011.



World production of natural gas reached around 3193 billion cubic meters in 2011 thereby posting an increasing rate estimated at 6% above the 2010 production level. The world's natural gas reserves were around 186.4 trillion cubic meters. On the Arab level, the Arab countries produced nearly 322.2 billion cubic meters of natural gas which represented 10% of the world production. Yet, the Arab countries' reserves of natural gas have reached nearly 46.2 trillion cubic meters, i.e. 25% of international reserves.

On the Local Level:

In 2011, the Kingdom local crude oil and natural gas production was nearly 135 thousand toe, i.e. 3% of Jordan's total energy needs. In view of the limited production of local resources, Jordan has depended on imports to meet its energy needs. Crude oil and oil products imported in 2011 were around 5978 thousand toe. The quantities of natural gas imported from Egypt were around 806 million cubic meters.

Total cost of imported crude oil, oil products and natural gas amounted to around JD 3839 million in 2011 which represents a growth rate of 51% as opposed to imports of 2010.

In 2011, the overall demand for primary energy was about 7457 thousand toe thereby posting an increasing rate of 1.4 % compared to demand in 2010. The total demand for final energy which is the energy available to consumers was nearly 4888 thousand toe with an increasing rate of 0.3% compared to the 2010 demand levels. On the other hand, the amount of demand for oil products was 3593 thousand toe.

Institutions of the Energy Sector in 2011

In view of the important role which energy sector plays in terms of the socioeconomic aspects, and as this sector's activities are directly related to the political and economic aspects, the Government has been interested in re-organizing this sector in order to enhance its efficiency and increase its effectiveness. In light of the new institutional amendments, the current institutional framework of the energy sector consists of the following:

1- Ministry of Energy and Mineral Resources (MEMR):

The Ministry has adopted the process of comprehensive planning for this sector in terms of regulation, drawing up general policies, following up on the implementation of such policies towards carrying out the assigned tasks. Most important of these tasks include providing all forms of the energy needed for the purposes of comprehensive development at the lowest possible cost and with the best standards. Besides, tasks included attracting global capital funds for investing in the Kingdom in the various fields of energy such as generating electricity, producing oil products, utilizing local sources and resources of energy especially the renewable ones.

2-Electricity sector's institutions:

These institutions which are responsible for regulating, generating, transporting, and distributing electricity inside the Kingdom; include the following:

2-1-Electricity Sector Regulatory Commission (ESRC):

It is an independent commission established in 2001 whose most important tasks involve determining electricity prices, subscription fees and costs of the necessary services, issuing licenses to the companies generating, transmitting, and distributing electricity, and monitoring their compliance with the conditions stipulated in these licenses. This Commission is also responsible for providing amicable solutions to the disputes arising between the electricity sector's companies and the consumers, and also between the companies themselves, in as much as the public interest will be secured, as well as for extending consultancies and advice concerning any matters related to the electricity sector.

2-2-National Electric Power Company (NEPCO):

It is a public shareholding company which is owned by the Government and which is responsible for the building, operation, and maintenance of the transmission system within the borders of the Kingdom, in addition to secure the Kingdom with electricity through the expansion of building generation unites through the private sector.

2-3-Central Electricity Generating Company (CEGCO):

It is a public shareholding company responsible for generating and whole selling Electricity to the National Electric Power Company. This company whose shares are owned in full by the Government was founded in 1999, and on 17/10/2007, 60% of the company shares were privatized, by selling 51% of the Government shares to the Inara coalition company led by Dubai capital company along with 9% to the Social Security Corporation. The installed capacity for the company in the year ended of 2011 is around 1687 MW.

2-4-Samra Electric Power Generation Company (SEPGCO):

It is a shareholding company whose shares are fully owned by the Government and was founded according to the Council of Minister's decision taken on 20/01/2004 with a nominal capital value of JD 50 million. It was registered within the Private Shareholding Companies Registers under No. 40 on 21/04/2004. The installed capacity for the company in the year ended of 2011 is around 742 MW.

2-5-AES- Jordan. Psc:

It is a private company owned by the American company AES and the Japanese company MITSUI, it was founded on 28/2/2009, and it owns the first private project in Jordan in generating electricity; which is East Amman power plant/ Al Manakhir which was inaugurated under the patronage of His Majesty King Abdullah II, on 26/10/2009 with installed capacity of 370 MW.

2-6-Al Qatraneh Electric Power Company:

It is private company established by coalition of Korean company KEPCO and Saudi company XENEL. The project was operated as a simple cycle on 31/12/2010 . The installed capacity for the project is around 373 MW.

2-7-Electricity Distribution Companies:

These are three companies each with a concession area as follows:

2-7-1. Jordan Electric Power Company (JEPCO):

It is a public shareholding company responsible for distributing electricity in the Metropolis, Zarqa, Madaba and Balqa Governorates apart from the Central Jordan Valley, according to a 50-year concession contract which will expire in 2012.

2-7-2. Irbid District Electricity Company (IDECO):

It is a public shareholding company responsible for distributing the electricity in Irbid, Mafraq, Jerash, and Ajloun governorates apart from the Northern Jordan Valley and Eastern areas, according to a 50-year concession contract which will expire in 2011. In 2008, the company had been privatized by selling the Government all their shares which equal to (55.4%) from the Company.

2-7-3. Electricity Distribution Company (EDCO):

It is a public shareholding company responsible for distributing electricity in the areas beyond the concession areas of both JEPCO and IDECO, namely in the Southern, Eastern and Jordan Valley areas. The company had been fully privatized in 2008.

2-8-Rural Electrification Project:

Work on this project has been started in 1992 in order to deliver the electricity to the villages and population concentrations in the Jordanian countryside towards attaining durable development in these areas and settling down the inhabitants in their villages. Rural fil is not a direct or indirect tax; it is a part from energy cost as provided by paragraph 7 of the electric tariff issued pursuant to Article 31 of the General Electricity Law No. 8 of 1976. The project was re-organized upon a decision by the Council of Ministers on 15/3/2011 to become one of the directorates of the Ministry of Energy and Mineral Resources.

3- Petroleum, Gas, and Mineral Ores Institutions:

These institutions carry out operations related to prospecting for petroleum and mineral ores inside the Kingdom along with refining crude oil and sales of oil products. These include:

3-1-Natural Resources Authority (NRA):

It is involved in implementing works related to prospecting for mineral resources, conducting geological, geophysical, and geochemical surveys along with issuing licenses and rights for mining, stone quarries, and exploration, and monitoring the operations thereof.

3-2-National Petroleum Company (NPCO):

It is a government-owned public shareholding company which carries out works pertaining to research, exploration and production of oil and gas in the concession area to the northeast of the Kingdom on the Iraqi borders. The concession area covers 7000 square kilometers including the Risha Gas Field area of around 1500 square kilometers. The concession period is 50 years effective since 1996.

3-3-Jordan Petroleum Refinery Company (JPRCO):

It is a public shareholding company which is responsible for refining crude oil, producing and distributing oil products inside the Kingdom by the signed concession contract in 1958 which was terminated on 02/03/2008, and has been extended many times.

3-4-The Jordanian Egyptian Fajer Company:

It is a limited liability company working according to license agreement which was signed on 25/01/2004 between the Jordanian Government represented by the Ministry of Energy and Mineral Resources, and the Jordanian Egyptian Fajer Company. Its duty is to build, own and operate the natural gas pipeline from Aqaba to north of the Kingdom, and collect the Egyptian natural gas in Aqaba and then transport it by the pipeline and sell it to the power plants and to the heavy industry.

3-5-Gas Stations:

They are stations owned by natural or legal persons, which concerns in the sale of oil products to citizens. These stations reached 441 in 2011.

3-6-Gas Agencies:

They are agencies owned by natural or legal persons, which concerns in the distribution of gas cylinders to citizens. These agencies reached 916 in 2011.

3-7-Central Gas Distribution Companies:

They are private sector-owned companies, which concerns in the distribution of gas by tanks. These companies reached 5 in 2011.

4- The Commission for Regulating Radiation and Nuclear Activity:

This Commission was established in 2007 as replacement of the Jordanian Nuclear Energy Commission which was established in 2001. The commission has a legal entity independent financially and administratively and directly responsible in front of the Prime Minister.

The Commission aims to protect the health and property of the human being and the surrounding environment from the radiation and nuclear dangers through regulating and monitoring the use of the nuclear power, and making sure of the existence of the requirements and conditions of health and safety and the protection from the radiation and the nuclear security.

5- The Jordanian Atomic Energy Commission:

The Jordanian Atomic Energy Commission was established in 2008 in order to transfer the use of the peaceful nuclear power and the technology of the radiation to the Kingdom, and enhance its usage in order to generate the electricity, for the desalination of water and for agricultural, medical and industrial usage.

6- Bio-Gas Company:

It is a shareholding company jointly owned by the CEGCO and Greater Amman Municipality. The Company has been founded in the year 2000 for utilizing methane gas extracted out of the organic waste towards generating electricity. The installed capacity for the Company is 3.5 MW.

7- Promoting Renewable Energy and Energy Efficiency Fund

Promoting Renewable Energy and Energy Efficiency Fund was established to provide support for improving energy consumption efficiency studies in different sectors, and support for awareness campaigns and training programs, as well as loan guarantee for energy efficiency and renewable energy projects. This fund is funded by the Government, donors and investment returns.

