The Hashemite Kingdom of Jordan

The Ministry of Energy and Mineral Resources

Annual Report

2013

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His Majesty King Abdullah II Bin Al Hussein

H.R.H Crown Prince Hussein bin Abdullah II

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Minister of Energy and Mineral Resources Message

It has been an honor and a privilege to be entrusted with our country's mandate to solve our energy challenges. Energy resources play a critical role in Jordan. For the last 10 years, the fortunes of our government and our society have been closely aligned to the availability of cheap energy resources and our ability to efficiently use it. Today we find ourselves living in a transformational era for energy markets not only regionally but also globally and the ability of our country to be dynamic and play in this changing global context will determine our success going forward.

By now, everyone in Jordan is well versed in our formidable energy challenges and engaged in the continuous debate on what are the implications to Jordan's energy security and economic competitiveness as a result the disruption of Egyptian gas supplies, instability in Iraq and Syria, elevated oil prices, and the vast Eastern Mediterranean gas discoveries. MEMR has been in the forefront of these developments and has adopted a multifaceted progressive strategy to tackling these issues.

In 2013, we have continued working toward executing the Energy Master Plan of 2007 guided by the core principle of delivering to Jordanian households and businesses low cost, reliable, safe and diversified energy. To that end, we have made significant progress in many fronts toward achieving that goal by enhancing the current infrastructure and identifying new sources of energy in order to decrease the country's reliance on crude oil with the following being examples:

- Commissioned and contracted the addition of new petroleum storage capacity in the south and the middle of the Kingdom exceeding 350 thousand tons.
- In Renewable Energy, in addition to signing 12 Solar investment agreements to generate electricity exceeding 200MW by mid to late 2015, and ordering 117 MW of the first utility-scale wind power plant to be built in the Tafila region, we have facilitated and made it easy for end consumers including households, hotels, hospitals, and places of worship to generate their own electricity and supply excess to the grid. A capacity of more than 4.5MW has been generated by the latter and expected to increase exponentially.
- After arduous negotiations to obtain competitive pricing, we have signed an agreement with an Estonian company to develop 470 MW Shale oil power plant that is slated to be operational in 2017.
- Signed an agreement with Shell to supply liquefied natural gas (LNG) to a $65 million LNG terminal in Aqaba that is currently under construction. LNG gas is expected to start flowing into the terminal early 2015.

Additionally, we remain very engaged with all our neighbors in exploring additional opportunities as more gas discoveries are announced (e.g.,Gaza, Cyprus) and the potential in Lebanon, Greece and Egypt and the Palestinian authority have great promise not only to help us secure cheap energy supplies but also improve our regional cooperation. Securing our share of these vast regional resources is a strong first step toward providing Jordan with critically needed affordable energy supplies after losing supplies from Egypt.

In unprecedented energy collaboration step, and the first of it kind in the region, we have signed an MOU with both IRAQ and EGYPT to collaborate in the development of a strategic oil and gas regional hub. The agreement paves the way for turning Aqaba into a solid transit energy hub serving the local market, Iraq, Syria and other Levant market players.

As we continue making progress and adapting to market conditions, it is imperative for us to evolve our strategy and take advantage of any new energy cost reduction opportunities. I am confident that we have put in place stable guardrails, and we are adapting the right principles and following the right strategy to achieve our country's energy diversity and security. I am very pleased with the performance of my team in the Ministry and their unwavering commitment to improve our energy situation and I am also very grateful to the various local and international organizations and entities that are actively supporting us execute our strategy.

Dr. Mohammed Moussa Hamed

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.

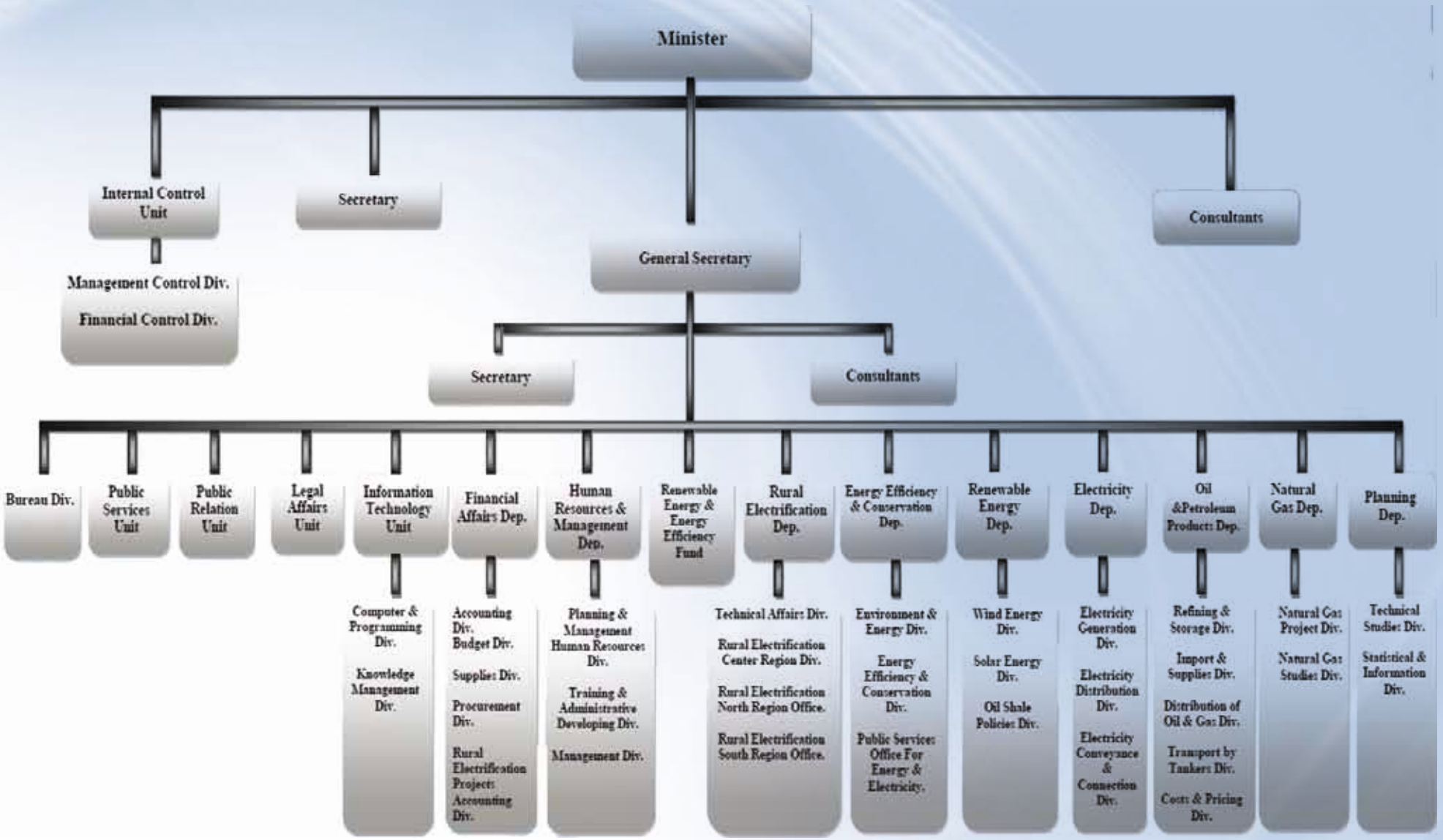
Core values

- **Working in team spirit**
- **Dissemination of knowledge**
- **Transparence and un-biasness**
- **Affiliation and discipline**
- **Excellence**
- **Justice and equal opportunities**
- **Creativity and innovation**
- **Social responsibility**

Strategic objectives

- **Achieve energy supply**
- **Diversify the sources and kinds of energy**
- **Develop and utilize the local conventional and renewable sources of energy, oil shale and uranium**
- **Transfer, localize and develop nuclear energy technology and develop and sustain its uses.**
- **Increase energy efficiency in all sectors**
- **Maximize the added value to exploit mineral ores**

The Organizational Structure



Terms and Abbreviations

b/day	Barrel/day
boe	Barrel oil equivalent
boe/day	Barrel oil equivalent /day
CF	Cubic Feet
GDP	Gross Domestic Product
GWh	Gigawatt–hour (10^9 Watt-hour)
JD	Jordan Dinar (10^3 Fils)
kg	Kilograms
kgoe	Kilogram oil equivalent
km	Kilometer
kt	Thousand tons
kV	Kilovolt
kW	Kilowatt (10^3 Watt)
kWh	Kilowatt–hour
MVA	Mega volt Ampere
MW	Megawatt
MWh	Megawatt–hour (10^6 Watt-hour)
toe	Ton oil equivalent

The Significant Statistics of Economy in Jordan 2013

Item	Unit	Amount
Population	Million	6.530
Gross Domestic Product (GDP) at current prices	Million JD	23852
GDP per capita	JD	3653

Source: Department of Statistics

The Significant Statistics of Energy in Jordan 2013

Item	Unit	Amount
Energy Intensity	kgoe/1000 US$ Fixed Price	208
Per capita energy consumption	kgoe	1249
Per capita electricity consumption	kWh	2235
Electricity generation	GWh	17261
Electricity consumption	GWh	14564
Population access to electricity	% of population	99.9
Domestic energy production (crude oil and natural gas)	1000 toe	112
Energy imports	1000 toe	7656
Primary energy consumption	1000 toe	8157
Cost of consumed energy	billion JD	4.076
Cost of Consumed Energy (%)		
Exports	%	85
Imports	%	26
Gross Domestic Product	%	17

Introduction

The Ministry of Energy and Mineral Resources aims to provide all forms of energy required for sustainable development through the enhancement and implementation of proper policies, legislations and programs; diversify sources and forms of imported energy; and to boost local and renewable sources of energy and efficiency in various sectors.

In this context, the Ministry of Energy and Mineral Resources and other sector's institutions were able to perform many achievements during 2013.

Crude Oil and Oil Products

A continuous approach towards securing the kingdom's need of crude oil and oil products was duly achieved. All tenders to build a storage capacity of 100,000 tons of crude oil and oil products were submitted. A project with a cost of 44.5 million was referred to the Chinese company CDIG in 27.9.2013 and it is expected to start the project in the second half of 2015. Another project with a capacity of 6 thousand tons of LPG is expected to be built in Aqaba by an engineering procurement construction contract EPC referred to the Chinese company CDIG to be implemented in the second half of 2015.

Moreover, a tender project to build strategic capacities with approximate (250-300) thousand tons of light petroleum products and (8000) tons of LPG was submitted and supposed to be completed in the middle of the Kingdom by the first half of 2016.

Furthermore, a framework agreement between the Hashemite Kingdom of Jordan and the Republic of Iraq was signed in 15.4..2013 to build a pipeline and begin to export Iraqi crude oil through Jordan territories to Aqaba port starting from 2018.

An oil market has also been opened and three local and international companies were given licenses to distribute oil products in the Kingdom and commenced its work since May, 2013.

Natural Gas

There was an ongoing follow-up with the Egyptian authorities to ensure the permanence of contract quantities supply of natural gas to electricity generating stations in the Kingdom, and in search for new sources of natural gas supply, a project to import liquefied natural gas LNG by ships to Aqaba port has been implemented. Golar LNG ltd. has signed a contract of floating storage and regasification unit (FSRU) in 31.7.2013. The FSRU shall store the LNG, gasify and pump it to the Arab gas pipeline to the electricity generation stations.

The Aqaba Development Corporation (ADC) has ended the procedures of an advanced evaluation offer to LNG jetty tender project in Aqaba which was referred to the (BAM-MAG) Coalition for 46.5 million dinars.

