



The Hashemite kingdom of Jordan

*Ministry of Energy
and Mineral Resources*

Annual Report

2008



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0



His Majesty King Abdullah the second Ibn Al- Hussein

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● **Vision**

Achieving a secure sustainable supply of energy.

● **Mission**

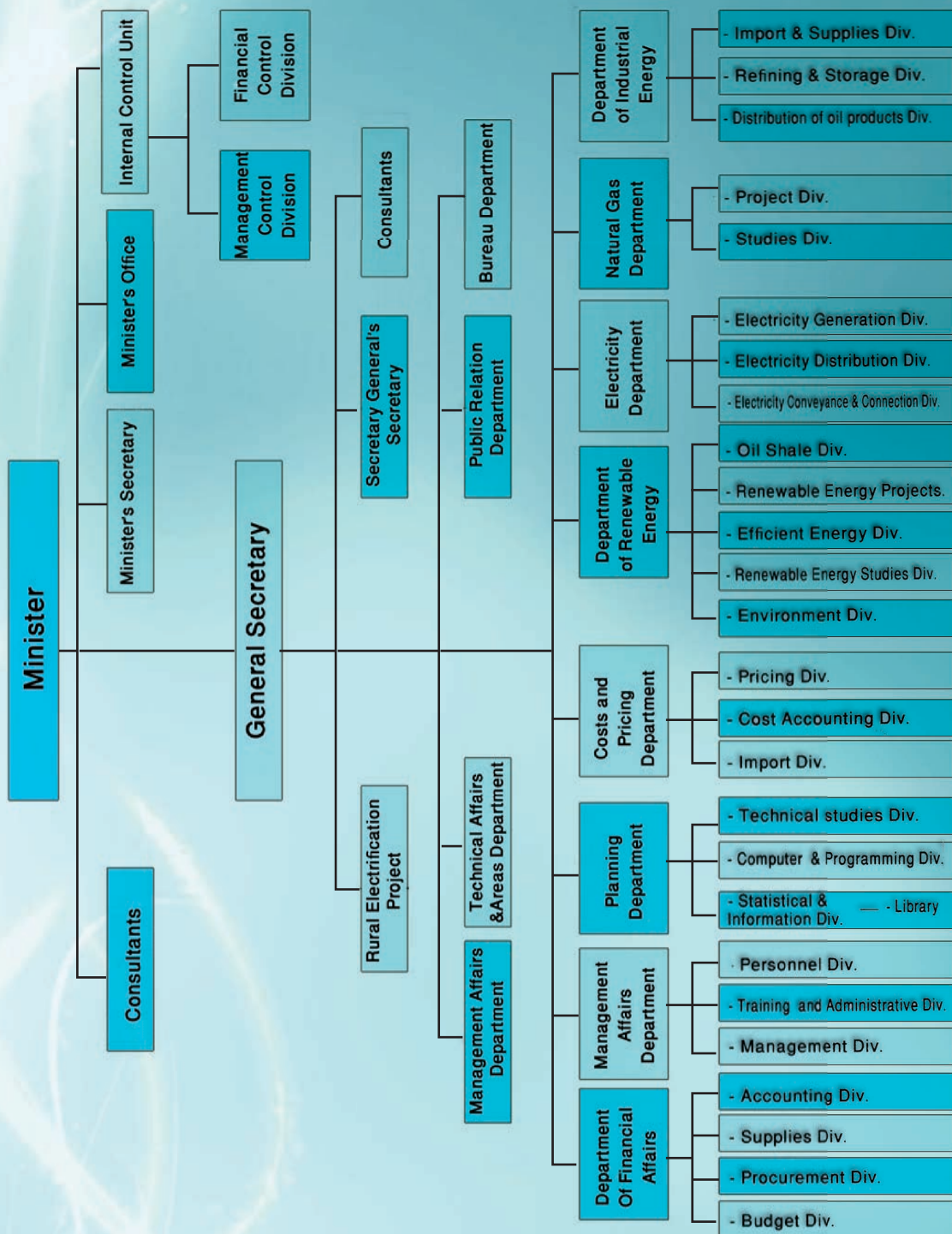
Ensuring the required energy supply; for sustainable development, with the least cost and best quality through enhancement and implementation of proper policies, legislation and plans.

Core values

- *Working in team spirit*
- *Development and dissemination of knowledge*
- *Perseverance and building responsibility*
- *Leadership building*
- *Transparency and openness*
- *Affiliation and discipline*
- *Excellence and efficient performance*
- *Justice and equal opportunities*
- *Partnership with the private sector*
- *Cooperation and coordination with other entities*

Strategic objectives

- *Diversify the sources of energy*
- *Develop and utilize the local conventional and renewable sources of energy, oil, shale, and uranium.*
- *Liberate the energy markets*
- *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 (100 watt)
GWh	Gigawatt hour = Million kilowatt hour
KWh	kilowatt hour
MW	Megawatt
MWh	Megawatt hour
b/dy	Barrel/day
b	Barrel of oil equivalent
b/dy	Barrel of oil equivalent/day
toe	Ton of oil equivalent
MVA	Megavolt ampere
KV	Kilovolt
km	Kilometer
kg	Kilograms
kg	Kilogram of oil equivalent
GDP	Gross Domestic Product
JD	Jordan Dinar (10 ³ Fils)
CF	Cubic feet

Significant Figures of Energy and Economy in Jordan 2008

Population (millions)	5.850
Gross Domestic Product (GDP) at current prices (million JD)	14190
GDP per capita (JD)	2426
Energy Intensity (toe/1000 JD in 1994)	0.82
Per capita primary energy consumption (Kgoe)	1254
Per capita share of electricity consumption (KWh)	8
Electricity generation (GWh)	88
Electricity consumption (GWh)	11509
Percentage of population supplied with electricity (%)	99.9
Overall domestic energy production (1000 toe)	154
Imported Oil (1000 toe)	7287
Primary energy consumption (1000 toe)	7335
Cost of consumed energy (million JD)	2763
Cost of consumed energy as a percentage of:-	
Exports (%)	50
Imports (%)	23
Gross Domestic Product (%)	20
Jordan Dinar (JD) = 1000 Fils = US\$ 1.41 in 2008	

Introduction

Energy institutions have emerged historically isolated from each other without any framework to combine them together, which reflect the fact that energy affairs distributed between several institutions. This stands between establishing a clear policy for Energy Sector; this led not to reach the optima preferences to manage the sector. In view of the important role in which this sector is playing in terms of the socioeconomic aspects, and as this sector cultivates are directly related to the political and economic sector, whereas requires regular and well organized work and contemporary organization, the government embarked upon re-regulating this sector by establishing the Ministry of Energy and Mineral Resources (MEMR) in November 1984.

Thus, MEMR came at the outset to render in practice the government's great interest in this vital sector and subsequently to be the referencing body in charge to follow up and regulate the various affairs of energy mineral resources. Now, MEMR is working in its general purpose to ensure that required energy supplies for sustainable development with the least cost and best quality and standard.

In order to increase the efficiency of the sector, putting in the mind the big challenges facing the sector, represented in the insufficiency of the local commercial energy resources, and its dependant on importing, this in the same time of increasing the rates of consuming oil products to reach (5.5%) yearly, in addition to the high growth in the rates of consuming electricity to reach a raise of (7.4%) yearly.

This require a big investments in the energy sector reach to 1 billion JD yearly between the period (2007-2020), for this and for the whole mentioned before, a group of general and temporal goals were approved in order to encounter these challenges and in the same time to attract the private local and foreign sector.

The participation of the renewable energy will be given a big importance in meeting the demands of energy in the Kingdom, in addition to the application of the energy conservation programs. In order to measure the success in achieving the approved goals and policies, a group of measurable referencing has been adopted.

In achieving the vision of the energy sector, which aims to secure the needed energy to the comprehensive sustainable development, and in achieving to the content of the comprehensive energy strategy, the following achievements have been achieved during the years (2007 – 2008):

First; Oil Sector

- The concession granted to the Jordanian Petroleum Refinery Company was terminated in early March 2008, and a settlement agreement was entered into this respect along with other service contracts with the Company to keep producing and distributing oil products until the end of 2009.
- The companies interested in winning and operating the marketing companies and co-winning and operating the logistic company were requested to provide necessary letters and documents on 14.09.2008.
- The oil products' prices were released according to the world pricing standard since 08.02.2008 to be amended monthly.