Energy Sources in Jordan

The Jordanian local energy resources are very limited commercially, despite the efforts of the Government that has been spent since decades in searching and prospecting for crude oil and gas. In addition to the foreign companies which has been bounded with the Government with agreements for searching and prospecting. Those foreign companies have been offered all available facilities and information provided by seismology studies and surveys. All of these efforts have come out with to find a humble and non- commercial crude oil in Hamza well in 1985, and to discover some gas amounts at Al Rishah in 1989 as it is used fully to generate electricity.

There are huge amounts of Oil Shale in Jordan, as they can be utilized commercially by the direct incineration to produce electricity or by the retorting to produce crude oil; especially after the technological advancement in utilizing the oil shale which achieve the environmental demands and the international success in this field. This has led the Government to adopt a strategy to market oil shale, and to attract interested international companies to utilize it. With respect to new and renewable energy resources, their share to the energy mix is not exceeding 1%. The Government has adopted an ambitious program to increase new and renewable energy share to the energy mix to reach 7% by 2015 and 10% by 2020. All details of local energy resources would be mentioned in the comprehensive strategy for the energy sector.

Table (1) clarify the local production of crude oil and gas and its participation in the whole consumed energy in the Kingdom during the period 2007-2011.

Table (1)
Jordan's production of crude oil and Natural gas during 2007-2011

Year	Crude Oil (000 tons)	Natural Gas (Billion CF)	Contribution to the overall Energy consumption (%)
2007	1.2	7.7	3.7
2008	1.7	7.2	3.2
2009	1.5	7.8	3.3
2010	1.2	6.5	2.8
2011	1.0	6.4	3.0

Local Demand for Energy and Electricity

1- Crude Oil and Oil Products:

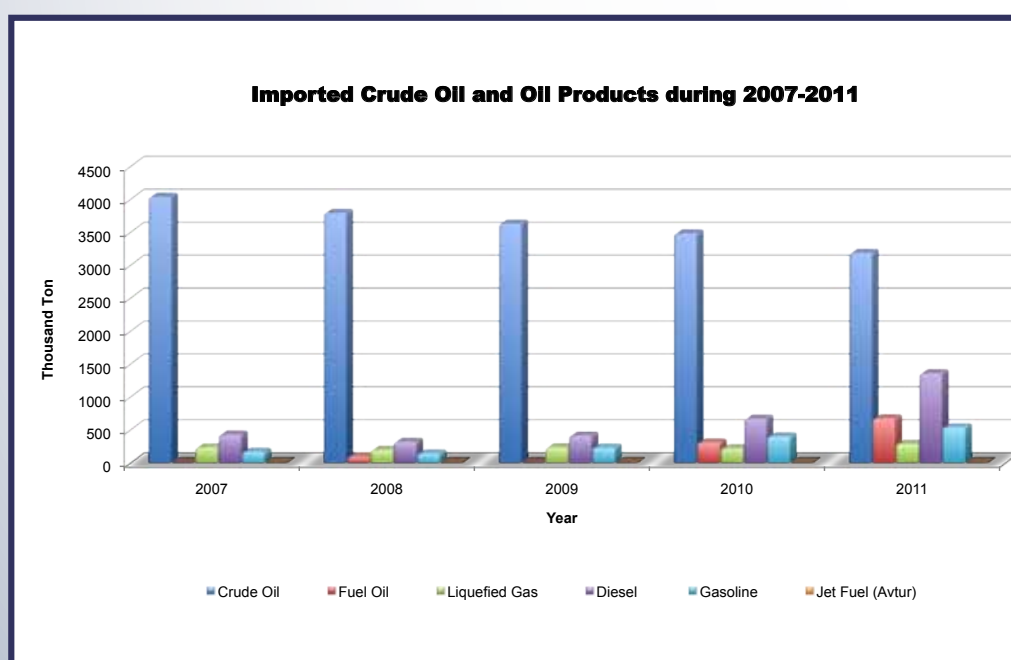
The cost of imported crude oil and oil products was around 3.7 billion JD in 2011, registering a growth of 63% from 2010, and that's because of increasing amounts of imported fuel oil, Diesel, Gasoline. The imported crude oil and oil products increased 21% from 2010.

Table No. (2) shows the quantity of imported crude oil and oil products during the period 2007-2011.

Table No. (2)
Imported Crude Oil and Oil Products during 2007-2011 (000 tons)

Year	Crude oil	Fuel oil	Liquefied gas	Diesel	Gasoline	Jet Fuel	Total
2007	4040	-	233	429	166	1	4869
2008	3796	91	196	320	141	1	4544
2009	3633	-	234	414	231	1	4513
2010	3485	307	219	670	400	1	5082
2011	3189	674	288	1361	540	1	6137
The growth rate for 2011	(8.5)	119	31.5	103	35	0	21

The brackets mean negative sign.



2- Natural Gas

Quantity of natural gas imported in 2011 from Egypt through the natural gas pipeline between both of the countries, which forms part of the Arab Natural Gas Pipeline, was around 806 Million Cubic Meter with a dropping percentage estimated by 65% from that was registered for 2010. This is because of many accidents occurred on the Arab Natural Gas Pipeline inside the Egyptian territories, as stated by the Egyptian side.

3- Primary and Final Energy Consumption

In 2011, the overall demand for the primary energy was nearly 7457 million toe showing an increasing rate of 1.4% beyond that 2010.

Table No. (3) Demonstrates the local demand of the primary energy during the period 2007-2011.

Table No. (3)
Primary energy consumption during 2007-2011 (000 toe)

Year	Type of energy				Total
	Crude Oil and the Oil products	Natural Gas	Renewable Energy	Imported Electricity	
2007	4906	2406	118	8	7438
2008	4426	2725	110	74	7335
2009	4454	3086	120	79	7739
2010	4774	2289	124	168	7355
2011	6141	873	130	313	7457

Final energy consumption and distribution to all economic sectors are demonstrated through table No.(4).

Table (4)
Sectoral distribution of the Final Energy Consumption during 2007-2011 (000toe)

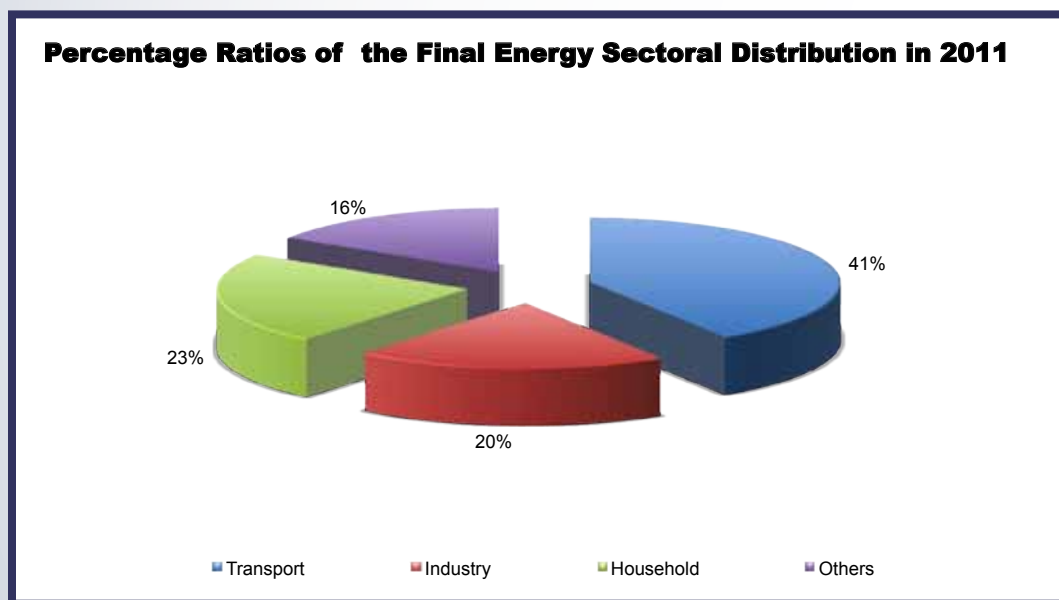
Year	Sector				Total
	Transport	Industry	Household	Others*	
2007	1912	1192	1070	853	5027
2008	1767	1095	1010	835	4707
2009	1952	1101	1083	885	5021
2010	1991	1014	1019	849	4873
2011	2012	961	1136	779	4888

* Including commercial and agricultural sectors along with street lights.

Also table No. (5) demonstrate percentage ratios of the sectoral distribution of final energy consumption.

Table (5)
Percentage ratios of the sectoral distribution of final energy consumption during 2007-2011

Year	Sector				Total %
	Transport %	Industry %	Household %	Others %*	
2007	38	24	21	17	100
2008	38	23	21	18	100
2009	39	22	21	18	100
2010	41	21	21	17	100
2011	41	20	23	16	100



4- Oil Products Consumption and Prices

The year 2011 has witnessed a rise in the consumption of oil products in general; the reason for this is due to the significant rise in the consumption of fuel oil used in electricity generation due to the decline of imported natural gas supplies from Egypt. The volume of consumption in oil products reaches about 6076 thousand tons while the volume of consumption in 2010 reaches about 4907 thousand tons, with a growth rate of 24%. And some oil products have witnessed an increase in the volume of consumption, except asphalt and rates of decrease reached 28%.