Electricity

Gas turbine with capacity of 145.9 MW was added on 28.6.2013 and put into operation in Samra Electric Generation Station to support the peak load during summer 2013. Agreements were signed between NEPCO and AES-LEVANT for Fourth Independent Power Plant (IPP4)/ Amman east. A cornerstone for Third Independent Power Plant (IPP3) was set in Al-Manakher. However, the Pan Arab electric interconnection study will be feasible between Jordan and Saudi Arabia.

Oil Shale

The Government has awarded several local and global companies the concession areas for investing in the oil shale by surface and deep distillation and direct combustion, in addition to the signing of memoranda of understanding with other companies. Oil Shale areas were classified in the Kingdom for interested companies based on criteria approved by the Natural Resources Authority (NRA).

Jordan is the fourth country in the world in terms of possession of oil shale sources after the United States, China and Brazil. Where surface oil shale reserves in Jordan underlie over 70 billion tons consisted of more than 7 billion tons of oil.

Renewable Energy

Jordan has a great potential and sources of renewable energy, particularly solar and wind energy. Jordan locating within the Sunbelt zone, where the intensity of solar radiation is between (5-7) kwh/m^2 as well and wind speed in specific locations is between (7-9) m/s. These figures are promising for utilizing renewable energy to generate electricity in Jordan.

Building on this, agreements of the first project were signed to generate electricity out of wind with 117 MW in Tafilah by a consortium of Jordanian and International Companies - Jordan Wind Project Company (JWPC) with a total of 205 million-US dollar investment size.

As a matter of fact, (12) projects offer were received to generate electricity using photovoltaic systems (PV) with 200 MW in total. A second round for direct offers to invest in renewable energy was launched and 83 requests from investing companies interested in renewable energy projects were directly received and evaluated. Furthermore, a final evaluation for companies' offers to proceed the project of wind energy and generate electricity in Ma'an with 65-75 MW and 150 million USD cost funded by the Kuwait Fund for Arab Economic Development.

The Korean KEPCO (The winner of the wind energy tender in Alfjeij-Shoubak with 90 MW of capacity) has completed an environmental impact assessment study for the project. It is planned that the project works by the end of 2015, if the study is accepted and the company responded to the requirements of the ministry and successfully achieved its financial closure. The negotiation on implementing the PV Solar Power Project at Azraq with the first rank company was completed through a Spanish-Jordan Debt Swap at a cost of 5 million and a capacity around 2MW.

The number of requests for connecting renewable energy systems according to the Net-Metering system has reached 430 requests with 12,352 kw of capacity of which 291 systems with 2554 kw as well were connected and operated after the Renewable Energy and Energy Efficiency Law No. (13) of 2012 have been issued.

Conservation and Energy Efficiency

The National Energy Efficiency Action Plan (NEEAP) for the years 2013-2014 was set and finally adopted by the Cabinet. Furthermore, a tender project to promote energy efficient lighting in government buildings by installing 600 thousand lights was submitted. Another project of distributing (1.5) million household energy-saving light bulbs of consumption less than 600 kWh was implemented.

A domestic contribution towards saving energy in coordination with the Jordan River Foundation for the purchase of solar heaters will be part of this initiative. The installation will include around (5) Thousands solar heaters by 2020 at a cost of 1.4 million dinars approximately.

The following annual report shall include many accomplishments in many other areas such as atomic energy, mining, and electric Interconnection project, etc.

The Development of Oil and Natural Gas Sectors

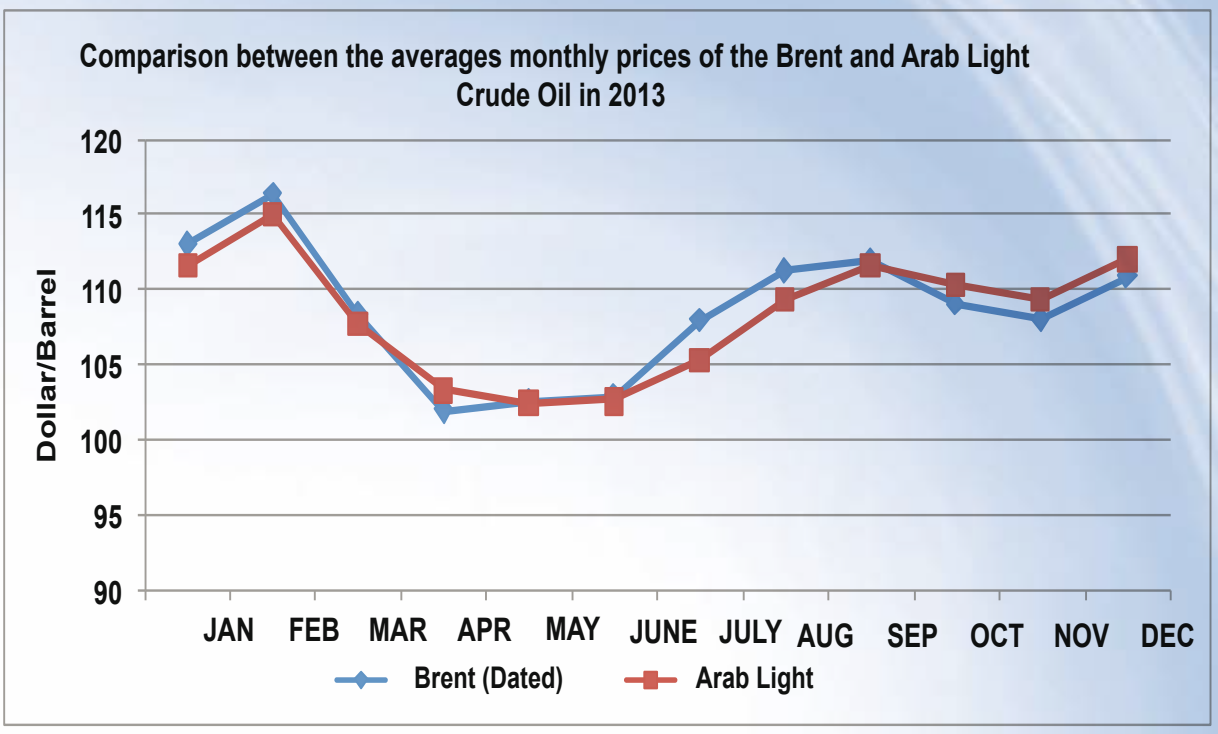
The Arab and International Levels

The average daily world production of crude oil in the year 2013 has reached around 89 million b/d showing a growth of 3% comparing to 2012. However, the world's proven reserves in 2013 stood at (1257) billion barrels.

With regard to the Arab counterpart daily production of crude oil for the same year has amounted about (29) million barrels, a proportion of (33%) of the global production.

The Arab's proven reserves of crude oil for 2013 has amounted to (709) billion barrels that represents (56%) of global reserves.

Brent oil prices have fluctuated and reached the highest rates at 116 dollars a barrel in February, 2013comparing to April, 2013 where it hit its lowest rate to reach 102 dollars a barrel. The following chart shows comparison of monthly average prices on Brent oil and Arab light imported by Jordan in 2013.



Source: Platts Bulletin

The world production of natural gas in 2013 amounted to approximately (3364) billion cubic meters, with a growth estimated to 2% comparing with 2012 while the world's reserves stood at 190 trillion cubic meters.

However, on the Arab level, the Arab states' produced nearly 590 billion cubic meters of natural gas with 18% of the world production. Yet, the Arab states' reserves of natural gas have reached nearly 56 trillion cubic meters representing 29% of international reserves.

The Local Level

The local production of energy (crude oil, natural gas and renewable energy) was (273) thousand toe in 2013 representing (3%) of Jordan's total energy needs. Due to the lack of energy sources, Jordan depends heavily on imports to fulfill its domestic energy needs. The imported quantities of crude oil and oil products in 2013 were amounted to approximately (6445) thousand toe, while total quantities of natural gas imported from Egypt reached (867) million cubic meters. The total cost of crude oil and oil products, natural gas and coal imported by Jordan has reached (4036) million Jordanian dinar in 2013 with a (12%) decline comparing with 2012.

The total demand for primary energy was estimated to (8157) thousand toe in 2013 with a drop of (1%) while the total demand for final energy i.e., energy available to the consumer, has reached (5406) thousand toe with a drop of (5%) comparing with 2012 demand levels. On the other hand, the demand for oil products was (3687) thousand toe.

The Institutions of the Energy Sector in 2013

Given the importance of the crucial role played by energy in the socioeconomic aspects, and the direct relationship to its activities with the political and economic issues; the government has paid the sector a great attention to enhance the efficiency and effectiveness. In the light of the new institutional amendments, the current institutional framework of the energy sector consists of the following structure:

1. The Ministry of Energy and Mineral Resources (MEMR)

The Ministry has adopted a comprehensive planning process for the sector in terms of regulation, set policies and follow-up implementation to achieve the tasks entrusted. The most important of which is to provide the required energy by all forms needed for the purposes of comprehensive development at the lowest possible cost and better quality; beside attracting the required capital needed for investment in various energy sectors such as generating electricity, producing oil products , and utilizing energy domestic resources particularly the renewable ones. Not to mention supplying villages, populations and Jordanian rural communities with electricity through rural electrification project. However, the ministry spares no effort to support studies to improve energy efficiency in various sectors and ensure loan guarantee for renewable energy and energy efficiency projects through the renewable energy and energy efficiency Fund.

2. Electricity Sector

Institutions responsible for regulating, generating, transmitting and distributing electricity all over the Kingdom, as follow:

2.1 Electricity Regulatory Commission (ERC)

An independent commission established in 2001. ERC mainly objective is to identify electricity tariff, subscription fees and costs necessary to electricity services, issue licenses for companies in terms of transmission, distribution, adhering to condition of license compliance, and handle and resolve those complains and disputes aroused by the electricity companies and the consumers and also by the companies themselves amicably which can best serve the public interest, as well as to extend any consultancy or advice needed concerning any subject or situation related to electricity.

2.2 National Electric Power Company (NEPCO)

A public shareholding company owned by the government, responsible for the construction, operation and maintenance of the transmission system within the borders of the Kingdom along with the electric transmission system which connects the system with other neighboring countries' systems, as well as to secure the Kingdom's power supply through expansion of generating units whether for the private sector and/or the public sector.

2.3 Central Electricity Generating Company (CEGCO)

A public shareholding company founded in 1999 and responsible for power generation and wholesale sold to the National Electric Power Company. The generating capacity

of the company reached (1687) MW at the end of 2013.

2.4 Samra Electric Power Company (SEPCO)

A private shareholding company founded in 2004 and whose shares are fully owned by the government. The company is responsible to generate electricity and sell it to NEPCO. The generating capacity of the company reached around (887.9) MW at the end of 2013.

2.5 AES-Jordan. PSC

Also known as Amman East Power Project, a private company owned by the American AES company and the Japanese MITSUI company founded in 2009, and responsible for generating electricity and selling it to NEPCO.AES-Jordan. PSC owned the first private project in Jordan to generate electricity in East Amman power plant/Al-Manakher which was inaugurated under the patronage of His Majesty King Abdulla II on 26th, May.2009. The generating capacity of the company reached around (370) MW at the end of 2013.

2.6 Qatraneh Electric Power Company

A private company owned by the Korean KEPCO company and the Saudi XENEL company, founded in 2010. The company is responsible to generate electricity and sell it to NEPCO. The generating capacity of the company reached around (373) MW at the end of 2013.

2.7 Electricity Distribution Companies

Includes three companies, each has a concession area to distribute electricity as follows:

2.7.1 Jordan Electric Power Company (JEPCO)

A public shareholding company responsible for distributing electricity in the Metropolis, Zarqa, Ma'daba and Balqa governorates excluding Central Jordan Valley under a 50-year concession ended on 22.11.2012. The company has been granted a temporary license for six months and extended for further six months from the date of 21.5.2013 under the same conditions stipulated by the Convention of the temporary license in accordance with the provisions of the General Electricity Law and relevant legislation.