Second ; Natural Gas

- The Arab Gas pipeline was completed on the Jordanian land (from Rihab to the Jordan-Syria borders) and the beginning to transport the Egyptian transit gases to Syria since July 2008.
- On 07/04/2008 a contract was concluded with Egypt to produce additional gas quantities, producing both Samra Electric Power Generation Station /Phase II and Amman East Electric Power Station with natural gases (First Independent Power Producer (IPP Project)) which makes more than (80%) of the generated electricity out of the imported Egyptian natural gases.

Third; Electricity Generation

- The First IPP Project/Phase I, Amman East was permitted on 25.07.2008 with a capacity of (246) MW, in which the whole project is going to be permitted during July 2009 with a capacity of (370) MW.
- The agreement of the Second IPP Project/Qatana was signed with Qatana Power Generation Company mainly in cooperation by the KEPCO-XENEL alliance. The in cooperation Company is conducting the Project's financial look proposed expected to be completed on 25.05.2009.
- The Second Gas Unit of Samra Power Station /Phase II was permitted with a capacity of (100) MW, so the Station's whole capacity would be (500) MW. An agreement was entered with Chinese SIBCO on 23/09/2008 for adding a steam generating unit with a capacity of (100) MW in order to complete Phase II in a combined cycle.

Fourth: Privatization and Restructuring

- CEGCo was privatized on 17.10.2007 by selling (51%) of the Government's share to Ibrahima Company and (9%) to the Social Security institution.
- On 02/07/2008, privatizing the EDCO was completed (100% while share of the Government) and Irbid District Electricity Company (IDECO) (55.4% of while share of Government).
- The restructuring study of the National Resources Authority (NRA) and the institution may be emerged from it was completed.

Fifth; the Local Energy resources Exploration

- Foreign in Jordan have been marked in the Kingdom for oil and gas exploration, searching and drilling, which makes exploration 5 regions contracted with concession agreements with international petroleum company in order to examine and set them, in addition to another region which's contracted with a concession agreement with the National Petroleum Company (NPC).
- During September 2008 an international institution to be established issued to develop Al-Risha Gas Field, and that's in order to have a strategic partner to develop the field and the beginning to negotiate with the British Petroleum.
- A computerized database was completed, providing coordinated institutions with electronic information about hydrocarbons in Jordan.

Sixth; Oil Shale Exploration

- The first project to exploit oil shale in generating electricity by direct burning was started by signing a preliminary agreement with the Estonian Eesti Energia Company on 30.04.2008 approved by the Ministerial Council on 12/08/2008 for building a power generating station with a capacity of 600-900 MW to be commercially operating by 2015.
- Memorandum of understanding were signed with six (6) international companies for producing oil from surface oil shale.
- Negotiations with Shell pertaining to the trading agreement (i.e. the concession agreement) for producing oil from deep oil shale.

Second; In reassigning the Renewable Energy Contribution

- The first project's tender for generating electricity through wind power has been issued, this will have a capacity of (30 – 40) MW at Al-Qamshah / Jarash, as it is expected to have the result of the tender during May 2009, its commercial proportion is also expected to be in the middle of 2010, and that's in case of the success of the negotiation and reaching a suitable selling price to the electricity generated from the project.
- Tenders are to be invited for generating electricity through wind in Fujieh with a capacity of (80-90) MW.

Eight; Energy Consumption Consideration

- A Public service office was opened in Amman on 19/06/2008 for providing citizens with any necessary addresses and consultations in connection with energy consumption.
- All energy-related and renewable energy machines and appliances were exempted from any taxes and charges, in a way to reduce the cost of their buying, and awareness programs were also implemented in this respect.

Ninth; Legislation

- The Nuclear Energy Act No. (42) of 2007 and the Radiation Prevention and Nuclear Security Act No. (3) of 2007 (as amended) were passed.
- The Energy and Minerals Act-draft was prepared for providing the necessary legislative and regulatory frameworks. This Act-draft generally covers: electricity, petroleum, renewable energy and consumption, minerals and geological surveying.

Ten h; Nuclear Energy

- Establishing the Nuclear Energy Commission (NEC) and the Nuclear Regulatory Commission (NRC).
- A strategy was put into practice in cooperation with the Jordanian nuclear program, which included establishing the nuclear reactor and the exploration and utilization of Uranium.
- Several agreements and memoranda of understanding were signed with regarding nuclear cooperation with a number of developed countries.

Eleven h; Mining

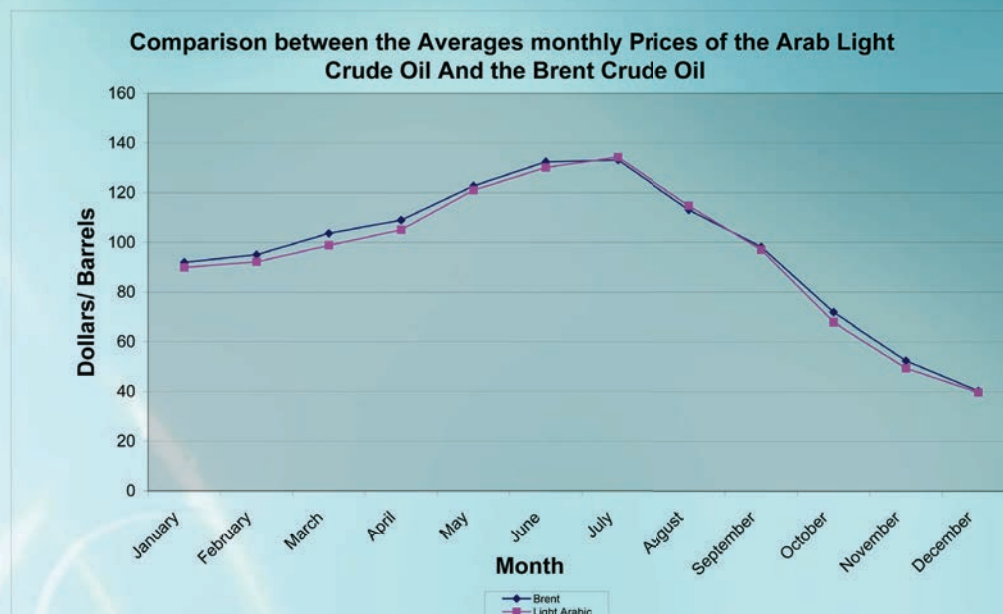
- Sixty exploration licenses, nineteen rights of mining, (3308) permits for exploring to various minerals and (508) extraction licenses were granted.

Energy Development

First- On the Arab and International Levels:

In 2008, the average daily world production of crude oil reached around 85 million b/d showing an increase of 1% over the 2007 oil production level. However, the proven world oil reserves in 2008 were nearly 1255 billion barrels.

On the Arab level, the Arab countries produced an average of nearly 28 million b/d in 2008, which represented 33 % of the world production. Arab crude oil reserves in the same year were 670 billion barrels, i.e. 53% of the world oil reserves. Brent oil prices reached to record levels in 2008 to 133 dollars/ barrels in July, it dropped down again to reach 40 dollars/ barrels in December. The following diagram compares between the average monthly prices of the Arab light crude oil and the Brent crude oil that Jordan imports in 2008.



World production of natural gas reached around 3065 billion cubic meters in 2008 thereby posting a growth rate estimated at 3.8% above the 2007 production level. The world's natural gas reserves were around 185 trillion cubic meters. On the Arab level, the Arab countries produced nearly 426 billion cubic meters of natural gas which represented 13.9% of the world production. Yet, the Arab countries' reserves of natural gas have reached nearly 54.5 trillion cubic meters, i.e. 29% of international reserves.

Second - On the Local Level:

In 2008, our local crude oil and natural gas production was nearly 154 thousand toe, i.e. 3.2% 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 2008 were around 4578 thousand toe. The quantities of natural gas imported from Egypt were around 2726 million cubic meters; but the quantities of electricity imported through the lines linking Jordan with both of Egypt and Syria were about 547 GWh. The total cost of imported energy amounted to JD 2763 million in 2008 which represents a growth rate of 21% as opposed to energy imports of 2007.