The following tables show the development in producing and consuming oil products in the period 2007-2011.

Table No. (6)
Development of the Petroleum Refinery's production of oil products during 2007-2011
(000 tons)

Year \ Oil Products	Liquefied Gas	Gasoline	Avtur	Kerosene	Diesel	Fuel Oil	Asphalt	Total
2007	107	678	291	139	1213	1205	155	3788
2008	120	740	299	105	1236	1002	168	3670
2009	107	757	308	81	1173	920	193	3539
2010	85	703	343	85	903	1080	150	3349
2011	84	681	329	58	1030	868	107	3157

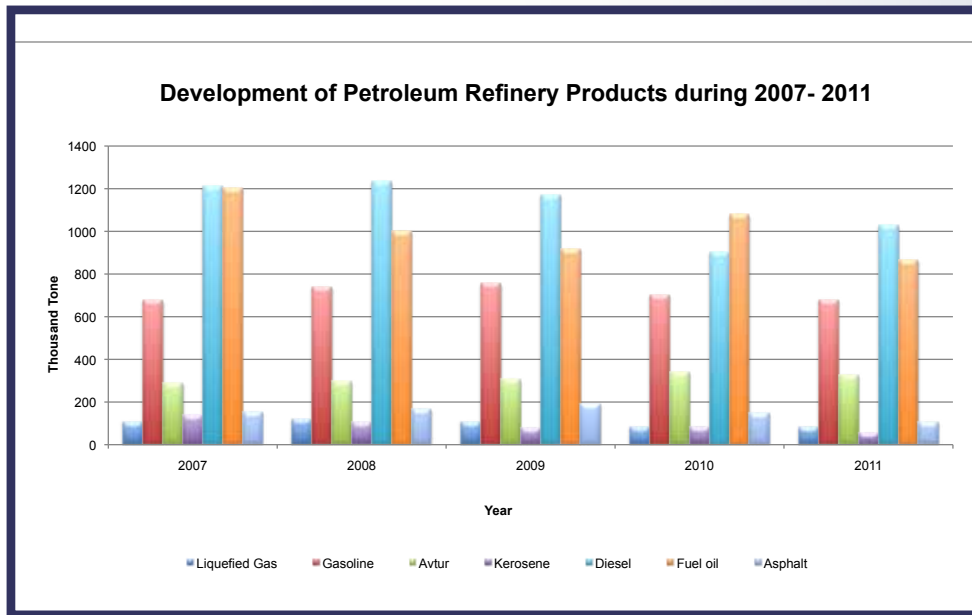
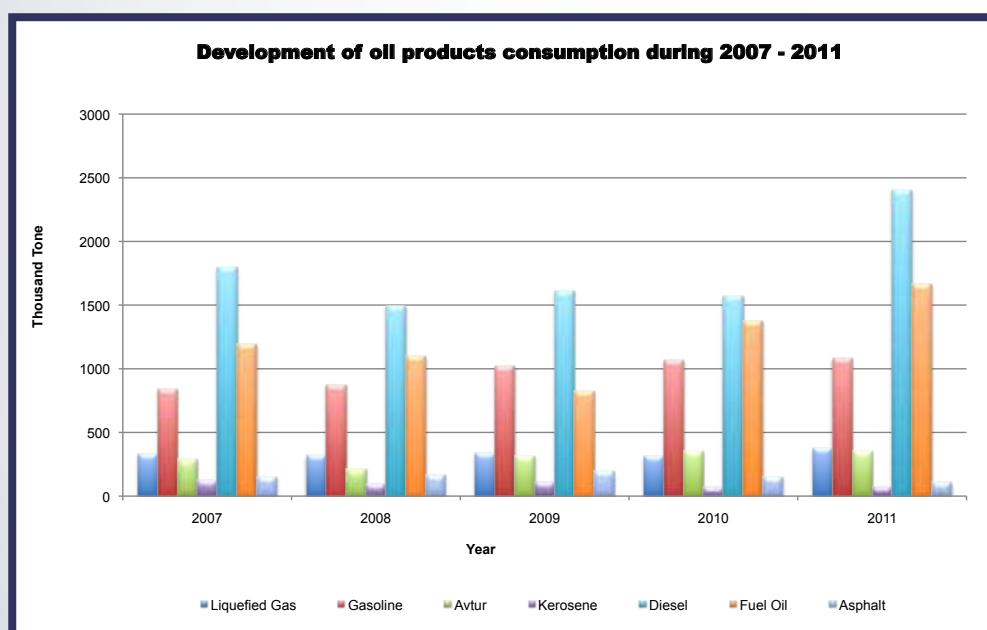


Table No. (7)
Development of oil products consumption during 2007-2011 (000 tons)

Year \ Oil Products	Liquefied Gas	Gasoline	Avtur	Kerosene	Diesel	Fuel Oil	Asphalt	Total
2007	335	840	297	131	1799	1193	154	4749
2008	319	873	216	100	1493	1100	167	4268
2009	339	1022	318	111	1614	823	194	4421
2010	312	1065	351	69	1577	1381	152	4907
2011	378	1083	354	75	2407	1670	109	6076
Growth Rate (%)	21	2	1	9	53	21	(28)	24

The brackets mean negative sign



With regards to the prices of oil products in 2011, the Government has worked on keeping the subsidies on the liquefied gas, yet it has not subjected the pricing formula on a monthly basis on gasoline of two kinds, diesel and kerosene, but subjected on the rest of oil products that have no direct connection with the citizen.

The following table shows the prices of oil products prices locally in 2011.

Table (8)
Local prices of oil products during 2011

Item	Unit	Jan		Feb	Mar		Apr	May	Jun	Jun-Aug	Aug-Sep	Sep-Dec
		1/1-11/1	12/1-27/1	1/2-28/2	1/3-3/3	4/3-31/3	1/4-1/5	2/5-31/5	1/6-28/6	29/6-2/8	3/8-6/9	7/9-31/12
Liquefied gas	Dinar/Cylinder	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50	6.50
Gasoline (90)	Fils/Liter	655.00	620.00	620.00	620.00	620.00	620.00	620.00	620.00	620.00	620.00	620.00
Gasoline (95)	Fils/Liter	795.00	795.00	795.00	795.00	795.00	795.00	795.00	795.00	795.00	795.00	795.00
Diesel	Fils/Liter	545.00	515.00	515.00	515.00	515.00	515.00	515.00	515.00	515.00	515.00	515.00
Kerosene	Fils/Liter	545.00	515.00	515.00	515.00	515.00	515.00	515.00	515.00	515.00	515.00	515.00
Fuel oil/Indus	Dinar/ton	397.14	397.14	414.26	414.26	414.26	491.86	491.86	495.91	505.65	517.44	501.24
Avtur/local	Fils/Liter	512.00	512.00	540.00	540.00	596.00	646.00	677.00	628.00	631.00	640.00	614.00
Avtur/Foreign	Fils/Liter	517.00	517.00	545.00	545.00	601.00	651.00	682.00	633.00	636.00	645.00	619.00
Avtur/Charter	Fils/Liter	532.00	532.0	560.00	560.00	616.00	666.00	697.00	648.00	651.00	660.00	634.00
Fuel oil/Ships	Dinar/ton	397.14	397.14	414.26	414.26	469.22	491.86	520.54	517.39	519.17	517.44	511.32
Diesel/ships	Fils/Liter	545.00	545.00	535.00	535.00	585.00	635.00	665.00	655.00	670.00	675.00	670.00
Asphalt	Dinar/ton	426.33	426.33	444.47	444.47	502.73	526.74	557.13	531.03	541.35	553.85	536.68

5-Electricity

The demand of electricity has been increased in 2011 by all sectors, this was due to the high temperatures in this summer, which led to the expansion in the use of air conditioning units, and the industrial sector registered the highest growth rate reaches to 6.8%, then the domestic sector 4.2% and pumping water 3.8%, and as a result of this growing demand, electricity imported through interconnection network with Egypt and Syria has increased to reach 1738 GWh with a registered growth rate reaches to 159% from 2010. Also, the Ministry of Energy and Mineral Resources and the National Electric Power Company made several actions to meet this growing demand. The details of these procedures will be dealt with later, when viewing the comprehensive strategy for the energy sector.

- Electricity Generation and Consumption

The quantity of electricity generated in 2011 was around 14647 GWh showing a decline rate around 0.9% from 2010. The consumed electricity was around 13535 GWh showing a growth around 5.4% from 2010. The Electric Peak load of the Kingdom in 2011 reached around 2790 MW thereby posting a growth of 4.5 % compared to that of 2010.

The following tables show the development of consuming and producing electricity energy and distributing the consumption and its rate to all the sectors.