2.7.2 Irbid District Electricity Company LTD (IDECO)

A public shareholding company, responsible for distributing electricity in Irbid, Mafraq, Jerash and Ajloun governorates excluding Northern Jordan Valley and Eastern areas. The company has been granted a 25- year license in 2008.

2.7.3 Electricity Distribution Company (EDCO)

EDCO is a public shareholding company; responsible for distributing electricity outside the concession areas of JEPCO and IDECO; namely the Southern, Eastern and Jordan Valley areas. The company had been granted a 25- year license in 2008.

3. Petroleum, Gas, and Mineral Ores Institutions

Institutions carry out operations of prospecting for oil, gas and mineral ores inside the Kingdom along with refining and selling crude oil and oil products. The institutions include:

3.1 Natural Resources Authority (NRA)

A public institution established the Organization of Natural Resources Affairs Law for 1968. It is involved with prospecting mineral resources, conducting geological, geophysical, and geochemical surveys in the Kingdom along with issuing licenses with regard to rights for mining, prospecting, quarrying and monitoring operations thereof.

3.2 National Petroleum Company (NPCO)

A public company owned by the government. NPCO is responsible for prospection and production of oil and gas in the concession area to the northeast of the Kingdom along with the Iraqi borders covering an area of 7000 square kilometers including Risha gas field within an area around 1500 square kilometers. The duration of the concession period lasts for (50) years from the date of entry into force in 1996.

3.3 Jordan Petroleum Refinery Company (JPRCO)

A public shareholding company responsible for refining crude oil , producing and distributing oil products in Jordan by service agreements signed with MEMR and have been extended several times.

3.4 Jordanian Egyptian Fajr for Natural Gas Transmission & Supply Co. Ltd

A limited liability company, pursuant to the Jordanian Companies Law and License Agreement signed on 25.1.2004 by both Jordan government represented by the Ministry of Energy and Mineral Resources and Jordanian Egyptian Fajr; the company builds, operates and owns the gas pipeline from Aqaba to the north of Kingdom, collects and transfers the Egyptian natural gas in Aqaba through the pipeline and sells it to the electricity generating stations and major industries.

3.5 Gas Stations

Stations owned by legal or natural persons concerns with selling fuel. The number of the stations operated in the region reached (473) at the end of 2013.

3.6 Gas Agencies

Agencies owned by legal or natural persons concerns with distributing gas cylinders. The number of working agencies reached (1096) at the end of 2013.

3.7 Central Gas Distribution Companies

Privately-held companies concerns with distributing tank gas. The number of the companies reached (6) companies in 2013.

3.8 Oil Products Marketing Companies

Three privately-held companies concerns with distributing oil products (gasoline, diesel, kerosene and jet fuel).

4. Jordan Nuclear Regulatory Commission (JNRC)

A commission established in 2007 as a successor to the former Jordan Nuclear Energy Commission, established in 2001. JNRC is an effectively independent and adequately empowered Regulatory Body. It enjoys an administrative and financial independence. The commission aims at protecting environment, human health and property from the hazards of radiation and related pollution through regulating and monitoring the use of nuclear energy and ionizing radiation and ensuring the

availability of conditions and requirements of general safety, radiation protection, and nuclear safety and security.

5. Jordan Atomic Energy Commission

The Jordan Atomic Energy Commission was established at the beginning of 2008 as successor to the Jordanian Nuclear Energy Commission. The work of the Atomic Energy Commission focuses on introducing the peaceful uses of nuclear energy and radiation to the Kingdom and developing its sustainable use to generate electricity, desalinate water and various applications of agriculture, medicine and industry purposes.

6. Jordan Bio-Gas Company Ltd.

A joint-stock company owned by the CEGCO and Greater Amman Municipality (GAM), founded in 1998.The Company aims at converting organic waste into methane gas to generate electricity. The generating capacity reaches 3.5 MW.

The Energy Sources in Jordan

Jordan local energy sources of oil and natural gas are very limited despite the exerted efforts spent by the government to develop, search, or prospect for other domestic resources through foreign companies associated with the government. Those companies have offered all required facilities and information provided by seismic studies and surveys.

Jordan has a huge amount of oil shale which exceeds 70 billion tons containing more than 7 billion tons of oil. Oil shale can be utilized to generate electricity by direct incineration, or produce oil and gas by retort or ICP technology.

With regard the current contribution to new and renewable energy resources to the total energy mix does not exceed 2%. The Ministry of Energy and Mineral Resources has adopted an ambitious program to increase this contribution to reach 7% by 2015 and 10% by 2020. All details related to domestic energy resources will be subsequently discussed by the comprehensive strategy for the energy sector.

Table (1) shows the domestic production of crude oil and natural gas and their contribution to the overall energy consumed in the Kingdom during the period (2009-2013).

Table (1)

Production of Crude Oil and Natural Gas in Jordan during (2009-2013)

Year	Crude Oil (kt)	Natural Gas (BCF)	Contribution of Domestic Production of Oil and Natural Gas to the Overall Energy Consumption (%)
2009	1.5	7.8	3.3
2010	1.2	6.5	2.8
2011	1.0	6.4	3.0
2012	1.0	5.8	2.4
2013	1.0	5.3	2.1

The Domestic Demand for Energy and Electricity

1. Crude Oil and Oil Products

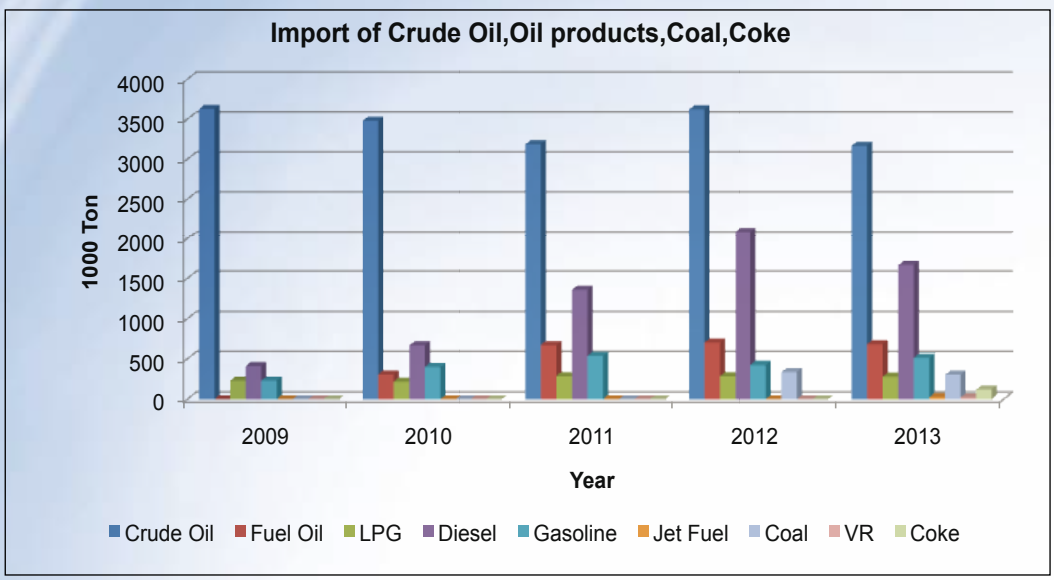
The cost of crude oil and oil products imported in 2013 was estimated to (3861) JD million, registering a drop of 12% comparing with 2012.

Table (2) shows the quantity of crude oil and oil products imported during the period of (2009-2013).

Table (2)

Imports of Crude Oil and Oil Products during 2009-2013 (thousand tons)

Year	Crude oil	Fuel oil	Liquefied gas	Diesel	Gasoline	Jet fuel	Coal	Vacuum residuals	Pet coke	Total
2009	3633	-	234	414	231	1	-	-	-	4513
2010	3485	307	219	670	400	1	-	-	-	5082
2011	3189	674	288	1361	540	1	-	-	-	6137
2012	3623	703	288	2089	426	1	340	-	-	7130
2013	3170	685	280	1670	515	27	306	23	123	6799



2. Natural Gas

The overall quantities of natural gas imported from Arab Republic of Egypt in 2013 through the Arab gas pipeline was around (867.5) million cubic meters with an increase of rate amounted to (48%) comparing to that registered in 2012.

3. Primary and Final Energy Consumption

The overall demand for primary energy in 2013 was nearly (8157) thousand toe with (1%) of a rate decrease comparing with 2012.

Table (3) demonstrates the domestic demand for primary energy during the period (2009-2013).

Table (3)
Primary Energy Consumption during (2009-2013)
(thousand toe)

Year	Type of primary energy						Total
	Crude Oil and Oil Products	Coal	Pet Coke	Natural Gas	Renewable Energy	Imported Electricity	
2009	4454	-	-	3086	120	79	7739
2010	4774	-	-	2289	124	168	7355
2011	6141	-	-	873	130	313	7457
2012	6992	226	-	659	140	188	8205
2013	6689	204	116	907	145	96	8157

As for final energy consumption and distribution to all economic sectors are shown in table (4).

Table (4)
Sectorial Distribution of Final Energy Consumption
during (2009-2013) thousand toe

Year	Sector				Total
	Transport	Industry	Household	Others*	
2009	1952	1101	1083	885	5021
2010	1991	1014	1019	849	4873
2011	2012	961	1136	779	4888
2012	2521	921	1198	743	5157
2013	2734	924	1109	617	5384

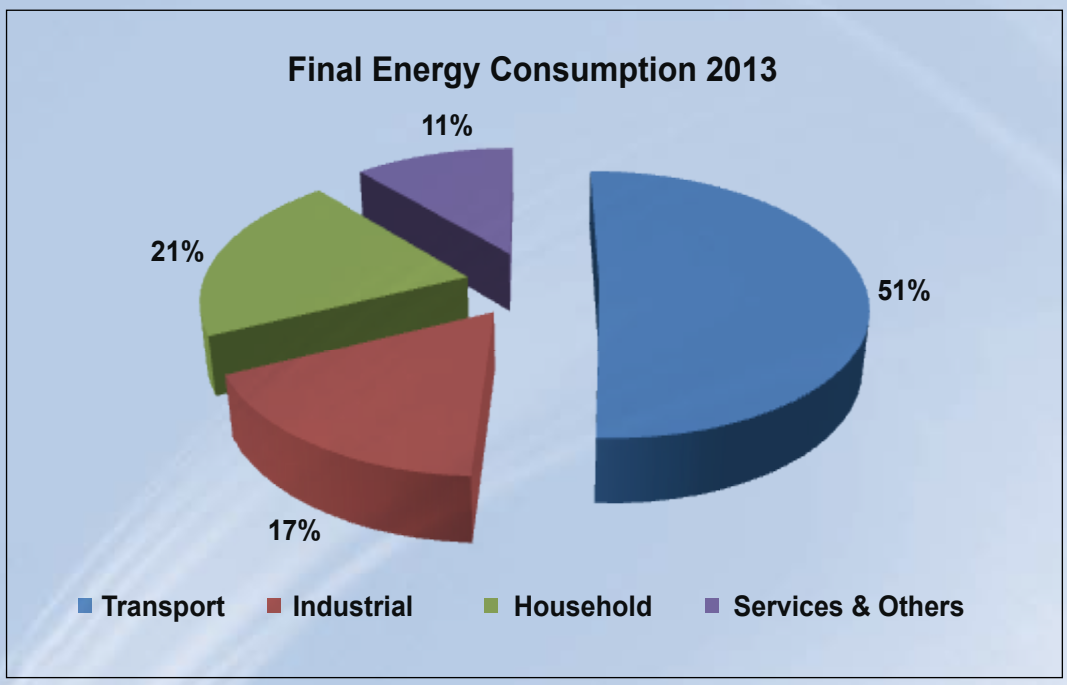
*Includes commercial and agricultural sectors along with street lights.

Table (5) shows the percentages of the sectorial distribution of final energy.