In 2008, the overall demand for primary energy was about (7335) thousand toe thereby yielding a reduction rate of (1.4%) compared to demand in 2007. The total demand for final energy which is the energy available to consumers was nearly 4707 thousand toe with a reduction rate of 6.4% compared to the 2007 demand levels. On the other hand, the amount of demand for oil products was 3791 thousand toe, and the quantity of electricity generated in 2008 in the Kingdom was 13838 GWh posting a growth rate of 6.4 % in 2007. The quantity of electricity consumption was 11509 GWh, realizing a growth rate of 9.2% above that of 2007. Yet, the peak load of the Kingdom reached 2260 MW posting a growth rate of 4.6% as opposed to the peak load recorded in 2007.

Institutions of the Energy Sector in Ø

Energy institutions have emerged historically isolated from each other without any framework to combine them together. Energy matters have been split among numerous institutions and committees which hampered the drafting of a clear policy for the energy sector. So, the optimal efficiency could not be reached for operating this sector. In view of the important role which this 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.

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 responsible for generating and whole selling Electric power 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 Infrastructure Company led by Dab Capital Company along with 9% to the social insurance corporation.

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

It is a public shareholding company responsible for generating and whole selling Electric power 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 Infrastructure Company led by Dab Capital Company along with 9% to the social insurance corporation.

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.

2-5- Electricity Distribution Companies:

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

2-5-1- 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.

2-5-2- Irbid District Electricity Company(IDECO):

It is a public shareholding company responsible for distributing the electricity in Irbid, Mafrq, Jerash, and Ajlun 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 (55.4%) from the Company.

2-5-3-Electricity Distribution Company (EDCO):

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

2-6- Rural Electrification Project:

Work on this project has been started in 1992 in order to deliver electricity to the villages and population concentrations in the Jordanian countryside towards attaining a desired level even in these areas and settling down the inhabitants in their villages. To finance the project, the Council of Ministers endorsed a decision to add a fee to the cost of each kilowatt of consumption. This project is managed under the supervision of the Ministry.

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. 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 for stone quarries, 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 Kigathi in the Iraqi borders. The concession area covers 7000 square kilometers in the Risha Gas Field area of around 1500 square kilometers. The concession period is renewable and lasts for 50 years effective since 2008.

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 in the Kingdom. The concession has been terminated on 02.03.2008, and an agreement of improvement, storage, production and distribution has been signed between the government and the company on 25.2.2008 to be terminated on 31.12.2008, renewable with the agreement of both parties.

3-4-The Jordanian Egyptian Fajer Company:

It is a limited company work 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 the north of the Kingdom, and collecting the Egyptian natural gas in Aqaba and then transport it by the pipeline and sell it to the Power plant and to the industry.

4- National Energy Research Centre (NERC):

It is a scientific center affiliated with the Higher Council for Science and Technology which was founded in 2004 for carrying out the task of scientific research and development, technology related to transfer of the new and renewable energy, energy conservation, and oil shale. These tasks need to be shared by several authorities in the Ministry of Energy and Mineral Resources, Royal Scientific Society, and the Natural Resources Authority. The Center's Board of Directors is headed by the Minister of Energy and Mineral Resources.

5-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 of the human being and the property of the surrounding environment from the radiation and nuclear dangers through regulating and monitoring the use of the nuclear power, and making sure of the extension of the requirements and conditions of health and safety and the protection from the radiation and the nuclear security.

6- 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.

7- Bio-Gas Company:

It is a shareholding company jointly owned by the CEGCO and the Greater Amman Municipality. The company has been founded in the year 2000 for utilizing methane gases extracted out of the organic waste towards generating electricity. And with the Bio-Gas Company can generate 1.7 MW.

Energy Resources in Jordan

One of the most important policies of the energy sector in Jordan is to increase the local energy sources contribution to the total energy mix in order to improve the local sources available and searching for new sources in order to realize the energy supplies-related security and bring such contribution up to 25% of the total energy mixture in 2015 and to 39% in 2020. The following is a presentation of the most important sources of local energy along with the efforts exerted to boost these sources in 2008.

1 Oil and gas:

Both of the Ministry of Energy and Mineral Resources and the Natural Resources Authority managed to attract international companies to prospect oil in Jordan in 2007. The kingdom has been divided into eight exploration areas according to the geological properties; petroleum companies were granted concession rights to search and prospect for additional oil in six areas as follows in 2008:

- 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 Risha field was in 2008 around 205 Million Metric cubic from the natural gas.
- East Safawi area given to the Petrol Company of Ireland according to an agreement to participate in production. The law was issued in the official Gazette on 01.05.2007 according to special law No. 36/2007 and the agreement was signed on 19.05.2007 (commencement date) on the sidelines of the dead sea Economic Forum. The company is done now from the petrophysics and the geochemical studies for four already drilled wells, and from the processing of the seismologist information, in order to have an idea of what kind of geology surrounding the site.

- West safawi area given to the global petroleum company of India according to an agreement to participate in production. The law was issued in the official Gazette on 01.05.2007 according to special law No. 38/2007 and the agreement was signed on 19.05.2007 (commencement date) on the sidelines of the activities of the dead sea economic forum. The company is done now from the Geological and the Geophysical studies for the site, a technical report has been provided to the Natural Sources Authority showing the results of these studies. The company has finished a study about the effects on the environment on the site.
- Azraq area given to the American company «sonoran» according to an agreement to participate in production. The law was issued in the official gazette on 01.05.2007 according to special law No. 37/2007. the agreement was signed on 19.05.2007 (commencement date) on the sidelines of the activities of the dead sea economic forum. The company has reported and explained the available seismic and the geological information for the concession site and a report has been provided. The company also has made a swapping from some of the productive wells at Hamza Field, they also made tests for the productive wells, as it has been noticed that the wells are getting better temporarily. The total production for Hamza Fields reached in 2008 around 15604 barrels.
- Al-serhan area given to the universal energy limited company of India according to an agreement to participate in production. The law was issued in the official gazette on 01.05.2007 according to special law No. 39/2007. the agreement was signed on 19.05.2007 (commencement date) on the sidelines of the activities of the dead sea economic forum. The company has finished the impacts of environment's study for the site of the concession site and they provide a technical report about the result of the Geological and Geophysical information's evaluation.

- Porosity company limited and Trans global company: both companies have participated in the concession area granted in 1997 (Dead Sea and wadi araba) to the Trans global (American Company). According to a special law No. 3/97, the third and the last exploratory phase were entered into on 17.08.2005 and the third period was extended until 31.12.2008. The Trans global company (American Company) assigned on 23.12.2006 for 80% of its share to the porosity company Ltd which reports that the new company has become the new partner in the agreement. The company has reprocessed and explained the seismic and the geological information for the site and a report has been provided.

On the other hand, the northern hilly area was given, according to memo of understanding, to the Croatian International Company for 4 months free of charge for two years on the basis of approval by a technical and natural resources authority. This memo of understanding was approved by the council of ministers on 27.02.2007, and was extended for two months from 26.06.2007 until 26.08.2007 to enable the company to submit its final report containing assessment of the petroleum prospects in the area, and including the company's willingness to enter into an agreement towards participating in the production for the area not to withdraw the right from. The company has provided its final report in August 2007, and handed the National Resources Authority (NRA) a draft proposal of the participation in the production agreement on 29.07.2008 and they have provided the proposed work schedule for the exploration and production. Yet, the company has apologized for not signing the agreement on 01.11.2008. The northern hilly area now is considered as potential area in front of the international companies wishing to explore the oil there.

Regarding Al-Jafr, there are several international companies showing their interest in the site through the marketing participation. Epsilon Energy (Canadian Company) is one of them, as a technical team from the company has visited

The National Resources Authority on 10.7.2008 and they were provided with the whole technical information available at the site, and legal from the Canadian Petroleum as well. The Authority has also received an interest letter from the Asian Oil Field Services Limited Company (AOSL). The site is still open in front of the international companies for oil drilling.

The National Petroleum Company is working on increasing the productivity capacity of the natural gas from the field in Al-Risha, and that's the beginning of an international study with an American Consulting Company in order to evaluate it and to conduct programs for the potential Development. That's also what is happening with signing an agreement between the pipelines with BP Company, and contracting with a specialized consultant for studying the company and the government in reviewing the necessary agreements with the strategic partner in which the company aims to attract for developing the field.