Table No. (9)
Growth of the electricity production and Peak load during 2007-2011

Year	Peak Load MW	Growth Rate (%)	Electricity generated GWh	Growth Rate (%)
2007	2160	13.6	13001	16.9
2008	2260	4.6	13838	6.4
2009	2320	2.7	14272	3
2010	2670	15	14777	3.5
2011	2790	4.5	14647	(0.9)

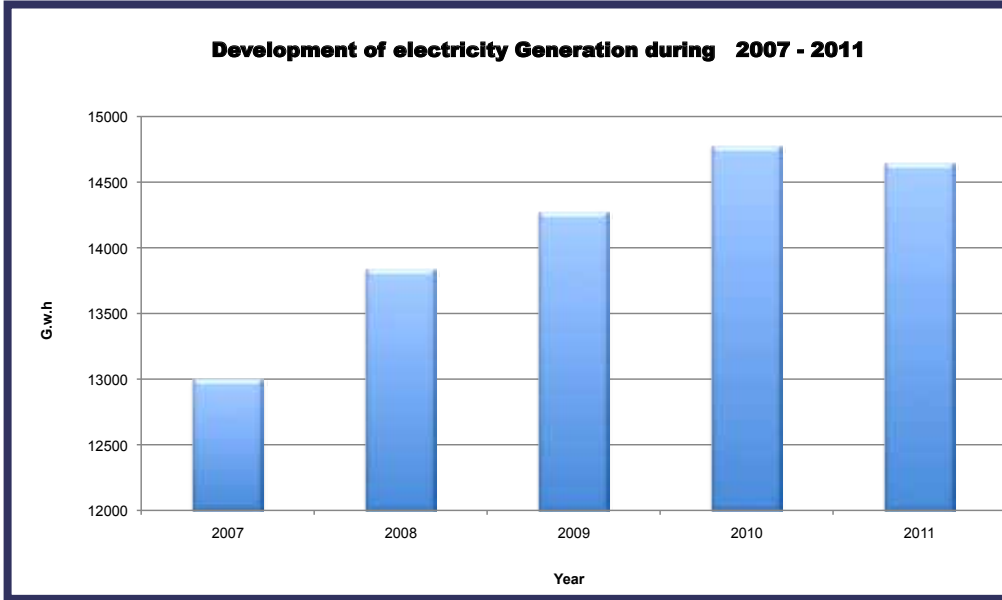
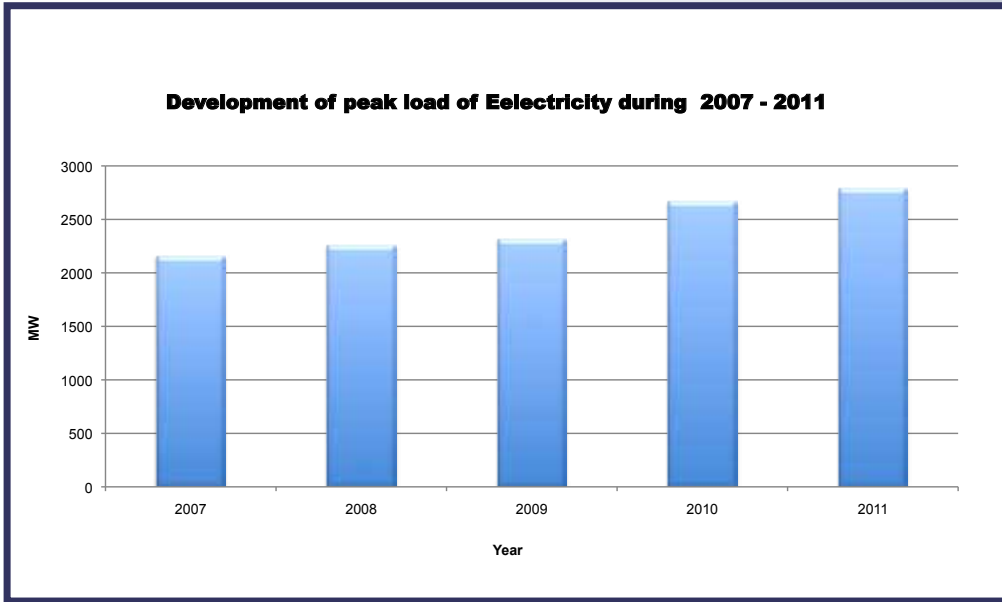
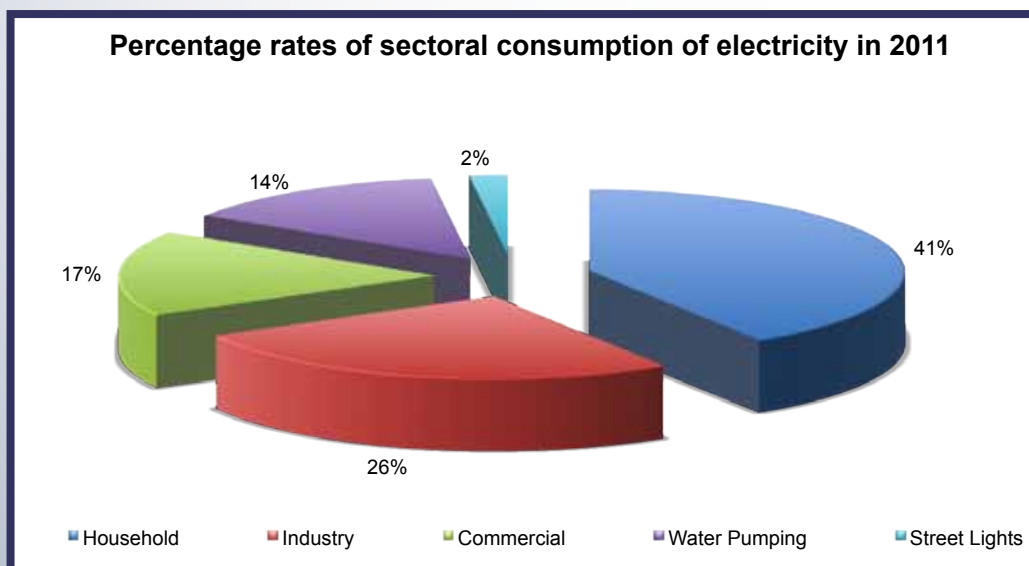


Table No. (10)
Sectoral distribution of electricity consumption and growth rate during 2007-2011 (GWh)

Year \ Sector type	Household	Industry	Commercial	Water Pumping	Street lights	Others	Total	Growth Rate %
2007	4001	2917	1759	1592	269	-	10538	10
2008	4459	3128	1925	1713	284	-	11509	9.2
2009	4926	2981	1978	1761	310	-	11956	3.9
2010	5220	3258	2184	1867	315	-	12844	7.4
2011	5441	3478	2260	1938	324	94	13535	5.4

Table No. (11)
Percentage rate of sectoral consumption of electricity during 2007-2011

Year \ Sector type	Household %	Industry %	Commercial %	Water Pumping %	Street lights %	Total %
2007	38	28	17	15	2	100
2008	39	27	17	15	2	100
2009	41	25	16	15	3	100
2010	41	25	17	15	2	100
2011	41	26	17	14	2	100



Electricity tariff are demonstrated in the following table:

Table No.(12)

Electricity tariff valid in the Kingdom as issued on 1/7/2011		
First: Tariff of electricity sold by the NEPCO to the Distribution Company and the major subscribers:	Unit	Value
a- Major subscribers tariff:		
1- Peak Load.	(JD/KW/Month)	2.98
2- Daytime supply.	(Fils/KWh)	82.0
3- Night time supply.	(Fils/KWh)	66.0
b- Harrana Broadcasting – Flat Rate	(Fils/KWh)	98.0
c- Electricity distribution companies		
a- (JEPCO)		
1- Peak Load.	(JD/KW/Month)	2.98
2- Daytime supply.	(Fils/KWh)	55.19
3- Night time supply.	(Fils/KWh)	45.14
b- (EDCO)		
1- Peak Load.	(JD/KW/Month)	2.98
2- Daytime supply.	(Fils/KWh)	48.92
3- Night time supply.	(Fils/KWh)	38.87
c- (IDECO)		
1- Peak Load.	(JD/KW/Month)	2.98
2- Daytime supply.	(Fils/KWh)	49.10
3- Night time supply.	(Fils/KWh)	39.05
Second: Tariff of the electricity sold by the distribution companies to the consumers:	Unit	Value
a- Ordinary Consumers' tariff:		
1- First block: 1-160 KWh per month.	(Fils/KWh)	33.0
2- Second block: 161-300 KWh per month.	(Fils/KWh)	72.0
3- Third block: 301-500 KWh per month.	(Fils/KWh)	86.0
4- Fourth block: 501-750 KWh per month.	(Fils/KWh)	114.0
5- Fifth block: 751-1000 KWh per month	(Fils/KWh)	135.0
6- More than 1000 KWh per month.	(Fils/KWh)	174.0
b- Broadcasting Station & TV Station Flat rate.	(Fils/KWh)	98.0

c- Commercial Consumers First block: 1-2000 KWh per month. Second block: more than 2000 KWh per month	(Fils/KWh) (Fils/KWh)	91.0 106.0
d- Small industrial consumers with loads not Exceeding 200 KW.	(Fils/KWh)	57.0
e- Voltage networks 33, 11, 6.6 KV or supplied by low voltage networks with loads exceeding 200 KW. 1- Peak Load. 2- Daytime supply. 3- Night time supply.	(JD/KW/Month) (Fils/KWh) (Fils/KWh)	3.79 60.0 50.0
f- Agriculture: Flat rate. 1- Peak Load. 2- Daytime supply. 3- Night time supply.	(Fils/KWh) (JD/KW/Month) (Fils/KWh) (Fils/KWh)	60.0 * 3.79 59.0 49.0
g- Water pumping.	(Fils/KWh)	54.0
h- Hotels: Flat rate. 1- Peak Load. 2- Daytime supply. 3- Night time supply.	(Fils/KWh) (JD/KW/Month) (Fils/KWh) (Fils/KWh)	98.0 ** 3.79 93.0 82.0
I- Street lights.	(Fils/KWh)	64.0 ***
J- Armed Forces.	(Fils/KWh)	94.0
K- Ports Corporation.	(Fils/KWh)	91.0
Note: Minimum rate of monthly consumption: a- Regular consumers. b- Other consumers.		JD 1 JD 1.25

* Agricultural subscribers are entitled to opt for applying the trilateral tariff or continuing to use the flat rate.