Table (5)
Percentages of Sectorial Distribution of Final Energy
Consumption during (2009-2013) (%)

Year	Sector				Total (%)
	Transport	Industry	Household	Others *	
2009	39	22	21	18	100
2010	41	21	21	17	100
2011	41	20	23	16	100
2012	49	17	23	14	100
2013	51	17	21	11	100

*Includes commercial and agricultural sectors along with street lights.



4. Oil Products Consumption and Prices

In general, the year 2013 had witnessed a marked drop in the consumption and demand of oil products used for heating purposes, due to the rise in winter annual average temperatures and natural gas quantities imported from Egypt. The total consumption of oil products was about (6544) thousand tons comparing with (6758) thousand tons in 2012 with (2%) drop rate.

Table (6) shows the evolution of the production of oil products during the period (2009-2013). Meanwhile, table (7) shows the evolution of the consumption of oil products for the same period.

Table (6)
Development of Jordan Petroleum Refinery's Production of Oil Products during (2009-2013) (Thousand ton)

Oil Products / Year	Liquefied Gas	Gasoline	Jet Fuel (Avtur)	Kerosene	Diesel	Fuel Oil	Asphalt	Total
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
2012	102	716	357	96	1109	999	97	3476
2013	78	663	325	34	980	900	101	3082

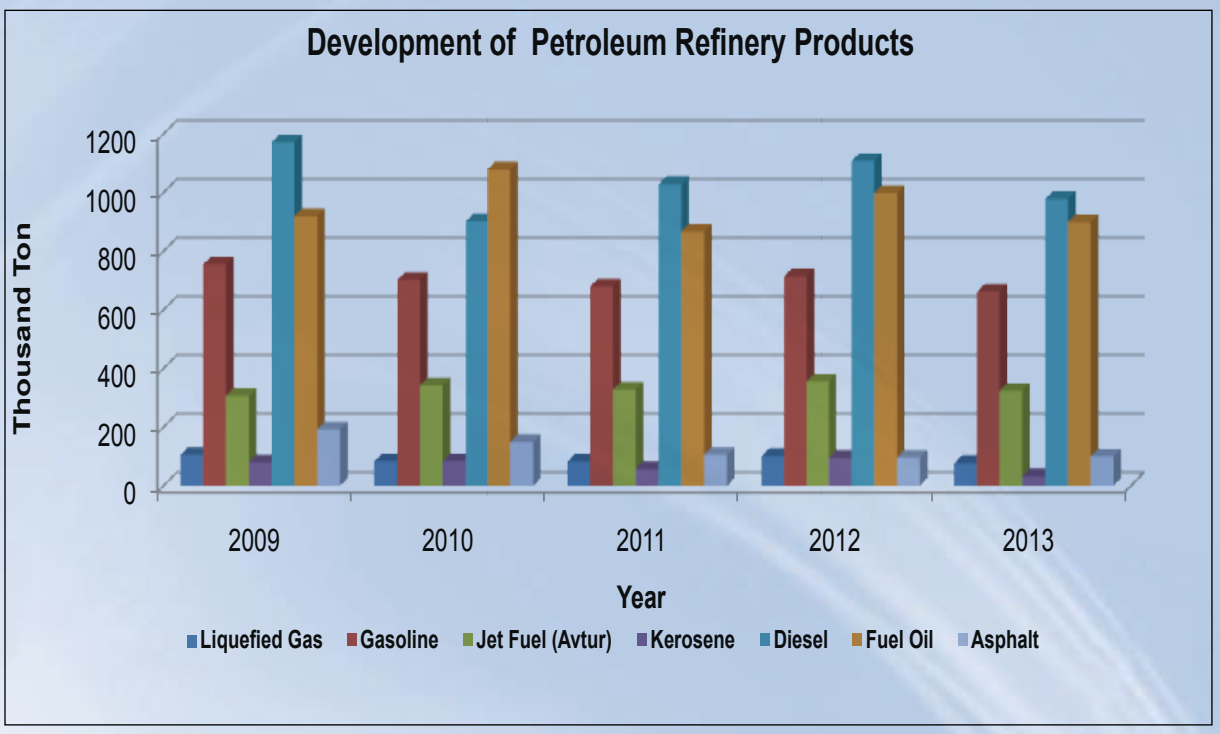
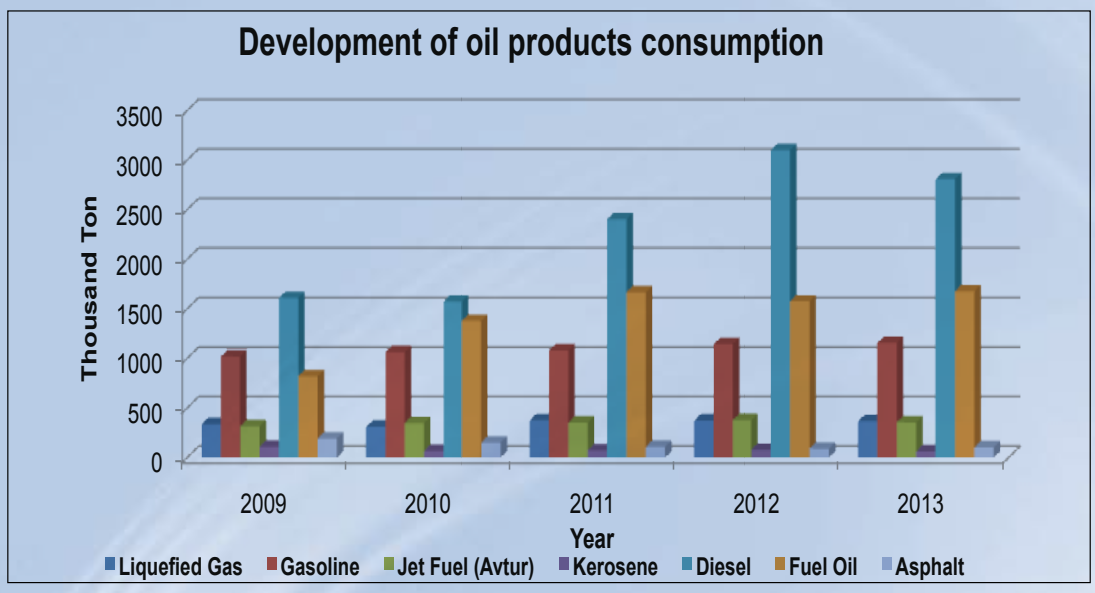


Table (7)
Development of Oil Products Consumption during (2009-2013)
(Thousand ton)

Oil Products / Year	Liquefied Gas	Gasoline	Jet Fuel (Avtur)	Kerosene	Diesel	Fuel Oil	Asphalt	Total
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
2012	377	1147	380	81	3103	1578	92	6758
2013	369	1161	357	63	2810	1679	104	6544
Growth Rate (%)	(2)	1.2	(6)	(22)	(9.4)	6.4	13	(3.2)

*Where brackets around numbers signifies a negative amount.



With regard to oil products prices in 2013, a policy towards liberating oil products prices was reinstated starting from 14.11.2014 according to global pricing policy after a stop in early 2011. A monthly pricing formula was applied on most oil products while keeping same prices of gas cylinders i.e., 10 JD/12.5 kg gas cylinder.

The following table demonstrates the prices of oil products announced locally in 2013.

Table (8)
Local Prices of Oil Products 2013

Item	Unit	Jan.	Feb.	Mar.	Apr.	May	June	Jul	Aug.	Sept.	Oct.	Nov.	Dec.
Gasoline (90)	Fils/Litre	780.00	800.00	835.00	800.00	765.00	765.00	785.00	810.00	825.00	825.00	810.00	810.00
Gasoline (95)	Fils/Litre	970.00	990.00	1030.0	970.00	930.00	930.00	950.00	980.00	1000.00	1000.00	980.00	980.00
Kerosene	Fils/Litre	665.00	685.00	710.00	665.00	635.00	635.00	645.00	665.00	680.00	680.00	675.00	670.00
Diesel	Fils/Litre	665.00	685.00	710.00	665.00	635.00	635.00	645.00	665.00	680.00	680.00	675.00	670.00
Diesel/electricity	Fils/Litre	650.00	680.00	700.00	665.00	635.00	635.00	645.00	665.00	680.00	680.00	675.00	670.00
Diesel/Ship	Fils/Litre	685.00	680.00	715.00	665.00	645.00	651.00	650.00	665.00	680.00	680.00	675.00	670.00
Liquefied Gas 12.5kg	JD/Cylinder	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00	10.00
Liquefied Gas 50kg	JD/Cylinder	49.03	49.22	47.69	46.94	44.77	42.36	42.33	43.41	44.55	46.36	45.62	47.92
Liquefied Gas/Central Distribution/ Bulk	JD/ton	943.49	947.30	916.88	901.82	854.46	806.15	805.61	827.11	849.93	886.27	871.31	917.48
Liquefied Gas/Tank Bulk	JD/ton	980.51	984.32	953.90	938.84	895.46	847.15	846.61	868.11	890.93	927.27	912.31	958.48
Fuel Oil/Industry	JD/ton	472.40	492.25	506.77	494.21	479.70	473.78	469.31	468.68	475.06	475.19	480.85	472.99
FuelOil/Electricity	JD/ton	472.40	492.25	506.77	494.21	479.70	473.78	469.31	468.68	475.06	475.19	480.85	472.99
Fuel Oil/Ships	JD/ton	503.76	494.88	506.77	494.21	487.61	483.64	473.00	468.68	475.06	475.19	480.85	472.99
Avtur/Local	Fils/Litre	618.00	634.00	660.00	610.00	579.00	575.00	583.00	604.00	621.00	619.00	615.00	611.00
Avtur/Foreign	Fils/Litre	623.00	639.00	665.00	615.00	584.00	580.00	588.00	609.00	626.00	624.00	620.00	616.00
Avtur/Charter	Fils/Litre	638.00	654.00	680.00	630.00	599.00	595.00	603.00	624.00	641.00	639.00	635.00	631.00
Asphalt	JD/ton	506.10	527.14	542.54	529.22	513.83	507.55	502.82	502.15	508.91	509.05	515.05	506.72

5. The Electricity

The demand for electricity had increased in 2013. The highest rate recorded for water pumping was (6%) followed by the industrial and the domestic sector which recorded (2.3%). The overall amount of electricity imported through interconnection network with Egypt and Syria reached (381) GWh registering a decline of (49%) comparing with 2012. The Ministry of Energy and Mineral Resources and the National Electricity Company made several actions to meet the growing demand. The details of mentioned procedures will be described later on, while viewing the overall strategy for the energy sector.

○ The Electricity Generation and Consumption

The volume of electricity generated in 2013 reached (17261) GWh, registering a growth of (4%) while the electricity consumed amounted to (14564) GWh recording a growth of (2%) approximately comparing with 2012.