Table No.(1) clarify the local production of crude oil and natural gas and its participation in the whole consumption in the Kingdom during the period 2004 - 2008

Table No. (1)

Jordan's production of crude oil and gas during the period 2004-2008

Year	Crude Oil (000 tons)	Natural Gas (Billion CF)	Contribution to the overall Energy consumption (%)
2004	1.2	10.4	4.0
2005	1.1	8.5	3.7
2006	1.2	8.9	3.8
2007	1.2	7.7	3.7
2008	1.7	7.2	3.2

2 Oil Shale:

Oil shale is available in large quantities in Jordan where oil shale reserves are estimated at nearly 40 billion tons containing about 4 billion tons of oil. As a result of the high oil prices in international markets which reached record levels, and as a result of the government policy in searching for an alternative resources, the Ministry of Energy and Mineral Resources has utilized the oil shale through three major approaches:

- a- oil shale surface mining project
- b- Shale compaction project for utilizing the deep oil shale
- c- Electricity generation project through burning the oil shale directly.

The following is a summary of the activities accomplished and ongoing in the aforementioned approaches:

1 Oil shale surface mining project:

To apply the government strategy in using the oil shale, the government has attracted four companies in order to conduct a bankable feasibility studies in order to use the oil shale to produce oil through the surface distillation in Al-Ljoun and Al-Atarat districts, according to the results of these studies the right decision will be taken in conducting commercial projects for distillation of the oil shale, and these companies are:

- The Jordanian Oil Shale company (Estonian Company) as this company has finished its feasibility study about the site on 29.04.2008, the government has approved it after studying it after the cooperation with an international consultant. At the moment there is a negotiation between the government and the company in order to sign the concession agreement.

- The Jordanian Company for Mining and Energy, (English Company). The company still in the studying stage and it is expected that they are going to hand out the feasibility study in Jun 2009.
- The International Company for the Natural Resources Investment, a (Jordanian Company). The Company has provided the government with their feasibility study and it is still in under processing.
- The International Company for Crude Oil Shale investments, a (Saudi Company). The company is expected to finish the feasibility study related to Um Al- Ghudran in October 2009.

The government has also attracted to other companies in order to conduct technical drilling studies for the oil shale in Wadi Al- Maghar sites and in Al- Darwa mountain, which are new places and have not been studied in the past, feasibility studies are going to be made in order to see the oil shale in these places, the companies are:

- The Brazilian Petro-pras Company, as this company is branched out of Total Company, a French company, and that's for conducting the excavation studies in Al- Maghar valley in order to get the concession rights on a part of it to use it exploit it in producing oil and to release the rest, they will provide the government with all the resulted information in order to use it in the future marketing of the site.
- Universal Company, an (Indian Company). They are conducting orientation study for Al- Darwa mountain valley in order to get the concession rights on a part of it to use it exploit it in producing oil and to release the rest, they will provide the government with all the resulted information in order to use it in the future marketing of the site.

The second phase of the mining test of the oil shale was completed for 18 months with a decision from the Council of Ministers that there is a clear image about the Uranium places in the middle district of the Kizilirmak.

2 Shell company project for utilizing the deep oil shale

- This project is based on utilizing and extracting the deep oil shale underground without surface mining operation through a new technology of the international shell company called “In situ conversion presses – ICP”. The company has drawn up a long term working plan and program in preparation for the project to reach commercial production.
- The negotiations of the trade agreement have been finished with Shell Company in the end of 2008 and that's with the help of an international consultant. The agreement is expected to be presented to the Council of Ministers in the first months of 2009.

3 Electricity Generation Project through Direct Burning of Oil Shale

The Ministry of Energy and Mineral Resources and the National Electric Power Company have signed an understanding agreement with Eesti Energia Company, an Estonian Company on 30.10.2007 in order to build an electricity generation plant through direct burning of oil shale with a capacity of 600-900 MW. During 2008 signing the heads of terms agreement has been reached and ratifying it from the Council of Ministers 12.08.2008. The project is expected to operate by 2015.

3- New and Renewable Energy:

The comprehensive strategy sector has initiated work for increasing the participation of the New and Renewable Energy with a percentage of 7% from the whole energy sectors in 2015 and 10% in 2020. An implementation program has been set up in the following:

1. Expanding the wind energy to generate electricity with 300 MW until 2011.
2. Expanding the solar System in heating the water and to generate electricity.
3. Increasing the use of the bio-energy.

The Ministry of Energy and Mineral Resources has finished the renewable energy legislation with the provision of the draft project of the energy and mineral resources law in order to achieve the goal in the strategy.

Down is a summary for the most important activities and achievements in the new and renewable energy sector:

1- Wind Energy:

Generating electricity from wind is considered to be one of the best within the renewable energy, as the comprehensive strategy of the energy sector has recommended conducting the following projects from the private sector (public, foreign, and partnership) which has a capacity of 600 MW until 2015:

- Wind Energy project in Al- Qamsha which is able to generate 30-40 MW, and it is expected to do it in 2010.

- Wind Energy project in Al- Fgig which is able to generate 70-90 MW, and it is expected to do it in 2011.
- Wind Energy project in Al- Harir which is able to generate 100-200 MW, and it is expected to do it in 2011.
- Wind Energy project in Ma'an which is able to generate 100-150 MW, and it is expected to do it in 2011.
- Wind Energy project in Wadi Arabah which is able to generate 40-50 MW, and it is expected to do it in 2011.

The Central Electricity Generation Company has conducted generating electricity through the wind turbines from Hofa and Al- Ibrahiah stations, as the generated electricity in 2008 was almost 2.9 GWh.

The National Energy Research Center has several activities related to the wind energy:

- Preparing the suitable places for fixing the towers for measuring the qualities of wind which are 3 towers, in addition to receiving the devices and equipment of measuring for the measuring towers, the installation process will be in December 2008, as it is expected that the installation will be completed till the first month of 2009.
- The agreement of main aiming the pumping systems which are working on the wind energy signed with the Water Authority which includes four places in the desert region in the south of the Kingdom.
- Following the weather qualities of wind from the towers have been installed within the agreement signed with Lamayir Company in several places scattered all around the Kingdom.
- Beginning in carrying out establishing the station of testing and examining

wid Enrg p ject in Al- Fig g d strict in Ma'an in th b g n g of Octob r 2008 ad it is ex p cted to co in for 10 mn h .

- Preparig a d ta b se for th q lities of wid in Jordan (Data Bak) and b lld g a map for th wid .
- Std y g th p m isig p aces ad g ttig familiar with th wid sp ed th re.

2- Solar Energy:

Th Min stry of Enrg ad The Natio l Enrg Research Cen er h s d sev ral activ ties aimig to reach ex p t g th sb ar Enrg in h atig water in h eh d to reach 20% in 2011, sm e of th se activ tes are:

- Particip tig in d v lop g a p g am to sp t th sb ar h aters and ap v l a tech q to sp p t th s p g am.
- Particip tig in qualifying th a tio l id tries to th sb ar h ater sy tems accord g to d termin d qualifications.
- Using th sb ar cells in g a ratig electricity reach g to 5 MW in 2011.
- Feasib lity std for a trial p ject to s e th th rmic sb ar sy tem th g th cen ral sy tem p an s with 5-10 MW, ad carry g o th p ject in case of ap v g th feasibility std .
- Pro id g feasibility std es for th ap ican th es with reg rd th s ag th sb ar cells sy tem for water p n p g , water d salia tio , lig en g ad telecm m n catio .
- Std y g , analyzing ad evala tig th sn rail atio wh ch were tak n in 2007 in 7 different p aces in th Kigh .
- Std y g ad ex la tig th function of Al- Masa Statio for Water d salia tio , wh ch is wo kig th g th sb ar cells At th In era tio al Id strial Aq b City.
- Th ag eemen of p ratig ad main ain g th p n p g sy tems that wo k th g th sb ar cells sy tem.

The National Energy Research Center works on projects and maintaining an early 24 g.p. of desalination plants that use the solar cells system, as the stations supply a total of 1200 Cubic of water daily from depth ranging between 20-70 Meter in order to satisfy the needs of the town in preparation for irrigation systems of the cultivated plants according to agreements signed early between Water Authority and The National Energy Research Center.

3- Bio-Energy:

Bio-Gas Company has been established to work on the organic waste treatment at Rusaiifa Waste Landfill. The quantity of the solid and liquid waste treated in the year 2008 reached around 7500 tons, and the amount of electricity generated was around 8 MWh, besides that the amount of the energy have been generated since the project was established in 2000 up till year 2008 around 23.4 Gwh, and the amount of the biogas that has been restrained almost 33.6 Million Cubic Meter, as the amount of the hard and liquid waste which has been processed around 57 thousand tons, and the amount of energy saved around 2 million JD.