** Five- or four-star hotels may opt for using the trilateral tariff or continuing to use the flat rate.

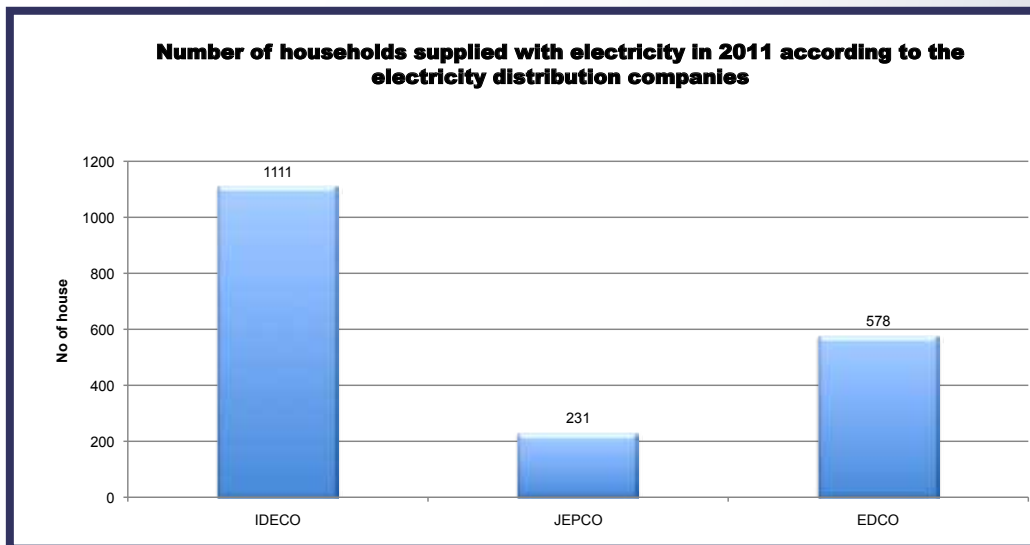
*** Applicable to the consumptions exceeding the 1988 level.

Rural Electrification Project

Electricity has been continued, as the Government insisted, to reach all remote villages and rural areas via the Rural Electrification project by means of the various electricity distribution companies and according to concession areas for each of them. The project received 1084 requests for electrification at an estimated cost of 8.3 million JD, where 657 requests have been accepted at an estimated cost of 3.8 million JD, while 427 requests have been rejected at an estimated cost of 4.6 million JD because of non-applicability. In 2011, a sum of 1920 houses including 10753 people was electrified. This electrification cost approximately JD 3.9 Million in total. The project has contributed to financial contributions to other entities amounted to 13.8 million JD for sustainable development. Table no. (13) illustrates the number of houses electrified, along with both the number of beneficiaries and the total cost according to concession areas of the electricity distribution companies in 2011.

Table (13)
Number of Houses Electrified in 2011 Distributed According to Each Electricity Distribution Company's Concession Area

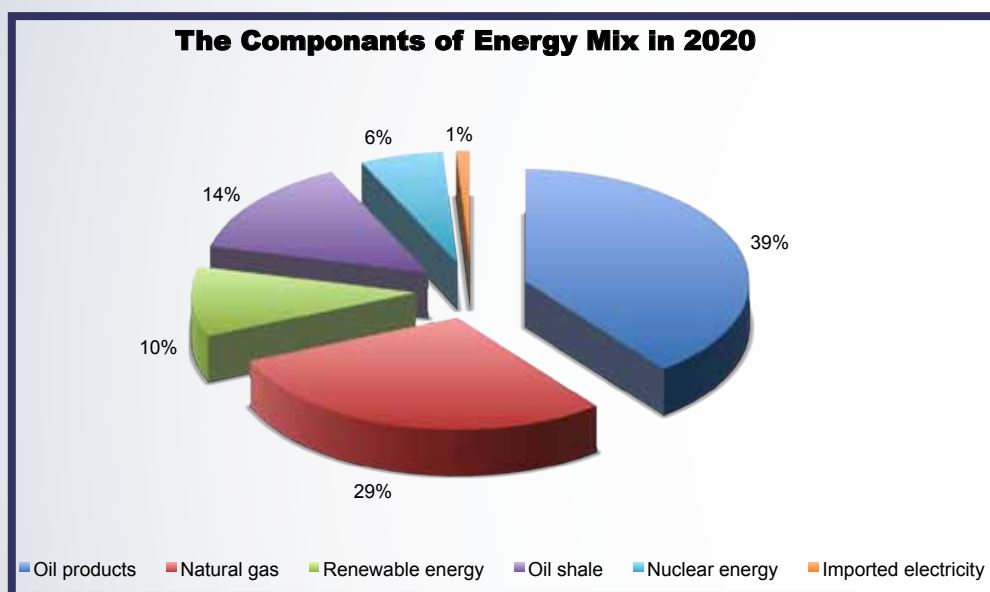
Company	Houses	Beneficiaries	Total Cost (Million JD)
Irbid District Electricity Co. (IDECO)	1111	6222	1.8
Jordan Electric Power Co. (JEPCO)	231	1294	0.5
Electricity Distribution Co. (EDCO)	578	3237	1.6
Total	1920	10753	3.9



The Accomplished Goals in the light of the Comprehensive Strategy for Energy Sector:

The strategy has studied all alternatives and economic options available to meet the demand of energy in all its forms. It has suggested specific mechanisms to ensure the security of energy supply, including the needed infrastructure projects. The estimated investment cost for the infrastructure projects included in the strategy would amount to 14 -18 billion US dollars for the period (2007-2020).

The implementation of the infrastructure projects included in the strategy would increase the contribution of the local resources in the total energy mix from 4% in 2009 to about 39% in 2020. The following figure illustrates the rates of the components of the total energy mix in 2020: -



The Ministry of Energy's most prominent accomplishments in this issue in 2011 are the following:

In Crude Oil and Oil Products:

- Continue to ensure the Kingdom's needs of crude oil through following up the execution of the agreement of providing importing, storing, securing, and distributing oil products which is signed with the Jordan Petroleum Refinery Company on 25/02/2008 and has been extended many times.

- The Ministry is following up the memorandum of understanding signed between the Jordanian and the Iraqi government of transferring the Iraqi crude oil from Peggy / Kirkuk to the location of the Jordan Petroleum Refinery Company at Zarqa. The agreement has been extended till 18/9/2012. It includes meeting of a part of Jordan annual needs from crude oil with not less than 30 thousand b/d + 15% throughout the year. However the actual amount that loaded is 10 thousand b/d only because the Refinery's units are unable to refine more than these quantities for their quantities.

- Fuel oil purchase agreement was signed with the Iraqi government for an amount of 30 thousand tons/month. Also, fuel oil supply agreement was signed with a private company from 1/10/2011 till 30/9/2012 after offering a private tender to transfer fuel oil.
- Follow up the execution of fuel oil transfer tender from Peggy in Iraq to Aqaba Thermal Station for the period from 1/10/2011 till 30/9/2012.
- Follow up the execution of crude oil transfer tender from Peggy / Kirkuk in Iraq to the location of the Jordan Petroleum Refinery Company for the period from 1/8/2011 till 31/7/2012.
- Managing Jarash oiler owned by the Government, which provides the required storage capacities that are necessary to secure the Kingdom's strategic and/or operational storage of crude oil, and to transfer it throughout the year via the port of Aqaba.
- An agreement for the sale and development of land chosen in coordination with Aqaba Development Company was signed to build storage capacities estimated by 70 thousand tons of crude oil.
- Keeping on organizing and monitoring the activities of the oil products supply sector. So 27 licenses were given to establish general gas stations, 2 licenses to establish private stations, 71 initial licenses to establish gas stations, 21 licenses to operate liquefied gas distribution agencies, 66 initial licenses to establish stores for storing liquefied gas cylinders, and 90 licenses to operate constructions for central distribution liquefied gas.
- Reviewing the instructions of licensing gas stations, fuel distribution tanks to determine their suitability of the market need.
- Advertising the winter campaign for the gas stations sector included inspection of public safety. Stations that had been visited were 316 stations.
- Preparation of the instructions of mobile gas stations for the purpose of supplying oil products through these mobile stations within the Kingdom as a service for large projects.