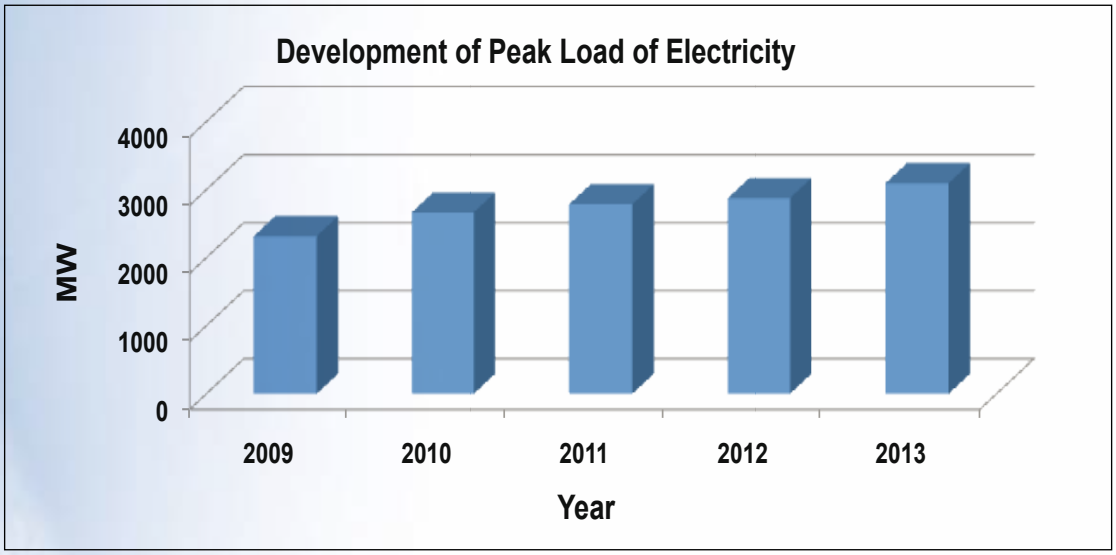
However, the Electric Peak load for the Kingdom in 2013 has recorded (3100) MW posting a growth of (7.6 %) compared to that in 2012.

The following tables (9), (10) and (11) demonstrate the development of production and consumption of electricity as well as the distribution of the consumption and the rate across sectors.

Table (9)
Growth of Electricity Production and Peak Load during (2009-2013)

Year	Peak Load MW	Growth Rate (%)	Electricity Generated GWh	Growth Rate (%)
2009	2320	2.7	14272	3
2010	2670	15	14777	3.5
2011	2790	4.5	14647	(0.9)
2012	2880	3.2	16595	13.3
2013	3100	7.6	17261	4.0

*Where brackets around numbers signifies a negative amount.



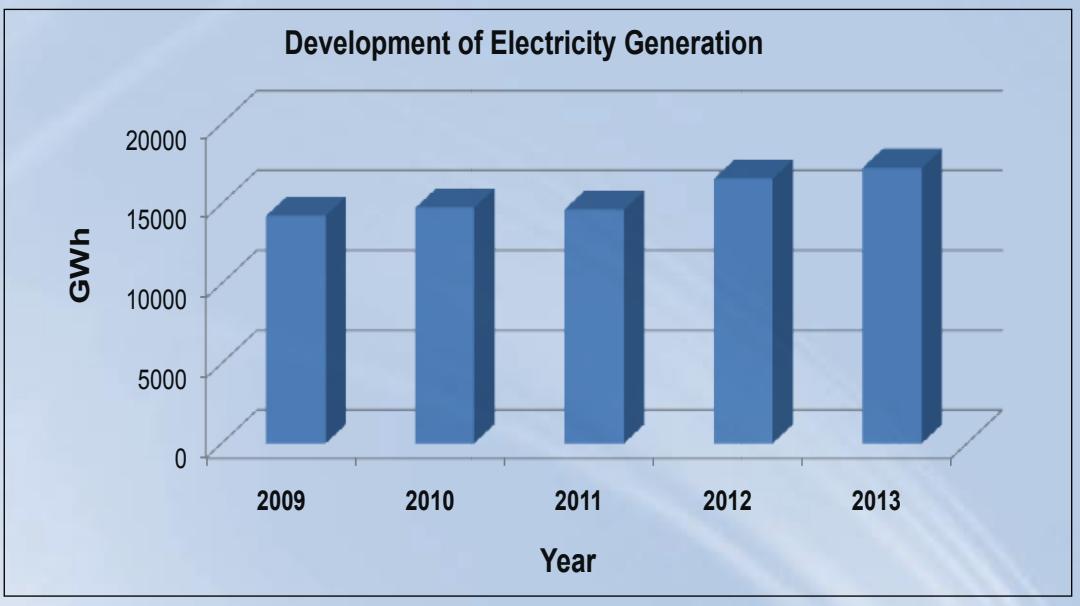
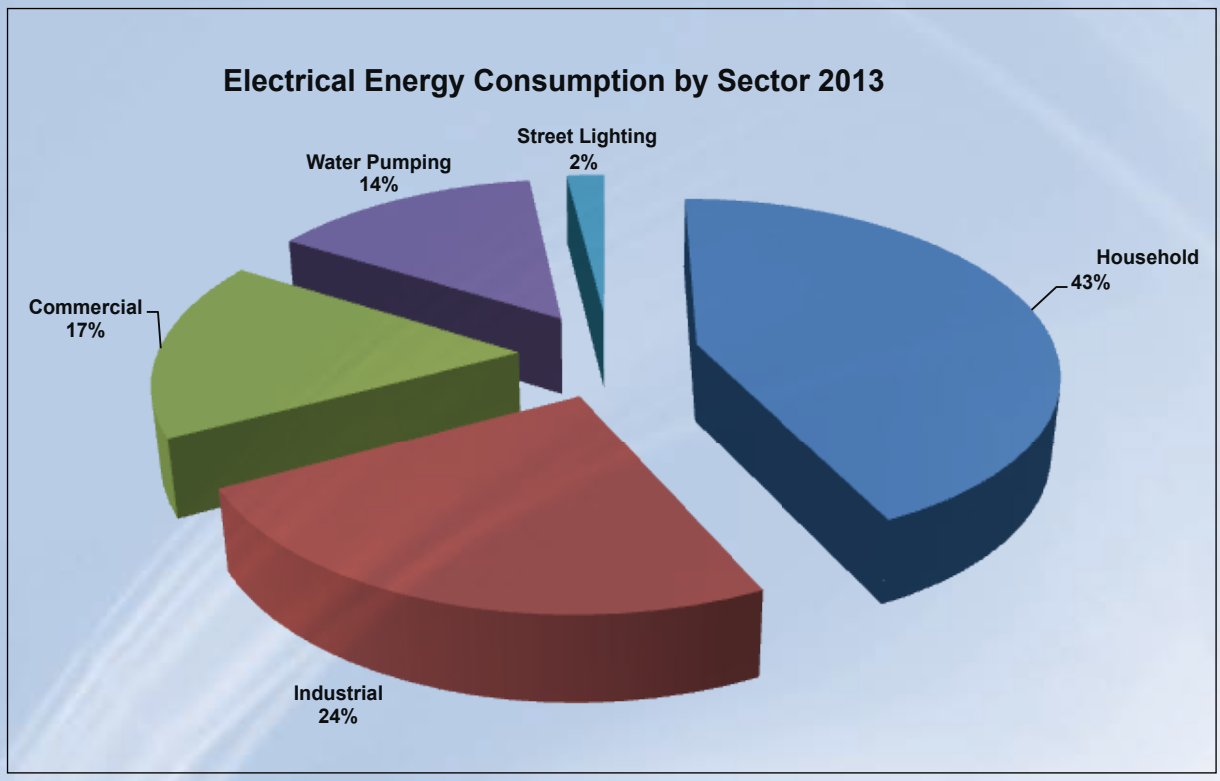


Table (10)
Sectorial Distribution of Electricity Consumption and Growth Rate during 2009-2013 (GWh)

Sector / Year	Household	Industry	Commercial	Water Pumping	Street Lights	Others	Total	Growth Rate %
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
2012	6126	3461	2427	1955	305	0	14274	5.5
2013	6265	3517	2415	2076	291	0	14564	2.0

Table (11)
Percentages of Sectorial Consumption of Electricity during (2009-2013) (%)

Sector / Year	Household	Industry	Commercial	Water Pumping	Street Lights	Total
2009	41	25	16	15	3	100
2010	41	25	17	15	2	100
2011	41	26	17	14	2	100
2012	43	24	17	14	2	100
2013	43	24	17	14	2	100



The Electricity Tariff

Electricity tariffs sold by NEPCO to the distribution Companies and major consumers demonstrated by the following table as of 31.12.2013:

Table (12)
Electricity Tariffs Applicable in the Kingdom Issued on August15th, 2013

Electricity Tariff sold by NEPCO to the Electricity Distribution Companies:	Unit	Tariff Value
A. (JEPCO)		
• Peak Load	JD/kW/Month	2.98
• Day-time Supply	Fils/kWh	76.26
• Night-time Supply	Fils/kWh	66.21
B. (EDCO)		
• Peak Load	JD/kW/Month	2.98
• Day-time Supply	Fils/kWh	68.90
• Night-time Supply	Fils/kWh	58.85
C. (IDECO)		
• Peak Load	JD/kW/Month	2.98
• Day-time Supply	Fils/kWh	62.71
• Night-time Supply	Fils/kWh	52.66

Table (13) below shows the electricity tariffs sold by the distribution companies to consumers as of 31.12.2013.

Table (13)

Electricity Tariffs sold by the Distribution Companies to Consumers

Consumer	Unit	Value
A. Household Users		
• First Block: 1-160 kWh per month	Fils/kWh	33
• Second Block:161-300 kWh per month	Fils/kWh	72
• Third Block: 301-500 kWh per month	Fils/kWh	86
• Fourth Block: 501-600 kWh per month	Fils/kWh	114
• Fifth Block: 601 -750 kWh per month	Fils/kWh	141
• Sixth Block: 751-1000 kWh per month	Fils/kWh	168
• Seventh Block: More than 1000 kWh per month	Fils/kWh	235
B. Ordinary Users		
• First Block:1-160 kWh per month	Fils/kWh Fils/	36
• Second block:161-300 kWh per month	kWh	79
• Third Block: 301-500 kWh per month	Fils/kWh	95
• Fourth Block: 501-600 kWh per month	Fils/kWh	125
• Fifth block: 601-750 kWh per month	Fils/kWh	152
• Sixth Block: 751-1000 kWh per month	Fils/kWh	176
• Seventh Block: More than 1000 kWh per month	Fils/kWh	247
C. Radio and TV Broadcasting Stations-Flat Rate Tariff	Fils/kWh	140
D. Commercial Users		
• First Block:1-2000 kWh per month	Fils/kWh	105
• Second Block: More than 2000 kWh per month	Fils/kWh	146
E. Banks		
• First Block: 1-2000 kWh per month	Fils/kWh	265
• Second Block: More than 2000 kWh per month	Fils/kWh	265
F. Telecommunication		
• First Block: 1-2000 kWh per month	Fils/kWh	238
• Second Block: More than 2000 kWh per month	Fils/kWh	278
G. Small Industries – Flat Rate Tariff		
• First Block: 1-10.000 kWh per month	Fils/kWh	57
• Second Block: More than 10.000 kWh per month	Fils/kWh	66
H. Medium Industries		
• Peak Load	JD/kW/Month	3.79
• Day-time Supply	Fils/kWh	72
• Night-time Supply	Fils/kWh	61
I. Agriculture- Flat Rate Tariff	Fils/kWh	60
J. Agriculture- Three Part Tariff		
• Peak Load	JD/kW/Month	3.79
• Day-time Supply	Fils/kWh	59
• Night-time Supply	Fils/kWh	49
K. Water Pumping.	Fils/kWh	76

L. Hotels- Flat Rate Tariff	Fils/kWh	146
• Peak Load	JD/kW/Month	3.79
• Day-time Supply	Fils/kWh	133
• Night-time Supply	Fils/kWh	117
M. Street lighting- Flat Rate Tariff	Fils/kWh	92
N. Armed Forces- Flat Rate Tariff	Fils/kWh	118
O. Ports Corporation- Flat Rate Tariff	Fils/kWh	129
P. Large Industry		
First: Mining Extractive Industries		
• Peak Load	JD/kW/Month	2.98
• Day-time Supply	Fils/kWh	237
• Night-time Supply	Fils/kWh	176
Second: Other Industries		
• Peak Load	JD/kW/Month	2.98
• Day-time Supply	Fils/kWh	108
• Night-time Supply	Fils/kWh	87
Q. Mixed (Commercial/Agriculture)- Flat Rate Tariff	Fils/kWh	90