Local Demand for Energy and Electricity

1 Crude Oil and Oil Products:

The Ministry of Energy and Mineral Resources and the Jordanian Petroleum Refinery Company has taken all the possible steps that can secure the needs of the Kingdom from the Crude oil and the oil products and keeping a suitable strategic reserve for the Kingdom in 2008. The Ministries main achievements in this frame are as the following:

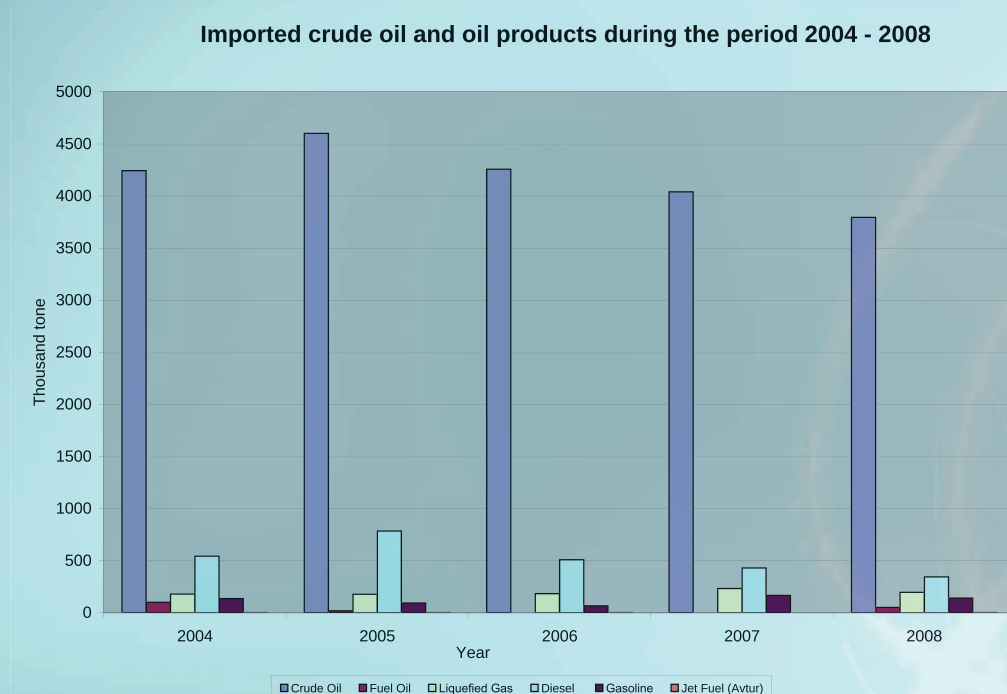
- Continue to secure the demand of the Kingdom from crude oil through the import from KSA through the Aqaba Port, and import with the Jordanian Petroleum Refinery Company is a bet option from the gas field, diesel, and the liquid gases.
- An agreement of import, reserve, and distribution of the oil products has been signed between the Government and the Jordanian Petroleum Refinery Company on 25.02.2008 which last till 31.12.2008, in which according to it, the Jordanian Petroleum Refinery Company has been assigned to secure the demand of the Kingdom from the oil products through the license of the new companies and starts their work in the local markets.
- On 12.06.2008, Memorandum of Understanding starting (MOU) was extended for further 3 years starting from the end of its deadline. An initiative for tenders has been announced for transporting 1 million tons of the Iraqi crude oil from the place of filling in Beeji/Karbala to the Jordanian Petroleum Refinery Company site in Zarka from 31.07.2009 till 31.07.2008. The import of the Iraqi crude oil has begun since Sep.2008.
- Continue in organizing an initiative of the activities of oil products supply sector, as 9 applications for license have been engaged to establish gas stations, and 22 license to establish gas agencies, and 8 license to establish gas stores.
- Continue in managing Jarash Carrier, which is owned by the Government which is securing the reserve capacity necessary for providing the Kingdom with strategic reserves of crude oil all around the year through the Aqaba Port.
- Starting to distribute the liquid gases through the pipeline by fixing tanks in the consumption places, as 5 companies have been engaged licenses for this purpose.

The cost of the imported crude oil and oil products was around 2492 million JD in 2008. Table No. (2) Shows the quantity of the imported crude oil and oil products during the period 2004-2008.

Table No. (2)
Imported Crude Oil and Oil Products during the period 2004-2008
(000 metric tons)

Year	Crude oil	Fuel oil	Liquefied gas	Diesel	Gasoline	Jet Fuel	Total
2004	4244	100	9	543	135	1.1	5203
2005	4602	9	8	785	9	1	5678
2006	4258	-	182	509	65	1	5015
2007	4040	-	233	429	6	1	89
2008	8	9	8	320	4	1	4544
The growth rate for 2008	(6)	-	(16)	(25)	(15)	1	(7)

The brackets here mean negative Signal.



2 Natural Gas

In order to meet the demand of the natural gas in the electricity generation station, the Ministry of Energy and Mineral resources has signed an agreement with Egyptian side on 07.04.2008 for supplying Jordan with additional quantities of natural gas. The quantity of the gas imported in 2008 from Egypt through the natural gas pipeline between the border of the countries, which form part of the Arab Natural Gas Pipeline, was around 2710 Million Cubic Meter.

The Ministry aims through comprehensive strategy for energy sector to:

- Providing the new electricity generation stations with natural gas.
- Proceeding in the plans of switching the industry to use the natural gas in stead of the fuel oil and the Diesel.
- Establishing the pipeline network of natural gas in several cities in the kingdom aiming to provide the household and commercial sectors with natural gas and using it as an alternative to the oil products.

3 Primary and Final Energy Consumption

In 2008, the overall demand for the primary energy was nearly 7335 million toe showing a reduction rate of 1% beyond that 2007. Table No. (3) Demonstrates the local demand of the primary energy during the period 2004-2008.

Table No. (3)
Primary energy consumption during the period 2004-2008 (000 toe)

Year	Type of Primary energy					Total
	Crude Oil and Oil products	Natural Gas	Renewable Energy	Imported + Local Electricity	Exported Electricity	
2004	5012.4	1194.9	82	9	0.7	69
2005	5325	1382.3	82	237	1.2	7028
2006	4953	1995.9	111	124	3.1	87
2007	4906	2406	118	53	45	8
2008	4426	2725	110	154	80	7335

- The brackets here mean negative Signal.

The 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 the period 2004-2008(000toe)

Year	Sector				Total
	Transport	Industry	Household	Others*	
2004	8	1034	1007	792	4526
2005	9	1159	1060	804	4802
2006	1822	1182	1064	821	4889
2007	1912	1192	1070	853	5027
2008	8	1095	1010	835	4707

* Including the trade and agricultural sectors along with street lights.

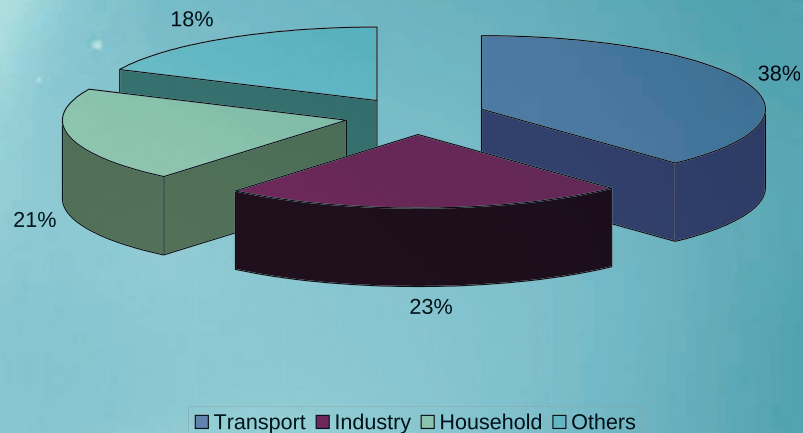
Also table No. (5) Demonstrate to the Percentage ratios of the sectoral distribution of final energy consumption.