In utilizing local Energy Resources of Oil and Gas:

The Ministry of Energy and Mineral Resources, and the Natural Resources Authority were able to attract many international companies for oil exploration in Jordan, the Kingdom has been divided into eight exploration blocks in accordance with the geological features of each region and the potentiality of oil and the volume of technical information available to them. Franchise rights for research, exploration and production has been awarded to a number of oil companies, the achievements in 2011 are as the following:

- **Al-Risha area** given to the National Petroleum Company (NPCO) according to concession agreement for 50 years as of 1996 until 2046. As the total production for Al-Risha filed was in 2011 around 6.4 Billion cubic feet from natural gas. In cooperation with British Petroleum (BP), NPCO has made three-dimensional seismic surveys covering an area of around 4850 square kilometers in the concession area, and the Natural Resources Authority was provided with these surveys.
- **East Safawi area:** On 17/10/2010 an international tender has been announced to market East Safawi area. The tender has been awarded to the National Petroleum Company (NPCO), and legal actions are being taken to send the agreement to the Council of Ministers for approval.
- **West Safawi area** given to the Global Petroleum Company of India according to an agreement to participate in production. The company has submitted an agreement for drilling a well on block A in the south of the concession area, and has made two-dimensional seismic lines for around 254 km longitudinal lines, However, the company did not delivered information (specifications, field controls, processing and explanations) to the Natural Resources Authority, and did not fulfilled its obligations regarding drilling, therefore, the agreement was cancelled by a decision issued by the Council of Ministers on 24/5/2011.

- **Al-Azraq area** given to the American Company "Sonoran". The company has processed 300 square km from the three-dimensional seismic surveys lines, and made a two-dimensional survey for around 150 km longitudinal lines. The agreement with the company has been extended on 11/8/2011 for one year. Hamza field production in 2011 was 6518 barrels.
- **Al-Sarhan area** given to Universal Energy Limited Company of India. The company has accomplished of around 350 square km of tow dimensional seismic surveys and 225 square km of three dimensional seismic surveys. The agreement has been extended on 11/8/2011 for one year.
- **Dead Sea and Wadi Araba Area** An international tender was given to market this area and Northern Heights on 17/10/2010, but no company has made any offer for the tender. Korean Global Energy Corporation expressed its desire in the Dead Sea and Wadi Araba Area and to sign a memorandum of understanding with the Natural Resources Authority. Also, Thyssen Petroleum Ltd expressed its desire in the Northern Heights and actions for signing a memorandum of understanding are being made.
- **The Central Heights and Al-Jafr Regions**, The Canadian company, Ammonite Energy International Inc expressed desire in this area and has conducted a study to assess petroleum possibilities. It has signed a production sharing agreement (PSA), and the memorandum has been submitted to the Council of Ministers for approval and to take legal actions to be issued under a special law.
- **South of Jordan Area:** ZARUBEZHNEFT, Russian company, expressed desire in this area and a memorandum of understanding was signed on 18/5/2011 to assess petroleum possibilities in the area. The company was provided with all technical information available on the area by the Natural Resources Authority, and work is progressing according to the terms of the memorandum.

In Utilizing the Oil Shale

The Ministry of Energy and Mineral Resources is still working with the Natural Resources Authority to develop utilizing oil shale in Jordan, in implementing of the Government's strategy in the diversification of energy sources and the exploitation of domestic sources of energy has been oriented to the exploitation of oil shale to contribute in a rate of 11% in the primary energy mix by 2015 and a rate of 14% in 2020, and for purposes in going ahead in the exploitation of oil shale the Government has adopted three methods to exploit oil shale as follows:

1. Surface mining project to exploit oil shale in the production of oil.
2. Shell Project Company to exploit the deep oil shale.
3. The project of generating electricity by direct incineration of oil shale.

The following is a summary of the main activities accomplished during 2011:

1- The Surface Mining Project to exploit oil shale in the production of oil.

The Government was able to attract most international companies with expertise in oil shale surface restoration, and own technologies such as Estonian, Canadian, Brazilian and Russian. These companies submit economic feasibility studies for areas before entering into negotiations on concession agreements. Activities of this project have accomplished the following:

Companies signed a concession agreement:

- Jordan's Oil Shale Company (Estonian company): A concession agreement was signed on 11/5/2010 with the Estonian company for a block in Atarat Um Alghdran area after the approval of the submitted economic feasibility study for the area and negotiation on the agreement. The agreement was issued in the Official Gazette as a temporary law on 1/7/2010 and issued as a permanent law in July 2011 after the approval of the Parliament.
- Karak International Oil (KIO) British Company: A concession agreement was signed with the company on 9/3/2011 for a part of Alljoun area. The agreement was issued as a special law on 1/8/2011 after the approval of the Parliament.

Companies who are still conducting economic feasible studies:

- International Company for Investment of Raw Oil Shale (Saudi Arabian Company): This company ended its study about one of the areas of Atarat Um Alghdran during July / 2010. The study was accepted and it is expected to start negotiation with the company to sign PSA.
- The coalition of Petrobras of Brazil and Total of France companies. This coalition signed a Memorandum of Understanding on Wadi Maghar area in order to make exploratory studies of the area and select an area to be exploited in the production of oil. It has to evacuate the rest of the areas and provide the Natural Resources Authority with all information obtained from the area that has been evacuated to use in marketing the rest of the area of Wadi Maghar. The company is still in the process of conducting the studies.
- National Company for the Production of Oil and Electricity from Oil Shale (Jordanian Company) a memorandum of understanding was signed with in 11/04/2009 on a part of Bayer area and was adjusted to a part of Alsultany area in 21/7/2010. It is expected that the company will provide the study in 2012.
- The Jordanian Aqaba Petroleum Company, (Jordanian Company): The company was given Alnedeih area for study and it made an exploratory study for the entire area where the company selected the area that it wanted to use and evacuated the rest of the lands and provided the Natural Resources Authority with all information concerning the area. It is expected that the company will submit the bank economic feasibility study during the first half of 2014.
- Russian Antrraws Company: the company was given a memorandum of understanding for the area of Bayer to study and in case of approval on the final study it could take the franchise rights on a specific part of the area. The company is currently conducting the required study.
- Allajaun Company to Invest in Oil Shale and Natural Resources (Jordanian\ Emeriti Company), the company signed a memorandum of understanding on a part of Allajaun and Atarat Um Alghdran area on 20/09/2010 to conduct an economical banking feasibility study. The company is still conducting studies.
- Other international companies are still negotiating the Government to enter into memoranda of understanding to exploit oil shale in new areas. The Government is still considering offers from the companies.

2- The Project of the Exploitation of Deep Oil Shale to Produce Oil (Shell Company Project)

A concession agreement was signed with Shell company for the exploitation of Jordanian deep oil shale without mining operations by using thermal injection technology (In Situ conversion process-ICP), owned by Shell company , where the company has developed a long-term program

of work in preparation for access to the commercial production of the project.

The company began working in the prepared program since the agreement entered into force after obtaining official approvals and the issuance in the Official Gazette on 16/8/2009.

3- The Project of Generating Electricity by the direct Incineration of Oil Shale :

- The Company (Eesti Energia) Estonian Company has submitted an initial offer to build a power plant using the technology of direct incineration of the Jordanian oil shale with a capacity of 430 MW. Given concerns of the environmental impacts on the project, it is expected until the company's completion of environmental impact assessment of the project and at the same time negotiation is being made with it on agreements to be signed in case of approval on the company's final offer.
- HTG Chinese coalition with Jordanian and Emeriti companies: Negotiation is being made with the coalition of these companies to sign a main principles agreement to present technical and financial offer to build a power station with capacity of 900 MW by using direct incineration of oil shale.

In New and Renewable Energy.

In light of the limitation of local traditional energy resources and burden of imported energy bill on the national economy, the Government gives using renewable energy resources a great importance. It is planned according to the comprehensive strategy for energy sector that renewable energy reaches 10% of total energy mix until 2020, comprising 15-20% of consumed electricity. To achieve this goal, the Ministry of Energy and Mineral Resources is working on implementing a number of studies, programs and projects that would develop using these alternatives and enhance contribution in primary energy mix, as well as providing investment environment that attract investment in these resources. Most prominent of these activities are the following:

- **Direct offers for investment in renewable energy projects:**

In accordance with the provisions of the Renewable Energy & Energy Efficiency Law in force that include: The private sector may submit direct offers for investment in renewable energy resources. In order to organize submission of these offers, the Ministry had announced in May 2011 of its willingness to receive interest applications for these projects. With the end date on 28/7/2011, a large number of interest applications (64) were received, and these applications are being assessed by a specialized technical committee from the Ministry and competent authorities in cooperation with an international advisor assigned to assist in the process of interest application assessment in preparation of signing memoranda of understanding with qualified companies to enable them to prepare and submit their offers in accordance with the Law. It is expected that the assessment process will be completed and the memoranda of understanding will be signed during the first quarter of 2012.

- **Al-fejeij wind energy project**

With the end date for submission of offers on 14/7/2011, 4 technical and financial offers were received from qualified companies. These offers are currently under evaluation and study by the advisor and technical committees in coordination with the World Bank who provided a grant of 6 million dollars through GEF. It is expected to complete the technical and financial assessment process of the offers and awarding during the third quarter of 2012.

- **Alkamsha wind energy project**

The last adjusted offer was received from the first degree winner: the coalition of the Greek Company TERNA after taking into consideration the recent environmental developments regarding

accepted noise levels. The offer is under final assessment by the project's committees to take the appropriate action and recommendations to the Council of Ministers.