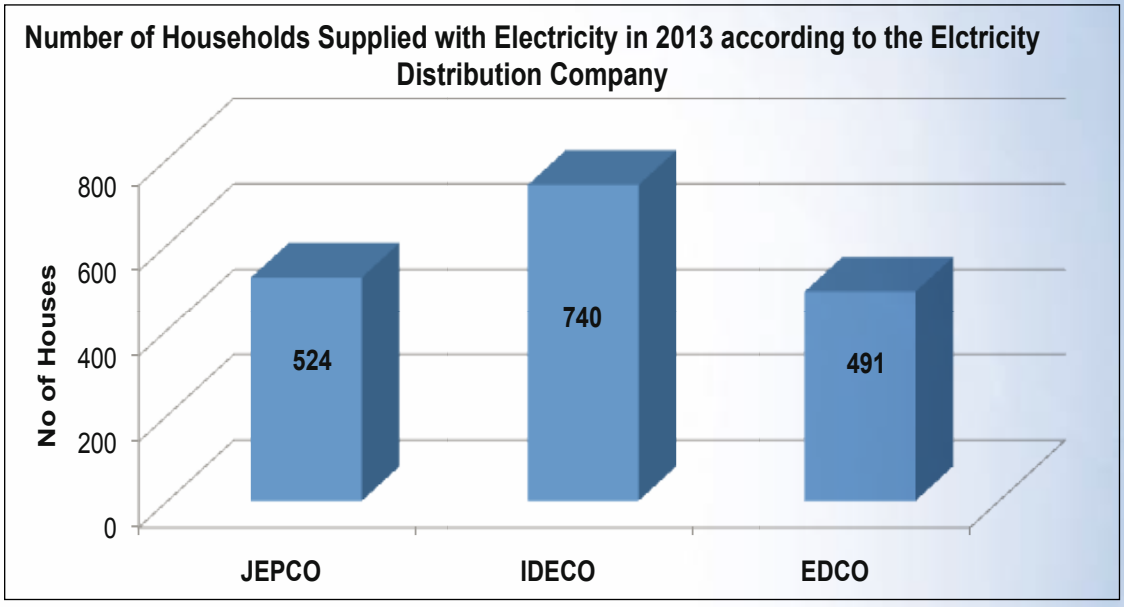
The Rural Electrification

The Ministry of Energy and Mineral Resources has continued electrification to remote villages, rural communities and poor families in 2013. The total recorded requests for electrification was (3734) at an estimated cost amounted to (17.4) million JD. Requests were handled as described in table (14), which also shows the cost for each category based on the total cost estimates required by all applications amounting to (17.4) million JD.

The following figures illustrate the number of houses electrified in 2013 recording (1773) houses covering (9929) beneficiaries distributed by concession areas of the electricity distribution companies.

Table (14)
Classification of processed sites in 2013 and cost of each category of estimated total cost

Implemented Sites		Sites under construction		Remained Sites		Cancelled Sites		Rejected Sites		Approved Sites	
No.	Cost million JD	No.	Cost million JD	No.	Cost million JD	No.	Cost million JD	No.	Cost million JD	No.	Cost million JD
1045	3.538	274	2.09	325	1.573	205	1.119	485	4.55	1168	4.537
Cost %	20	12		9		7		26		26	



The Most Significant Accomplishments of the Energy and Mineral Resources Sector in 2013:

The Ministry of Energy and Mineral Resources and other energy institutions have continued the implementation of action plan for 2013 emerged from the Executive Development Program in tandem with the overall national strategy of energy.

Outlined below are the accomplishments of the Ministry of Energy and Mineral Resources with respect to energy.

Crude Oil and Oil Products

- Ensured the Kingdom's needs of crude oil and oil products.
- Determined and liberated the monthly prices according to world oil prices on 14.11.2012 after price fixing on 12.11.2011.
- Pursuant to Cabinet decision no. (2149) dated 20.9.2011, to approve building crude oil and oil product storage capacities of 100 thousand tons in Aqaba; all procedures to tender the project and evaluate proposals were completed and referred to China Dalian International Economic & Technical Cooperation Group Co., Ltd. (CDIG) on 27.9.2013 with 44.5 million JD of cost. It is expected to run the project in the second half of 2015.The project aims at provision of alternative storage capacities for Jerash tanker, a floating storage to handle the imported crude oil shipments, improve and speed up the loading and unloading process of oil products, promote oil sector infrastructure and provide new employment opportunities.
- A tender with a capacity of 6 thousand tons of liquefied gas by an engineering procurement construction contract EPC was referred to China Dalian International Economic & Technical Cooperation Group Co., Ltd. (CDIG) to be built and implemented in Aqaba in the second half of 2015. The project aims at the provision of storage capacities to handle the imported liquefied natural gas shipments, improve and speed up the loading and unloading process of oil products, promote the infrastructure and provide new employment opportunities.
- A tender project to build strategic capacities with approximate (250-300) thousand tons of light petroleum products and (8000) tons of LPG was submitted and expected to be completed in the middle of the Kingdom by the first half of 2016. The project aims at the provision of building strategic storage capacities and achieve a secure supply as well as to access a adequacy up to 60 days of petroleum products used in emergency cases in addition to and provide new employment opportunities.
- A framework agreement to build a pipeline to export the Iraqi oil through Jordan territories to Aqaba port was signed between Jordan and Iraqi governments on 15.4.2013.The project consists of a pipeline with an exported capacity up to 1 million barrel/ day with all the necessary facilities; 150,000 barrel/day of which to supply the Jordan Petroleum Refinery, and a gas pipeline with a suitable capacity parallel to the oil pipeline to operate pumping stations within Jordan territories and provide domestic consumers with the natural gas up to 100 million cubic feet/

day, if available. It is expected to complete the project and begin to export Iraqi oil starting from 2018.

- An oil market has also been opened and three local and international companies were given licenses to distribute oil products in the Kingdom and started its work on May 1st, 2013.
- A specialized consultancy firm was appointed to undertake a study to assess the calculation of the operational costs for the Jordan Petroleum Refinery Company and compare its performance with similar refineries.
- A co-operation with Aqaba Development Corporation (ADC) to develop Aqaba oil terminal. A tender was submitted and referred to the Turkish (BETA) company. The project aims at developing the oil terminal to unload crude oil and oil products ships with high efficiency and public safety.
- A co-operation with Aqaba Development Corporation (ADC) to build a new terminal for liquefied petroleum gas in Aqaba. A tender was submitted and referred to the Lebanese company (BUTIC). The project aims at the ability to import LPG from global markets by sea through Aqaba terminal after choosing the old site for jetty construction to receive the LNG ships.
- The Ministry extends and follows up the memorandum of understanding signed on 19.9.2014 between both the Jordanian and the Iraqi governments concerning the transfer of the Iraqi crude oil from loading site at Peggy/Kirkuk to Jordan Petroleum Refinery site at Zarqa through the implementation of a tender of transportation in 2013-2014.
- Update and publish the amended regulations of Gas stations and distributing tanks no. (1) For 2012 in the Official Gazette.
- Prepare a draft instruction to transfer, store and distribute LPG cylinders.
- Participate in preparation of inspection guide and special standards of operating procedures for the Ministry in cooperation with the International Finance Corporation.
- Grant (19) licenses to import the vacuum residuals and pet coke to Jordan industrial companies and cement plants adding to one approval to move the vacuum residuals through the Jordanian border transit.
- Regulate and monitor the activities of supplying oil products. Where, (114) new sites of gas stations were approved, and (26) licenses to construct new fuel stations, (10) permits to make substantial modifications to the gas stations, and (14) operating licenses for new gas stations distributed all over the Kingdom were granted.

  Furthermore, (18) consent to build new agencies of LPG cylinders in several parts of the Kingdom, and (148) approval to run central LPG facilities implemented by the Central Gas companies

Utilizing Domestic Energy Resources-Oil and Gas

The Ministry of Energy and Mineral Resources in collaboration with the Natural Resources Authority (NRA) were able to attract many international companies for oil prospection in Jordan; the Kingdom has been divided into nine prospecting sites. Production sharing agreements, memoranda of understanding regarding oil prospection studies have been awarded to many global oil companies.

The Ministry has run the following prospecting sites:

- **Dead Sea-Wadi Araba**

  Follow-up and ratify the production sharing agreement with both the Korean Global Energy Corporation and Enegi Oil Plc by the Parliament to pass a special law.

- **East Safawi**

  Follow-up and ratify the production sharing agreement with the National Petroleum Company (NPCO) by the Parliament to pass a special law.

- **West Safawi**

  After the production sharing agreement with the Global Petroleum Company was cancelled by the Jordan government, Natural Resources Authority has provided reference conditions and market package for the West Safawi. An international tender was submitted for global petroleum companies approved by The Cabinet though no company has endorsed the tender proposal.

- **Al-Sarhan and Al-Azraq**
  - End the memorandum of understanding which lasts for nine months and effective from 2.12.2012 with Shell Exploration B.V. Company. The company has submitted an assessment report for both zones.
  - Prepare the marketing packages to submit an international tender offer for traditional and non-traditional prospection in both zones.

- **Hamza oil field (100 km within Al-Azraq prospecting area)**

  Transeuro Energy Company has been awarded a Production Enhancement Agreement to operate and redevelop Hamza oil field. A preliminary agreement was signed between the company and Natural Resources Authority.

- **Al-Sarhan (400 km within Al-Sarhan prospecting area)**

  Prepare the marketing packages to submit an international tender offer for the global petroleum companies to prospect and develop around Wadi Sarhan well 4 (WS-4) within an area of 400 km^2.

- **Al-Jafr Regions and Central Jordan**

  Follow-up and ratify the production sharing agreement with the Canadian Ammonite by the National Assembly to pass a special law.

- **The Northern Highlands**
  - Thyssen Petroleum Ltd. has submitted an assessment report for the Northern Highlands straight after the period of the memorandum of understanding work

plan with the Natural resources Authority was ended.

- o Prepare the marketing packages to submit an international tender offer for the global petroleum companies in the northern Highlands.

- **Southern Jordan**

  Prepare the marketing packages to submit an international tender offer for the global petroleum companies in the Southern Jordan. The global companies showed no interest of prospecting in the region.

Oil Shale

The Government has granted franchise rights for several domestic and global companies to invest in oil shale using surface and deep distillation and direct combustion, in addition to signing memoranda of understanding with other companies.

Open zones of oil shale were classified in the Kingdom to work forward and award reliance to interested companies based on criteria approved by the Natural Resources Authority after having access to all the information and studies to areas under concession canceled by previous memoranda.

The following are the major investment achievements in oil shale during 2013:

1. Jordan Oil Shale Company (JOSCO)

The company has ended the first phase of prospection in May 2013 to start a second phase evaluation which lasts two to three years. The company has so far drilled (30) wells within the interest zone of approximately 3000 km^2, tested (61) wells for water studies with total spending of $ 28.7 million. The company plans to select an area between (40-80) square kilometers for field study during this stage.

2. Oil Shale Energy Jordan (OSEJ)

The company started a pre-developed stage on 27.1.2011, carried out a program of both the first and the second year and worked on completing third year program which includes drilling of more than 241 exploratory wells. The company has made geological and geotechnical studies to improve and assess the process of oil productivity characteristics and the efficiency of distillation. It is also equipped to run experimental unit with 300 kg/hour of capacity in Frankfurt using shale in concession area.

3. Karak International Oil Company (KIO)

The company has started a pre-developed stage on 18.9.2012. The Natural Resources Authority has provided the company with all the necessary information needed to introduce its report concerning the MoU and the first report in Alna'deyah.The company markets the project of the first phase to secure the required funding. It also prepares for drilling operations in the concession area Lajjun as well as the Alna'deyah valley granted to company by a memorandum of understanding signed in December 2012.