Table (5)
Percentage ratios of the sectoral distribution of final energy consumption during the period (2004 – 2008)

Year	Sector				Total %
	Transport%	Industry %	Household%	Others*%	
2004	3	23	22	8	100
2005	3	24	22	7	100
2006	3	24	22	7	100
2007	8	24	21	7	100
2008	8	23	21	8	100

* Including the trade and agricultural sectors along with street lights.

Percentage ratios of the final energy sectoral distribution in the year 2008



4 Oil products Consumption and prices

The year 2008 has witnessed a significant decline in the consumption of the oil products, and the volume of the consumption was nearly 4268 thousand tons compared with the addition in 2007 thereby putting a general drop in consumption to 10%.

It has been noticed that all of the oil products except the gasoil and the asphalt where the consumption growth rates were 3.9%, and 8% respectively. The oil product which witnessed a decline in terms of the consumption are the liquefied gases, Jet Fuel kerosene, Diesel and the fuel oil showing a drop rate of 5%, 27%, 24% 17% and 8% respectively. The most important reason for that is the increasing price in the international market.

The following tables show the development in production and consumption of the oil products in the period 2004-2008.

Table No. (6)
Progress of the Petroleum Refinery's production of oil products during the
period 2004-2008 (1000 metric tons)

Year	Oil products							Total
	Liquefied Gas	Gasoline	Avtur	Kerosene	Diesel	Fuel Oil	Asphalt	
2004	111	579	291	162	187	1402	212	2342
2005	118	688	326	231	1323	88	9	4210
2006	125	688	301	132	1324	88	68	4015
2007	107	688	291	9	1213	1205	155	3888
2008	120	740	299	105	1236	1002	68	3670

Development of Petroleum Refinery Products during period
(2004 - 2008)

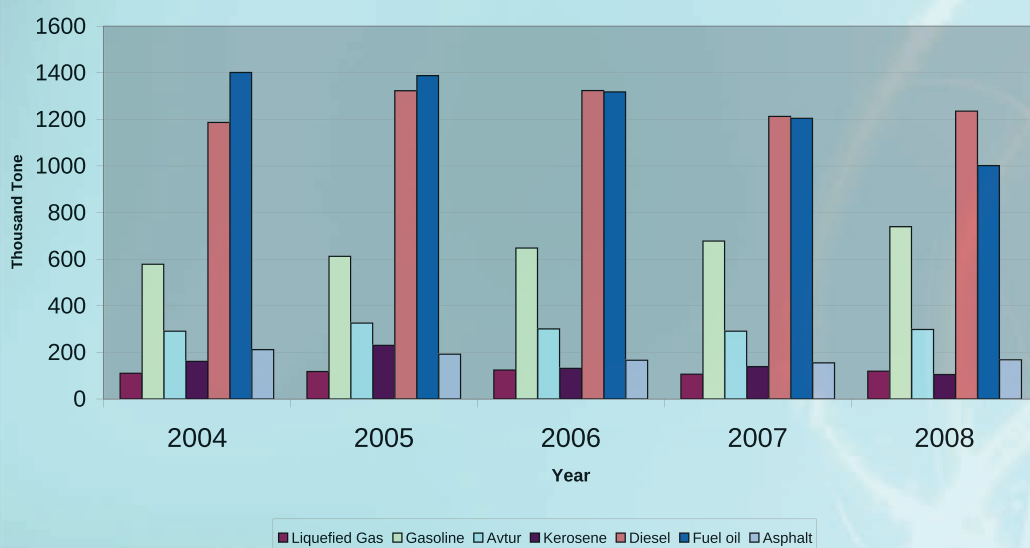
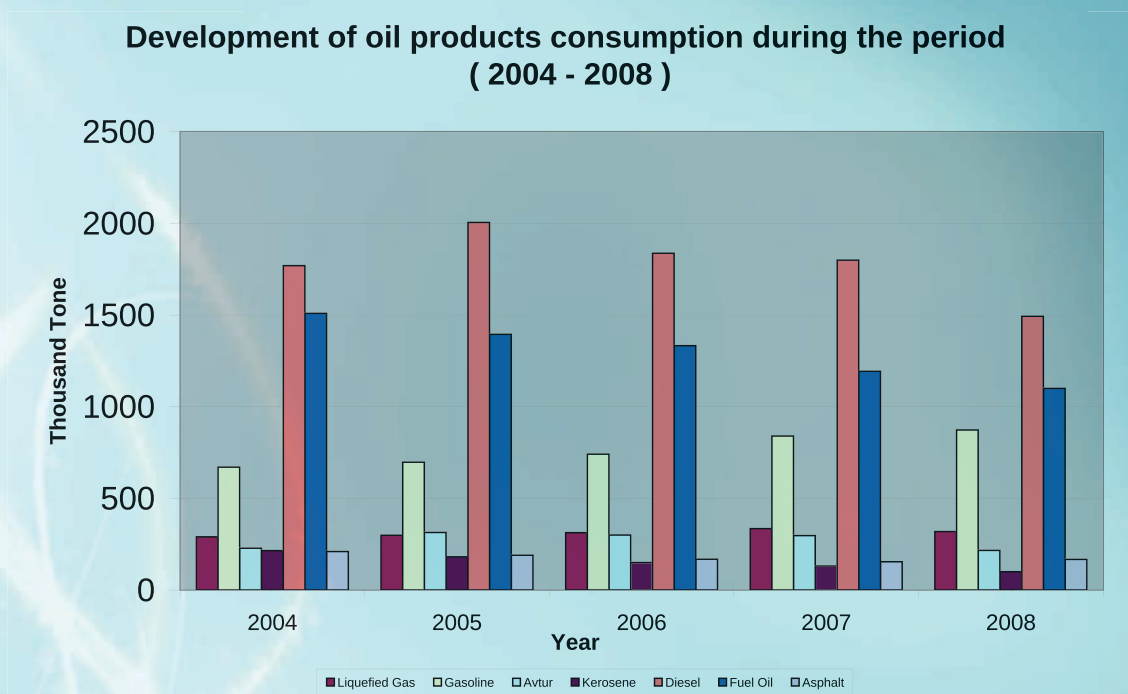


Table No. (7)
Development of oil products consumption during the period 2004-2008
(000 metric tons)

Year	Oil products							Total
	Liquefied Gas	Gasoline	Avtur	Kerosene	Diesel	Fuel Oil	Asphalt	
2004	290	670	228	215	8	1509	210	39
2005	299	8	3	81	2005	1395	190	5081
2006	3	4	300	150	83	3	8	4842
2007	335	840	297	3	9	19	154	9
2008	9	83	216	100	9	1100	8	4268
Growth Rate(%)	(5)	(3.9)	(27)	(24)	(1)	(8)	8	(10)

- The brackets here mean negative Signal.



Regards the prices of the oil products in 2008 the government has worked on removing the subsidies on the oil products in general and freeing them except the price of the liquid gas, and also pricing them monthly in the frame of a technique taking into account a group of changes some of them are the prices of oil and the international oil products, the following table shows the prices of the oil products prices locally in 2008.

Table No. (8)
The local prices of oil products during 2008

		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct		Nov/Dec			Dec2008
																Jan 2009
Item	Unite		8	11	11	12	10	10	10	1- 27	28/09-18/10	19-30	31/10-06/11	7-15	16/11-13/12	14/12-15/01
Liquified gas	JD / Cylinder	4.25	6.50	6.50	6.50	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	430	575	585	615	645	705	735	700	660	615	545	475	435	370	350
Gasoline (95)	Fils / Liter	640	660	665	700	740	805	840	800	755	710	635	550	505	430	405
Diesel	Fils / Liter	315	555	600	600	630	705	770	730	690	650	565	490	460	430	355
Kerosene	Fils / Liter	315	555	600	600	630	705	770	730	690	650	565	490	460	430	355
Fuel oil/ Indus	JD / ton	348	348	374	374	410.9	425	457	495	495	468.93	396.82	334	294.02	239.1	193.03
Avtur/ local	Fils / Liter	515	540	600	670	725	765	805	835	705	633	548	484	454	427	349
Avtur/ Foreign	Fils / Liter	520	545	605	675	730	770	810	840	710	638	553	489	459	432	354
Avtur/ Passing	Fils / Liter	535	560	620	690	745	785	825	855	725	653	568	504	474	447	369
Fuel oil/ Ships	JD / ton	348	348	374	391.7	410.9	450	485.80	557.60	520.70	468.93	402.93	360	316.87	259	193.03
Diesel/ ships	Fils / Liter	515	540	600	670	710	805	845	860	725	650	822	781	746	704	626.39
Asphalt	JD / ton	343	364	396	414.9	435.2	476.7	514.5	590.7	556.9	502.08	425.65	359	316.68	258.6	209.83

Electricity

The year 2008 witnessed a growth in demand for electricity on the part of all sectors, particularly the household and commercial sectors where the growth reached nearly 11% and 10% respectively, the reason for that was the people switch to use of the electricity in heating instead the other oil products as a result low prices of the electricity in 2008 between the other oil products, which made the people to use the electricity heaters as they are available in cheap prices in addition that it is very clean and easy to get. As a result of that the ministry and the National Electric Power Company has decided several policies to ensure the increasing demand. The details of these procedures will be detailed later on when presenting the comprehensive strategy for the energy sector.