- Solar Power Plant Project to generate electricity using Solar Cells (PV)

A grant through the debt swap with the Spanish Government by a value of 5 million dollars, as it was contracted with the Spanish government Institute of Solar Energy (IES) as a consultant for the project to help the Ministry of Energy to prepare the tender documents to be offered on Spanish companies only. The project will be implemented in Azraq area near Azraq power plant. It is expected the project will be working in 2013.

- Renewable energy studies

In order to identify technical, financial and legal limits needed for investment in renewable energy projects for power generation, the Ministry has contracted with specialized international consultative companies through a grant from the World Bank/GEF to study technical requirements for interconnection of renewable energy projects with electric grid and capacity of these projects and their sites, as this study is being implemented with National Electricity Company, study indicative prices of renewable energy, and study legal and regulatory frameworks of renewable energy, as these two studies are being implemented with Electricity Regulatory Commission. It is expected that these studies are completed and their results are announced in the second quarter of 2012 as results will be a reference for the private sector in submitting direct offers.

- CSP project with a capacity of 100 MW

Jordan is one of the countries that gain support from Clean Technology (CTF) managed by the World Bank to finance a part of this project. Study of additional finance opportunities available to complete financing of the project is being conducting by an international company and funded by AFD in order to obtain a competitive electricity price acceptable by the National Electricity Company. If results of the study were positive, tendering procedures will be started, which are expected during the second half of 2012.

- Renewable Energy & Energy Efficiency Temporary Law

Energy committee in the House of Representatives continued to discuss the Renewable Energy & Energy Efficiency Law during 2011. It is expected that the Law will be ratified and issued according to the constitutional actions in the second half of 2012. This Law is a contemporary law that opens the door for the private sector to effectively invest and contribute in the implementation of renewable energy projects, and provides legal, regulatory and constitutional frameworks for the private sector investments in this regard. This Law allows the Ministry to deal with all direct offers submitted to it for investment in renewable energy projects, and to deal with tenders for renewable energy projects, such as electricity generation by wind or solar energy. The Law included the exemption of the investor from costs the connection of renewable energy projects on national electricity grid. The Law obliged electricity companies to buy all electricity generated from these projects regardless of power generation priorities and economies, and included additional incentives, such as providing public lands with incentive leasing prices for renewable energy projects, etc.

Bio Energy

The Bio Gas Company continues working to process the organic waste in Alrosaifa Landfill. The amount of the solid and liquid waste that was processed in 2011 reached to 35 thousand tons, and the amount of electricity generated reached to 8005 MWh. And the amount of the biogas that its emissions were reduced reached about 7.6 million cubic meters.

In Energy Efficiency

The Ministry's accomplishments in this regards are summarized as follows:

- Development of public service office for energy and electricity

The office continued in providing free awareness and consultations for citizens on the procedures of energy efficiency, identifying energy-saving equipment used in this regard available in the local market, and conducting field lectures and visits to institutions and plants to raise awareness in this regard and conducting training workshops and participating in scientific conferences.

- Exemption of energy efficiency and renewable energy equipment from fees and taxes

In execution of the government decision no. 898 that concluded to exempt energy efficiency and renewable energy equipment from custom duties and sales tax to encourage citizens to buy energy efficiency and renewable energy equipment. Therefore, a technical committee (at the Ministry of Environment) was formed in coordination with the competent authorities, including the Ministry of Energy and Mineral Resources, to discuss all pending issues that face the execution and application of all sections of the decision. A mechanism has been adapted to exempt energy efficiency and renewable energy equipment.

“Organizing the procedures, means, and improving energy efficiency” regulation

In order to support improvement of energy efficiency programs in different sectors, a regulation thereof has been developed, and it is expected to be issued in 2012.

- Establishment of energy efficiency and renewable energy promotion fund

Once the Renewable Energy & Energy Efficiency Law is issued as a permanent law, energy efficiency and renewable energy promotion fund will be operated and activated, which aims to providing support for studies of improving energy consumptions in different sectors, supporting awareness campaigns and training in this regard, and guarantee loans for energy efficiency and renewable energy projects, so as the fund is funded by the Government, donors and investment returns.

- Cooperation with international institutions and programs to apply site map of energy efficiency

In order to work on the application of the site map of energy efficiency and to prepare the national plan for energy efficiency, it has been agreed with AFD to finance the Ministry to be able to consolidate and coordinate efforts with all institutions and ministries to play their role assigned in the site map. It has been also agreed with donor programs, such MED-EMIP to assist in developing a proposal for projects of energy efficiency, MED-ENEC in energy preservation in buildings, and RECREEE.

- Energy-saving lights support project

The Ministry has developed a proposal for supporting energy-saving lights at the national level, and it is working on providing finance necessary for implementing this project.

- Using solar energy for water heating support project

It is a national project to encourage using solar water heaters to increase them in household sector to reach 25% in 2020 according the national comprehensive plan for energy sector. A draft worksheet has been prepared for the method of working on the development of support programs in this regard.

- Awareness and training on renewable energy and energy efficiency programs

The Ministry is working on many awareness and training programs in collaboration with Amman Chamber of Commerce, Ministry of Environment and Ministry of Water. Also, a national awareness program is made aiming at all segments of the society. The program included CD containing all efficiency opportunities in energy and water, preservation of the environment as well as preparation of publications distributed on citizens. The program also included lectures and seminars in most schools and summer camps in the Kingdom.

- Formation of energy efficiency committee

In order to limit additional generation cost resulted from the cutoff of the Egyptian gas; the Prime Ministry has issued a decision to reduce lights at roads and lights in all ministries, government institutions and the Armed Forces by 50%. In the execution of the decision of the Council of Ministries, a committee was formed consisting of representatives of all institutions, and its mission is to develop action plans, mechanisms and recommendations for the execution of the decision.

- Building codes

The Ministry has effectively participated in code preparation committees regarding energy, including solar energy, energy-saving building and green building codes.

In Electricity:

The Ministry is currently working in cooperation with competent authorities and within its plan to ensure the availability of the electricity permanently within the following policies:

- Implementing the expansion projects by generating electricity based on the private generating projects IPP's and in manner of (build - own - operate) BOO.
- Diversification of the generation sources.
- Maximizing the use of regional electric interconnection networks.
- Raise the efficiency of the existing power plants, and reduce the loss from transmission and distribution networks.

The main electricity generation projects that address the future demand of electricity are the following:

1. Samra Electric Power Generation company:

- The third expansion project:

This project aims to add two gas units with a capacity of 142 MW to meet the demand for electricity in 2011. The first gas unit has commercially been operated on 25/1/2011 and the second unit at the end of February 2011. In regard of transforming the two gas turbines to operate by combined cycle through adding a steam unit, an advisor has been appointed and tender documents were prepared on 21/2/2011 and receiving offers has been extended for securing finance necessary for this project.

2. The second IPP project /Al-Qatraneh

The project aims to contribute in cover electric loads during 2010/2011 and with a capacity of 373 MW, by using the technology of the combined cycle that burns natural gas as a primary fuel and diesel as a secondary fuel according to the environmental standards applied in Jordan with a total cost of up to 460 million dollars. The project is located in Al-Qatraneh area which lies 80 km south

of the capital Amman. The location was selected based on a technical study by the concerned authorities. Al-Qatraneh Company of the electric power which is founded by a coalition from the Korean company KEPCO and the Saudi Arabia XENEL company is implementing this project. The project operated as a simple cycle on 31/12/2010 and has been operated as a combined cycle in 2011 including acceptance checks. It is expected to be operated in the beginning of February 2012.

Maximizing the use of the Regional Electric Interconnection project:

- The contract of electricity exchange between the Jordanian and Egyptian sides was renewed for the year 2011 on 14/3/2011, and also the contract of the electric energy exchange between the Jordanian and the Syrian side was renewed for the year 2011.
- In 2011, 1458 GWh from the Egyptian network and 280 GWh from the Syrian network has been transferred to fill the needs of the Jordanian network of electricity. Also 30 GWh passed over from the Egyptian network to the Syrian network and 9 GWh from the Syrian network to the Egyptian network through the Jordanian network, and 235 GWh passed over from the Egyptian network to the Lebanese network which brought benefit to the Jordanian side by the fees earned on energy transit.

In Natural Gas

The Ministry of Energy and Mineral Resources, within the comprehensive strategy for energy sector is aiming to the following:

- Provide the new electricity power plant with natural gas.
- Continue working on the plans of transforming industries to use natural gas instead of fuel oil and diesel.
- Establish natural gas distribution networks in several cities in the Kingdom in order to provide the domestic sector and the commercial sector by natural gas and use it instead of the oil products.
- Search of alternative resources for the supply of natural gas.
- Among the achievements that are accomplished in 2011 include the following:
- In 2011, there was a decline in natural gas quantities imported from Egypt through the Arab Gas Pipeline because of many accidents on the pipeline inside the Egyptian territories as stated by the Egyptian side. Imported quantities amounted to 806 million cubic meters with a dropping rate of 65% from 2010.
- Intensive follow up was made with the Egyptian side to guarantee continuity of supplying contractual natural gas quantities for power plant in the Kingdom.
- The Jordanian-Egyptian Fajer company for the transport and supply of the natural gas has implemented a project for increasing current capacity of natural gas pipeline by developing the current compressors station in Aqaba and adding two new compressors to be a total of four compressors which will lead to increase the current capacity of the pipeline to eight billion cubic meter/y.
- In the framework of searching for new resources for the supply of natural gas, actions of international tendering was taken in 2011 to appoint an international house of expertise to conduct the study necessary for importing liquefied natural gas through the port of Aqaba, where tender documents were prepared and offers were received from the qualified companies.