4. PETROBRAS, TOTAL and KAWAR group Coalition

The Natural Resources Authority has sent a feedback for the final report of the feasibility study submitted by the company including the financial regulation adopted by the concession agreements for surface distillation of oil shale in Jordan on 27.2.2013. The company has also been reminded to speed up the response on both the advisor and

the technical committee of oil shale observations in May and July 2013. The company responded to the observations on 8.8.2013 but the company is still studying the financial regulations adopted by the concession agreements and has not taken any final decision yet.

5. Saudi Arabian Corp for Oil Shale (SACOS)

The Cabinet has approved on 3.3.2013 the signing of a concession agreement with the company. The agreement was introduced to the Legislation and Opinion Bureau. The observations of the draft was received on 21.7.2013, modified and submitted again to The Cabinet to adopt the new amendments. The agreement will be submitted to the Parliament for examination and approval to complete the signing procedures and the adoption of the Special Law by the Jordanian Constitution.

6. The Russian INTER RAOUES Co.

The memorandum of understanding has concluded on 11.5.2013, the company carried out around 50% of the MoU requirements. The Natural Resources Authority has reminded the company several times by the end of the MoU to submit the required periodic reports. The board of directors has recommended terminating the memorandum of understanding for the company's failure to comply with the requirements. Moreover, a response received from the company showed its unwillingness to proceed business in Jordan and it requested to consider the MoU null.

7. Aqaba Petroleum for Oil Shale Co. (APCO)

The company has signed a memorandum of understanding on 16.4.2009. It requested the extension of the MoU several times due to the numerous administrative changes at the company that led to delay of work. The MoU was extended to 16.12.2014. The company works on the completion of the required technical feasible studies.

8. Jordan Oil Shale Energy Company (JOSECO)

A memorandum of understanding was signed on 11.04.2010. It has been extended to April 10, 2014. The company has commissioned a TTU Galoter L.P. emanating from the Treasure Trove Unit (TTU) registered in Scotland, which has the right to use the Russian technology UTT3000, to complete the feasible study.

9. Al-Lajjun Oil Shale Company

A memorandum of understanding of the surface distillation of oil shale in Al-Lajjun and Alatarat was signed with the Natural Resources Authority on 20.9.2010. So, in agreement with the National Electricity Company (NEPCO), the company through coalition partners from China and the United Arab Emirates were involved in a project of direct combustion according to the signed MoU. In addition, the shale ores of both regions were allocated to produce electricity on condition that the company reserves the right to surface distillation project if no direct combustion project is implemented.

10. Global Oil Shale Holdings (GOSH)

In a similar manner, Global Oil Shale Holdings has signed a likewise memorandum of understanding in surface shale distillation on 27.8.2012 in Sfeer El-Mahatah and Al-Attarat. The company is carrying out the MoU requirements of mining, geological,

geotechnical, geophysical, economic and environmental studies currently. Moreover, The company did not only start the drilling in Sfeer El-Mahattah but it also prepared for drilling in Al-Attarat and requested for 3-month extended period of abandonment.

11. Whitehorn Resources, Inc.

The Company has signed a memorandum of understanding in surface shale distillation on 22.10.2012 in Wadi Abu Hamam. The company is carrying out the MoU requirements of mining, geological, geotechnical, geophysical, economic and environmental studies recently, and started drilling in MoU region.

The Renewable Energy

Undoubtedly, Jordan has great potential sources of renewable energies, particularly solar and wind energy. Jordan is located within the Sunbelt where the intensity of direct solar radiation is (5-7) kWh/m^2 and wind speed in specific areas ranges between (7-9) m/s; the data is promising to utilize renewable energy to generate electricity in Jordan. Based on the previously mentioned figures, the overall comprehensive strategy for energy sector aims at diversification of energy sources and reduction of reliance energy imports stated that the renewable energy contributes with (7%) of an overall energy mix by 2015 and (10%) by 2020.

In line with this context, the most prominent achievements in 2013 were as follow:

- Agreements of the first generation of electricity out of wind energy in Tafeelah with117MW of capacity and 205 JD millions of investment with Jordan Wind Project Company (JWPC) were signed on 18.11.2013. The most prominent energy purchase agreement was signed by the National Electricity Power Company (NEPCO). Whereas, the commercial operation of the project is expected to run by mid-2015.
- On March 2013, (12) tenders were received to generate electricity using photovoltaic systems (PV) with 200 MW in total. Negotiations with the companies about offers were ended. An energy purchase agreement to be approved and signed by the Cabinet duly before the end of the year.
- On 6th of August a second round for direct offers to invest in renewable energy was launched. An (83) requests from investing companies interested in renewable energy projects were directly received on 14.11.2013 and to be promptly evaluated.
- A final evaluation for companies qualified to proceed the project of wind energy and generate electricity in Ma'an with 65-75 MW and 150 million USD funded by the Kuwait Fund for Arab Economic Development due to engineering, procurement and construction contract (EPC) . Results of the evaluation were raised to the Kuwait Fund in preparation to enter into negotiations on the implementation with the company of the first order. It is expected to run the project by mid-2015.
- A list of companies eligible was announced to operate the solar energy project using photovoltaic systems (PV) to generate electricity in Quwerah /Aqaba with 65-75 MW due to engineering, procurement and construction contract (EPC) at a cost of USD 150 million funded by Abu Dhabi Fund For Development (ADFD). Tenders pending ADFD approval will be awarded to the qualified companies to be implemented and operated by mid-2015.

- The Korean KEPCO (The winner of the wind energy tender in Al-Fjeij-Shoubak with 90 MW of capacity) has completed an environmental impact assessment study, which is under review of the financiers. If the study is accepted by the Ministry of Environment, the project agreements will be signed, taking into consideration that the Al-Fjeij project did not include the negotiation of project agreements under the terms of the World Bank. It is planned that the project will run by the end of the year 2015.
- The negotiation on implementing the PV Solar Energy Project at Azraq with the first rank company was completed through a Spanish-Jordan Debt Swap at a cost of 5 million and a capacity around 2MW pending approval of Debt Swap Commission to execute the project. So the tender will be awarded and sign the contract. It is planned that the project runs by the end of 2014.
- The cabinet approved the mechanisms to deal with projects to generate electricity from the waste by the private sector on 27.03.2013. Such a mechanism is similar with direct offers for solar projects and wind energy. In April 2013, Companies interested in investing were invited to submit direct offers according to the Renewable Energy Law. According to the current data, the possible capacity built from this source does not exceed 150 MW. A total of (36) interest requests were received from global companies. A committee was formed by the Ministry of Energy and Mineral Resources, the Ministry of Environment, the Ministry of Municipalities and GAM to evaluate the submitted applications.
- The Ministry of Energy and Mineral Resources with the Electricity Regulatory Commission both contributed in the preparation of the guidelines stipulated in the Renewable Energy & Energy Efficiency Law No. (13) Of 2012 in accordance with the policies and relevant legislations. The number of requests for connecting renewable energy systems according to the Net-Metering system has reached 430 requests with 12352 kW of capacity, 291of which with 2554 kW were connected and operated during the year 2013.

Bio Energy

Jordan Biogas Company Ltd. continues to work on processing the organic waste in Rusaifa Landfill. The amount of the generated electricity in 2013 has reached around (6) GWh. As far as biogas is concerned, the mitigated volume amounted to (6) million cubic meters.

Conservation and Energy Efficiency

The Ministry's goal achievements are summed up with regard to energy efficiency aspect into the following:

- A draft of National Energy Efficiency Action Plan (NEEAP) has been prepared for the years (2013-2014). The final form was adopted by the cabinet in 16.6.2013 and it is in progress.
- A design for the national program of energy efficiency for household and street lighting is in progress through Price Waterhouse Coopers (PWC) and in co-operation with the Agence Française de Développement (AFD).
- Proceed a tender project to promote the use of energy-saving lamps in government buildings through the supply and installation of (600) thousand energy lamps.

- Proceed a tender project to distribute (1.5) million household energy-saving light bulbs of consumption less than 600 kwh.
- Proceed a domestic contribution initiative towards saving energy in coordination with the Jordan River Foundation (JRF). Procedures were in progress to submit a tender to purchase solar and award it to the winning company. The initiative will include the installation of around (5) thousands solar heaters by 2020 at a cost of 1.4 million JD approximately.
- Proceed the implementation of an awareness plan for energy efficiency consumption. Where a broadcast of number of flash media awareness were broadcasted on Jordan TV.
- Hold series of awareness lectures of energy efficiency in cooperation with the Ministry of Education and the Ministry of Islamic Awqaf Trust Affairs.
- Hold and sign an awareness plan for energy efficiency in coordination with the National Energy Research Center / Royal Scientific Society.
- Prepare two drafts on the evaluation of the state of energy efficiency in lighting at the national level (National Status Report) and the national plan for energy efficiency in lighting (NELAP) within an initiative of energy efficiency in lighting (en. Lighten Initiative) with United Nations Environment Programme (UNEP) support.
- Design awareness messages on ways to save energy which were broadcasted over webpages of private sector institutions, the Ministry of Energy and Mineral Resources and e-Government (e-gov).
- Follow-up with U.S. Agency for International Development (USAID) to proceed in capacity building project in the energy sector.
- Participation with committees and working groups specialized in energy and environment, such as Environmental Impact Assessment and Environmental Auditing Committee, The National Committee on Climate Change, and Integrated Management Advisory Committee of Poly Chlorinated Biphenyls (PCB) compounds, etc.

Electricity

The most important achievements in electricity for 2013 was to complete the following:

- The commercial operation of additional gas turbine on 28.6.2013 with a capacity of 145.9 MW in Samra Generating Station to meet the peak load of summer 2013.
- Sign special agreements on Fourth Independent Power Plant (IPP4) with AES Levant Holding Jordan on 17.12.2012. The agreements are respectively, the executive agreement, power purchase agreement, agreement for water supply, and land lease agreement.
- Lay the foundation stone for Third Independent power Plant (IPP3) on 23.4.2013 in Al-Manakher.
- Complete the advisory studies on the future market of Jordanian Electric Power Company limited (JEPCO) and award the company a temporary license until 22.11.2013 to be extended for two months under cabinet resolution No. 2309 on November 20th, 2013.
- Complete the financial quittance for the privatization of the Electricity Distribution Company (EDCO) and Irbid District Electricity Company Ltd. (IDECO), and

submit report to the cabinet on 27.6.2013.

- Appoint a consultant to review signed agreements with the generating and distributing companies on 5.8.2013 to identify the possibility of reopening the purchase price, sell electricity and negotiate new prices.
- Amend electricity tariff on 15.8.2013.
- Prepare the national strategic plan in Arabic and English to handle the National Electric Power Company (NEPCO) losses and publish on the website.
- Stress the feasibility of Jordan-Saudi electricity grid during the private meeting held Kuwait to review the final results to study the Pan-Arab Interconnection Grid.
- Participate in the study preparation required to secure financial support from donors to mitigate the impact of the Syrian refugee influx on host, in coordination with the international agencies and the Ministry of Planning and international Cooperation.

Natural Gas

The most important accomplishments achieved in natural gas for the year 2013:

- An ongoing follow-up with the Egyptian authorities to ensure the continuity of natural gas supplies for electricity generation stations in the Kingdom, as well as maintaining the pipe line post attacks that stopped natural gas supply.
- Within the framework of finding new sources of natural gas supply to secure an additional source to meet the Kingdom needs, and to meet the growth demands of natural gas electricity generation stations, a project was implemented to import LNG by ships through the port of Aqaba.