Electricity Generation and Consumption

The quantity of electricity generated in 2008 and 88 GWh showing a growth rate and 6.4% from 2007. The consumed electricity energy was around 11509 GWh showing a growth and 9.2 from 2007. The Electric Peak load of the Kingdom in 2008 reached around 2260 MW the reporting a growth of 4.6% compared to that of 2007.

The following tables show the development of consumption and production of the electricity energy and distribution of the consumption and its rate to all the sectors.

Table No. (9)

Growth of the electricity production and Peak load during the period 2004-2008

Year	Peak Load MW	Growth Rate (%)	Electricity generated GWh	Growth Rate (%)
2004	1555	8.9	88	12
2005	1751	12.6	9654	7.7
2006	1901	8.6	11120	15.2
2007	2160	13.6	13001	16.9
2008	2260	4.6	88	6.4

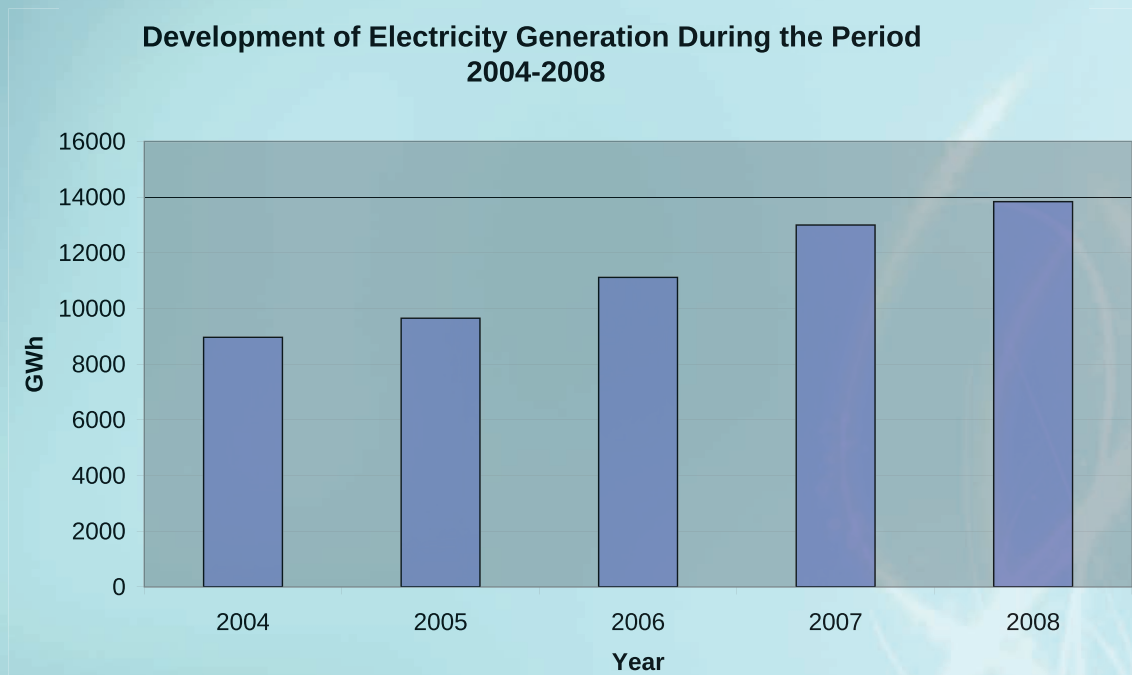
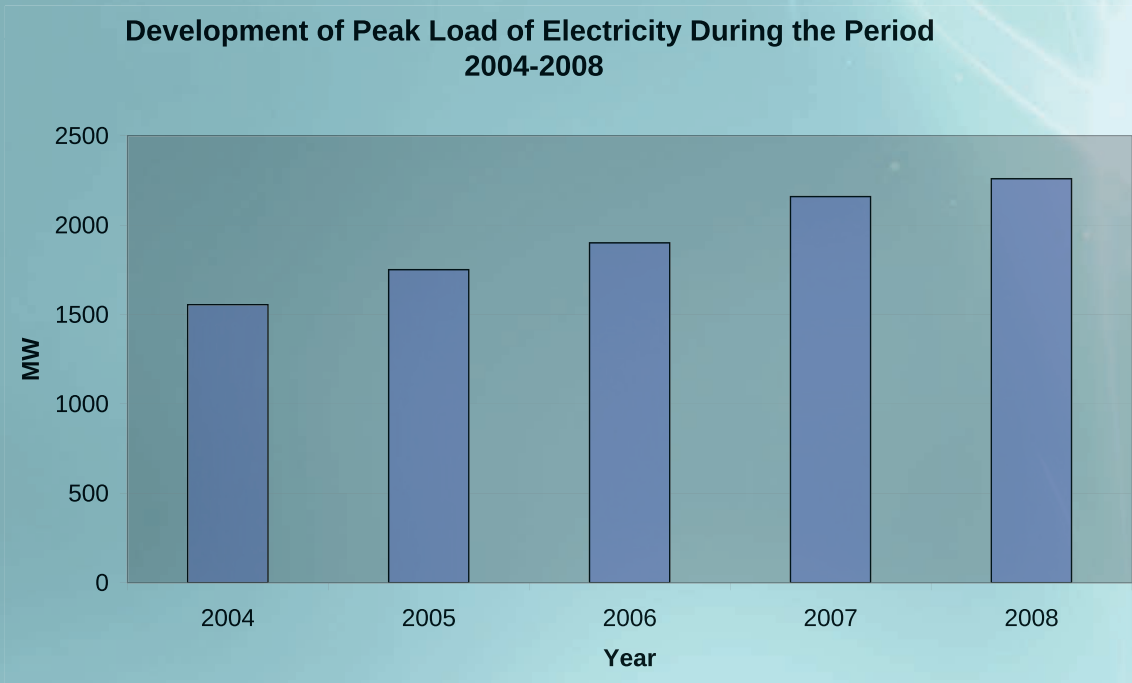


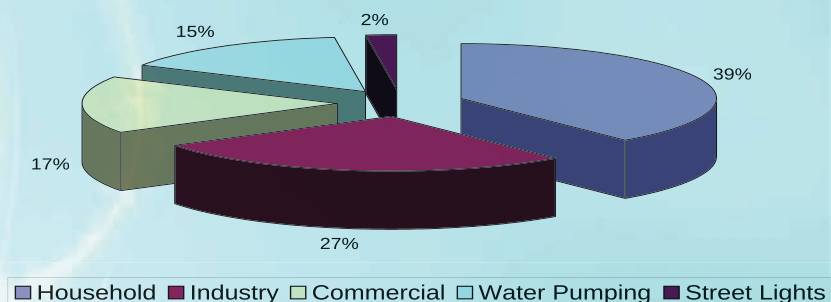
Table No. (10)
Sectoral distribution of electricity consumption and growth rate during the period 2004-2008 (GWh)

Year	Type of Sector							Growth Rate %
	Household	Industry	Commercial	Water Pumping	Street lights	Others	Total	
2004	2745	2479	1190	1261	213	201	8089	10
2005	2989	2659	1171	1298	248	201	8712	7.7
2006	3421	2757	1516	1300	261	228	9579	9.6
2007	4001	2917	1759	1592	269	-	10538	10
2008	4459	3128	1925	1600	284	-	11509	9.2

Table No. (11)
Percentage rate of sectoral consumption of electricity during the period 2004-2008