In Utilizing of Nuclear Energy for Peaceful Purposes:

- Jordan interest in the nuclear energy option came as an alternative for electricity generating energy alternatives to confront the difficult challenges represented by the scarcity of domestic energy sources and its increased demand, especially in the light of the growing rise in its prices and the high cost of its import, as well as the scarcity of water resources, especially drinking water.
- So the Jordan Atomic Energy Commission has been established in order to transfer the peaceful uses of nuclear energy and radiation technology to Jordan and to develop their use and management and to establish investment projects in the service of the national economy in the areas of electricity generating energy and water desalination as well as agricultural, medical and industrial areas.

The main achievements of the Jordan Atomic Energy Commission in 2011 are as follows:

First - Subcritical Matrix

- Receiving the nuclear subject (nuclear fuel) of the matrix from the Chinese side and temporary store it in the Jordan Atomic Energy Commission to load it in the matrix during the academic year 2011/2012.
- Obtaining necessary licenses from the Radiation and Nuclear Regulatory Commission for the matrix building in the name of Jordan University for Science & Technology.
- Completion of construction works required for the matrix building.

Second – Jordan Research Nuclear Reactor

- Completion of study of establishing the research nuclear reactor in the campus of JUST.
- Completion of PSAR and deliver it to the Radiation and Nuclear Regulatory Commission in addition to other relevant documents to obtain licenses to commence construction works of the reactor.
- Completion of preparing more than 200 documents to design the research nuclear reactor by the Korean side who is implementing the project and deliver them to the Jordanian side for review and audit.
- Promotion of the organizational structure of the management and teamwork of the project.
- Tendering for specifications and requirements for engineering supervision (OR) to help the Commission in engineering supervision on the project's work flow.
- Commencement of construction of the training center to be a facility of the Research Nuclear Reactor.
- Commencement of preparing the site and drills of the reactor.

Third – Building qualified capacities and human resources

- Support of scholarships and conducting training courses in nuclear science and technology. A number of Jordanian studies were given scholarships to study master and doctorate in France, China, Russia, South Korea and Japan.
- Establishment of Excellence Center for Nuclear Energy and Major Projects in Jordan in cooperation with the French government.

Fourth – Enhancing infrastructure of scientific research laboratories in nuclear science and technology

These laboratories are carrying out studies and researches in theoretical and practical aspects of nuclear science and technology and putting them for the service of concerned researchers and institutions in Jordan. The Commission is working on the development of its laboratories by adopting Quality Assurance (QA) program and obtaining ISO 17025 certificates to adopt these laboratories and results at the international level.

Fifth - Utilizing of Uranium

- To explore new locations for uranium ore in Jordan
- The Jordan French Company for Uranium Mining has prepared the initial study for economic and technical feasibility.
- To continue the development and promotion of uranium analysis laboratories in the Commission and working on obtaining ISO 17025 for these laboratories.

Sixth- Test study of the nuclear station location

- TriCapital has provided the Commission with 100 reports of 46 thousand pages on studies for the nuclear station location at Aqaba. These reports were deposited at the Commission for review and future benefit and follow up.
- Commencement of study of the nuclear station location in the north-east of the Kingdom in Kherbet Alsamra after ceasing work in Aqaba for technical and financial reasons.

Seventh- a- Pre-establishment of nuclear station to test nuclear technology

- The Commission in cooperation with WP Company has prepared technical, financial and logistic inquiries and questions related to nuclear reactor technology, which were sent to 4 international companies of direct relevance and broad experience in nuclear energy.
- On 17/1/2011, a tender was offered and request from the Russian, Canadian and French-Japanese companies carrying the same rank in terms of technical aspect and to meet the required needs to provide the Commission with full offers.
- Offers of the three companies were received on 30/6/2010 and a government technical committee was formed to study the offers.

Seventh- b- Nuclear station technology

The Commission has started in 2011 competitive dialogues with the three companies to reach a selection of a supplier for technology appropriate for Jordan. The process of competitive dialogues is still on progress and no nuclear technology has been chosen yet. Two major types of nuclear technology are currently taken into consideration for the nuclear station. They are: compressed water reactor and compressed heavy water reactor, noting that the two technologies are been experimented and their feasibility is proven, and they are third generation and after third generation reactors.

The financial feasibility study is being made by a foreign advisor. The main goal of this study is to conduct a comprehensive financial analysis that can be used by financial institutions to evaluate credit worthiness of the nuclear station.

It is expected that the winner technology supplier will be chosen in 2012, obtain a license to construct from the local authorities in 2015, complete construction by the end of 2019, and operate the first Jordanian station for nuclear energy in 2020.

Energy and Environment

The Ministry of Energy and Mineral Resources contributed in the study of many projects submitted to the Ministry of Environment, whether these projects were in the field of electricity generation, such as building power plants, or other projects in other industrial aspects, through its membership in the environmental impact study committee for projects to be implemented. The Ministry has also a major role in environmental assessment of the already established projects. The Ministry is participating in the technical and negotiating committees of the clean development mechanism. This mechanism of Kyoto Protocol provides that facility countries should establish projects in developing countries for helping them in achieving sustainable development, with the contribution of achieving the main goal of Climate Change Agreement and at the same time helping the developed countries to oblige with reducing emissions to their determined limits. The Ministry is also participating in the committee for following up government returns from the sale of reducing emissions certificates.

The Ministry has received many studies submitted by local and foreign companies to produce bio-gas from consumed plant oils, as the Ministry has directed these companies towards steps that must be followed to obtain the necessary licenses and adherence of all instructions of the organization of bio-diesel activities.

On 13/12/2011, the Ministry conducted a workshop in Jordan with the participation of experts from the World Bank to discuss the study submitted by the World Bank regarding Carbon Capture & Storage mechanism (CCS).

The Mining Sector

Mineral resources are considered one of the most important pillars on which the mining industries depend on, and which constitutes a key and important tributary to the national economy.

Jordan possesses a lot of natural resources, many of which are metal such as copper and iron and non-metallic as clay and its different derivatives, such as kaolin, pure limestone, silica sand and gypsum and construction materials produced by various quarries in various regions of the Kingdom, such as building stone, marble and granite slabs, etc., in addition to the exploitation of the wealth of the Dead Sea as salts or mud, which are used in the production of medical and cosmetic products.

Therefore, the Natural Resources Authority continued the investigation operations and the prospecting of raw minerals and industrial rocks in various regions of the Kingdom.

The most significant projects undertaken by the Natural Resources Authority of prospecting for mineral resources, in 2011 are the following:

• The prospecting project of oil shale

This project is located in areas south of the Kingdom and aims to find new places to this crude and determines its reserve, 6 wells have been drilled in the area of Bear Khadad /Ma'an governorate of a depth of 5-14 m, and from the results of the analysis it became clear that the percentage of oil in these wells is low as it reached an average of 3%. Also, 5 of 10 wells have been drilled in the area of Wadi Abu Hammam/Ma'an governorate of a depth of 221-290 m, and thickness of oil shale layers ranging between 180-224 m, and it became clear from the results of the analysis that the percentage of oil in these wells ranges between 3.67 to 10.22% Work is still under progress in the area for final assessment.

• The prospecting project of dolomite

Dolomite ore is explored in Althaghra/Ras Naqab for its importance in industries, where 25 spiral wells have been drilled at depths ranging between 8-30 m, and with a total depth reached 504 m. Also, 148 rock samples were collected and have been chemically analyzed to determine thickness of the ore and content of MgO. A technical report will be prepared in this regard in the future.

• The prospecting project of kaolin

Kaolin ore is explored in the north of Deisi/east of Wadi Alhufairhah covering 12 km. 3 hills have been studied that contain kaolin deposits, and one ditch was drilled (8 masateb) for around 14 m at length, and 17 samples have been collected and chemically analyzed. Results were promising and working on this project will continue in 2012.

• The prospecting project of copper and gold ores

An international tendering to explore copper ore in Abu Khaseeba and Um alamad/South of the Kingdom has been made, and international tendering to explore gold ore in Wadi Arabah/South of the Kingdom has been made. A number of companies have submitted offers to each tender and a technical study is being made to evaluate the best submitted offers.

Financial Statement in 2011

Item	Allocations in 2011	Expenses in 2011	Disbursed %
Current expenses	2555000	2518519	99
Capital expenses	25440800	23068436	91
Total	27995800	25586955	91

The Financial Statement for capital projects in the Ministry in 2011

MEMR Projects Financial Data in 2011

The Project's Name	Allocations for the year 2011	Expenses for the year 2011	Disbursed Rate %
Encouraging the establishment of natural gas networks	3272000	2999015	92
Generating electricity from solar cells with a capacity of 1 MW	3700000	3675194	99
Using wind energy to generate electricity in Alfujaij	2310000	1857920	80
Supporting the projects of the Atomic committee	14328000	14328000	100
The administrative projects	231000	151404	66
Total	23841000	23011533	97

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