In this context, the following procedures were concluded:

- o Sign a contract of floating storage and regasification unit (FSRU) with Golar LNG Ltd. on 31.7.2013 chosen through a competitive bidding process. The FSRU shall store the LNG, gasify and pump it into the Arab gas pipeline to the electricity generation stations. The storage capacity of the vessel amounts to (160) thousand cubic meters of liquefied gas equivalents to (3.3) billion cubic feet of gas in the gaseous state. The supply vessel reaches (750) million cubic feet gas per day which meets electricity generating stations demands of natural gas.
- o The Aqaba Development Corporation (ADC) has ended the procedures of an advanced evaluation offer to LNG jetty tender project in Aqaba which was referred to the (BAM-MAG) Coalition for 46.5 million JD. The contract was signed on 23.12.2013.
- o The Ministry of Energy and Mineral Resources has submitted a tender offer to purchase liquefied natural gas. Assessment procedures of tenderers were considered to choose the best. The work is under progress to complete discussions with the company on the main items for the sale and purchase of liquefied natural gas agreement.
- o Draft Gas Transportation and Tie-In Agreements with the Jordanian Egyptian Fajr for Natural Gas Transmission & Supply subject to approval by the Cabinet on 2.10.2013. Both the National Electric Power Company (NEPCO) and the Jordanian Egyptian Fajr for Natural Gas Transmission & Supply approved the draft agreements.

Peaceful Uses of Nuclear Energy

Jordan's interest of nuclear energy stemmed from the press need to face challenges represented by the scarcity of domestic energy sources, increase of energy demand, and the rise in the fossil fuel global prices. In other words, to provide domestic long- lasting sources of energy, the National Strategy of Energy for 2007 strengthened the development of domestic energy sources and diversification of resources by introducing nuclear energy as one of the alternatives to generate electricity. Accordingly, Jordan Atomic Energy Commission was created in 2008 to implement the national strategy for nuclear energy represented by Jordan nuclear energy program. The program consisted of three phases, utilizing and investing natural nuclear resources in Jordan mainly uranium , installing Jordan nuclear power plant to generate electricity , desalinating sea water, building qualified domestic human resources, and supporting activities and nuclear sciences and applications of the nuclear program. As a result, Jordan Atomic Energy Commission continued during the year 2013 its intense activities to achieve objectives designated.

One of the most important achievements of the Jordan Atomic Energy Commission accomplished in this year includes the following:

First - Uranium Mining

The achievements of the Nuclear Fuel Cycle Commission has implicated the foundation of the Jordanian Uranium Mining Company (JUMCO) on 2.1.2013 as an alternative to the Jordanian French Uranium Mining Company (JFUMC) post the cancellation of the mining agreement with AREVA, a French multinational group in 2012 by the Jordanian Government. Uranium mining and exploration in Central Jordan under the supervision of (5) international experts and specialists is being conducted by the Jordanian Uranium Mining Company (JUMCO) in cooperation with the Jordan Energy Resources Inc. (JERI). Moreover, a total of (1600) uranium trenches were drilled and (16,000) samples were collected for sampling and laboratory analysis to determine the concentrations of uranium and associated metals and estimate the quantities of uranium ores in the surface layers of Central Jordan regions.

The Uranium Extraction Department has established the first specialized laboratory to extract uranium, in addition to strengthen cooperation with the local authorities, in particular Jordan Phosphate Mines Company in the field of extracting of uranium from phosphoric acid mainly, and phosphate ores in general, beside cooperation with international events and agencies.

The Department of Transport and Radioactive Waste Management has also followed-up the transportation of radioactive sources and management and treatment of radioactive waste in the Kingdom as well as to conduct radiological measurements of radioactive sources at different locations in the Kingdom and drafting and adopting the National Policy and Strategy for Radioactive Waste and Spent Fuel.

Second- Jordan Nuclear Power Plant

The Nuclear Power Plant Commission has followed-up several tasks included the selection of a suitable site for the Nuclear Power Plant in Quseir Amra region to implement the work and the environmental impact in good timing and complete the detailed studies for Site Characterization. The Jordanian government has approved the foundation of a company owned by the government to manage the project of nuclear power.

The Russian Federation's nuclear power equipment and service export, Atomstroyexport was chosen in 2013 as the best bidder to build the first nuclear plant in the Kingdom with two nuclear reactors with a capacity of 1000 MW each. The first reactor is expected to run in 2023, while the second one will take place in two years after. The chosen reactor is the third generation of nuclear reactors (G3+) and upholds the highest standards of nuclear safety and security. Those reactors were operated, licensed, built and proven reactors.

On the other hand, the commission is working on to finish a feasibility study with the investor and the operator. Moreover, it enhances cooperation with the International Atomic Energy Agency (IAEA), the Arab Atomic Energy Agency (AAEA) and States with nuclear energy experience.

Third- Build Jordan HR Core Competencies and Nuclear Research Commission

The commission has followed-up through Nuclear Research Commission the implementation of Jordan Reactor for Training and Research (JRTR) in Jordan University of Science and Technology with (5) MW of capacity for training purposes of nuclear engineering students, conduct scientific research, the production of radioactive isotopes used in various medical and industrial sectors and the work on environmental impact study of Jordan Reactor for Training and Research (JRTR) and its radiological emergency plan in collaboration with all relevant national institutions.

The Construction License for Nuclear Research Reactor of Jordan Nuclear Regulatory Commission (JNRC) was issued including the environmental and radiological impact assessment of the reactor and radiation studies and site characteristics and seismic hazard analysis.

The percentage of completion of the overall project activities and events has reached (52%) at the end of 2013. It is expected to start the specialized engineering works up to the completion of its construction by 2015 and to be operated early 2016.

On the other hand, the first nuclear facility, Jordan Sub-Critical Assembly (JSA) was constructed and operated at Jordan University of Science and Technology post some necessary arrangements by both the university and Jordan Atomic Energy Commission (JAEC) from one side and the Chinese supplier, the China Institute of Atomic Energy, on the other early 2013.

Fourth- Nuclear Sciences and Applications

The Nuclear Science Applications Commission has carried on the development of scientific laboratories and various nuclear applications aimed at the development and transfer of peaceful uses of nuclear energy and radiation technology to Jordan through human resources and skills development to support the Jordanian nuclear program, enhance the infrastructure for nuclear science and technology in education and scientific research, and service production sectors in Jordan. In addition to supply uranium analysis laboratories with the latest devices and equipment to determine the concentration of uranium in samples of uranium mining and extracting project in Central Jordan, and supplement Gamma Irradiator Center with new radioactive source with activity of 100 kilo-curie due to the growing demand of medical raw materials suppliers in Jordan for sterilization using Gamma Irradiator. Preventive plans were made to prevent radioactive exposures through workplace and personal exposure monitoring. Taking into account the fact that the commission laboratories are certified and accredited by (ISO 17025) for Global Quality Assurance.

The Nuclear Research Reactor of Jordan Nuclear Regulatory Commission (JNRC) has the following accomplishments:

The regulatory and legislative framework has reviewed draft regulations required to implement the Nuclear Security, Safety and Radiation Protection Law No. (43) 2007 and updated in accordance with the national legislations and the requirements of The International Atomic Energy Agency (IAEA) in radiation protection and nuclear safety, especially after The Fukushima Daiichi nuclear disaster. Radiation of Licenses and Permits No. (8) and Radiation of Licenses Fees No. (9) 2013 were issued.

As far as radiation protection and radioactive sources control framework is concerned, the commission has issued a licensed profession in 1965, and (510) permits were granted for import, re-export, transit of radioactive materials and radioactive devices purposes in addition to (210) inspection visits to medical and industrial institutions.

Under the nuclear safety and licensing of Nuclear Installations framework, the Commission has worked to achieve high performance in observation and licensing issuance of nuclear application, control and inventory of nuclear material in Jordan including different nuclear reactors, other phases of the nuclear fuel cycle, uranium mining and extraction and radioactive waste management.

Since the beginning of 2013, the nuclear security and incident response was a responsibility of Jordan Nuclear Regulatory Commission (JNRC). Whereas the Commission was adopted by The International Atomic Energy Agency (IAEA) in February 2013 as a focal point for physical protection of nuclear material related to notification and response.

The Commission handled the responsibility to control terminals on arriving, departing and transit trucks and containers through the territories of the Hashemite Kingdom of Jordan, in order to prevent the illicit trafficking of nuclear or any radioactive materials for possession, transfer, use or any illegal disposal regardless nature and origin. Actually, (700) thousand trucks were examined, and (5) truckload contaminated shipments were returned to their country of origin.

The Energy and Environment

The Ministry of Energy and Mineral Resources has conducted several research projects submitted to the Ministry of Environment through the membership in committee of environmental impact assessment and environmental auditing projects.

The Ministry has a membership in the technical and project negotiation committee of the clean development mechanism, the Integrated Management Advisory Committee of Poly Chlorinated Biphenyls (PCB) compounds, The National Committee on Climate Change, the Advisory Committee of the institutional competencies project relevant to global environmental conventions and the committee of government revenues from selling CERs.

The Ministry has also prepared reports on several studies submitted by local and foreign companies to produce industrial and bio fuel and electricity from waste.

The Ministry has issued special legislations regulating the industrial diesel activities from wastes. Moreover, it follows-up and submits the national projects to the relevant international bodies to reduce emissions in the energy sector as well as following-up

the draft of the renewable energy program (clean energy projects) in the Middle East; in addition it participates in the preparation of environmental regulations to generate electricity out of the direct combustion of oil shale No. 75of 2013.

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 main 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 by different derivatives, for instance kaolin, pure limestone, silica sand and gypsum and construction materials produced by various quarries all over the Kingdom, such as building stone, marble and granite slabs, etc., in addition to the exploitation of the mineral wealth of the Dead Sea minerals as salts or mud used in medical and cosmetic products.

Therefore, the Natural Resources Authority (NRA) has continued the prospecting of raw minerals and industrial rocks all over the Kingdom.

The most significant prospecting projects carried by the Natural Resources Authority (NRA) in 2013 included the following:

- **Prospecting for Oil Shale**

The prospect for oil shale continued to locate new places of oil shale. However, (29) out of (50) wells were drilled in Wadi al Darwa. The number of samples collected has amounted to (1382) subjected to various chemical analyses including the outcomes. More (25) wells out of (30) wells were drilled in Al-Jafr and Asfeer Al-Mahatah, and (38) samples have been collected from (6) wells subjected to various chemical analyses including the outcomes.

- **Prospecting for Dolomite**

Technical specifications and conditions of tender to drill (45) wells were made in the Negev/Mount of Petra (Al-Thallaja). The tender was awarded to a local company pending direct drilling.

- **Prospecting for Phosphate**

Technical specifications, work plan and terms of bidding to drill (161) wells in Al-Shedia-southern Jordan. The number of wells drilled for this year reached (140) and (145) samples subjected to various chemical analyses including the outcomes were collected.

- **Prospecting for Pure Limestone**

A work plan has been prepared to prospect for limestone in the South Hassa to drill (70) wells by drilling Department in the Natural Resources Authority (NRA). Drilling were completed for (11) wells and (44) samples subjected to various chemical analyses including the outcomes were collected. In addition, technical specifications and conditions of tender were made to drill (35) wells in the southwest of Hassa, where (149) samples subjected to various chemical analyses including the outcomes were collected.

The Financial Statements 2013

Item	Allocations (JD)	Expenses (JD)	Disbursed Rate (%)
Current Expenses	4550000	4415843	97
Capital Expenses	85900000	16492623	19
Total	90450000	20908466	23

The Financial Statements of Major Capital Projects in the Ministry 2013

The Projects Name	Allocations (JD)	Expenses (JD)	Disbursed Rate (%)
Encourage establishment of natural gas networks in the kingdom	1590000	1590000	100
Restructuring oil sector	70000	66728	95
Construct liquefied natural gas port in Aqaba	17750000	1857440	10
Construct crude oil and oil products storage capacity	15500000	1348628	9
Utilize wind energy to generate electricity (Al-fujaij)	955000	949667	99
Support Jordan Atomic Energy Commission projects	9500000	9500000	100
The administrative project	235000	214203	91
Total	45600000	15526666	34

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