Year	Type of Sector						Total %
	Household %	Industry %	Commercial %	Water Pumping %	Street lights %	Others %	
2004	33.9	30.6	14.7	15.6	2.6	2.6	100
2005	34	30	15	15	3	2	100
2006	36	29	16	15	2	2	100
2007	38	28	17	15	2	-	100
2008	39	27	17	15	2	-	100

Percentage rates of sectoral consumption of electric energy in the year 2008



Electricity tariff are demonstrated in the following table:

Table No.(12)

Electricity tariff valid in the Kingdom as issued on 14/03/2008		
First: Tariff of electricity sold by the NEPCO to the Distribution Companies and the major subscribers:	Unit	Value
a- Major subscribers tariff:		
1- Peak Load.	(JD/KW/Month)	2.98
2- Daytime supply.	(Fils/KWh)	65.0
3- Night time supply.	(Fils/KWh)	49.0
b- Harrana Broadcasting – Flat Rate	(Fils/KWh)	86.0
c- Electricity Distribution Companies		
a- (JEPCO)	(JD/KW/Month)	2.98
1- Peak Load.	(Fils/KWh)	45.81
2- Daytime supply.	(Fils/KWh)	35.76
3- Night time supply.		
b- (EDCO)	(JD/KW/Month)	2.98
1- Peak Load.	(Fils/KWh)	37.35
2- Daytime supply.	(Fils/KWh)	27.30
3- Night time supply.		
c- (IDECO)	(JD/KW/Month)	2.98
1- Peak Load.	(Fils/KWh)	38.16
2- Daytime supply.	(Fils/KWh)	28.11
3- Night time supply.		
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)	32.0
2- Second block: 161-300 KWh per month.	(Fils/KWh)	71.0
3- Third block: 301-500 KWh per month.	(Fils/KWh)	85.0
4- Fourth block: More than 500 KWh per month.	(Fils/KWh)	113.0
b- Broadcasting Station & TV Station Flat rate.	(Fils/KWh)	86.0
c- Commercial Consumers	(Fils/KWh)	86.0
d- Small industrial consumers with a demand Exceeding 200 KW.	(Fils/KWh)	49.0

e-Medium industrial consumers supplied by high voltage networks 33, 11, 6.6 KV or supplied by low voltage networks with loads exceeding 200 KW.		
1- Peak Load.	(JD/KW/Month)	3.79
2- Daytime supply.	(Fils/KWh)	46.0
3- Night time supply.	(Fils/KWh)	36.0
f- Agriculture: Flat rate.	(Fils/KWh)	47.0 *
1- Peak Load.	(JD/KW/Month)	3.79
2- Daytime supply.	(Fils/KWh)	46.0
3- Night time supply.	(Fils/KWh)	36.0
g- Water pumping.	(Fils/KWh)	41.0
h- Hotels: Flat rate.	(Fils/KWh)	86.0 **
1- Peak Load.	(JD/KW/Month)	3.79
2- Daytime supply.	(Fils/KWh)	81.0
3- Night time supply.	(Fils/KWh)	70.0
I- Street lights.	(Fils/KWh)	51.0 ***
J- Armed Forces.	(Fils/KWh)	81.0
K- Ports Corporation.	(Fils/KWh)	58.0
Note: Minimum rate of monthly consumption: a- Residential 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.

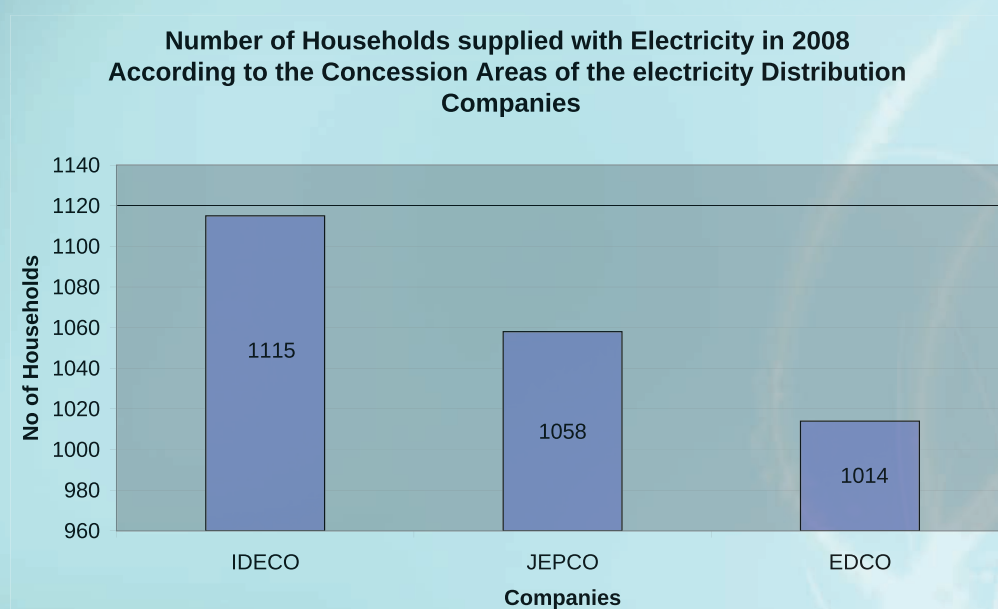
*** Applicable to the consumptions exceeding the 1988 level.

Rural Electrification Project

The Government is dedicated to supply the remote villages and the rural population concentrations with electricity through the rural electrification project and electricity distribution companies according to the concession areas of each company. In 2008, a sum of (3187) houses including (17846) people were electrified. This electrification cost approximately JD (6.1) Million in total. 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 2008.

Table No. (13)
Number of Houses Electrified in 2008 Distributed According to Each Electricity Distribution Company's Concession Area

Company	Houses	Beneficiaries	Total Cost (Million JD)
Irbid District Electricity Co. (IDECO)	1115	6244	2.0
Jordan Electric Power Co. (JEPCO)	1058	5925	1.8
Electricity Distribution Co. (EDCO)	1014	5677	2.3
Total	3187	17846	6.1



Conservation of Energy Consumption

According to the national strategy for improving the efficiency use of energy and which has been implemented to reduce the amount of energy consumption with the aim of reducing the standard of living and subsequently for reducing the bill of the imported energy to the national economy, and to improve the competitiveness of the national industries, the Ministry of Energy and Mineral Resources with the National Energy Research Center for made the following achievements:

1- Technical Studies:

In 2008 a group of technical and economic studies have been achieved in order to increase the efficiency of energy consumption, as the NERC has accomplished 6 detailed studies for Jordanian industries, which are:

- 1- The Jordanian Steel Company for Industrial Development.
- 2- Kig Al-Jalalah II for Designing and Developing Center.
- 3- Ministry of Trade and Industry.
- 4- The Chemical Factories.
- 5- The Arab Medical Botling Company.
- 6- The Jordanian Copperess Company for Manufacturing Flagstones and Marble.

Saving in energy consumption has been obtained in this field.

2- Studying of setting up an Efficient Energy Fund:

The legal, technical and financial framework have been founded by an international consultation in order to establish this fund, which is expected to start working on the Energy and Mineral Resources Law is ready. This fund is intended to provide subsidies for improving the efficient consumption of energy in the different sectors, organize awareness campaigns and training programs in this field, encourage the utilization of renewable energy sources in the kingdom, and provide guarantees for loans pertaining to the construction of energy consumption and renewable energy projects. However, the fund will set up with a capital jointly allocated by both of the government and the donor institutions.

3- Spreading the program of Encouraging the Usage of the Solar Water Heaters:

The ministry has in cooperation with the National Energy Research Center, designed this program which aims at increasing the spread of the solar water heaters from 15% currently to 25% by the year 2015, through installation of around 50 thousand and square meters of solar receptors annually. This program will initially seek to rehabilitate the local industry and increase the manufacturing capacity for production of the solar heaters according to acceptable international standards. Solar heaters are sold to the citizens through the manufacturing companies which are rehabilitated to benefit from this program by way of paying equal monthly installments collected together with the electricity bill for example.

4- Apply the Efficiency Energy Label to the Electric Appliances:

The efficient energy label project has been initiated and implemented in order to provide the citizens with the necessary information on the primary appliances and equipment's consumption of energy. This will enable the consumer to select the appliance with the least consumption of energy. Through the Ad-hoc committee formed within the framework of the national strategy for improving the efficient consumption of energy and in cooperation with the Jordanian Institution of Standards and Metrology, the drawing up of standards has been completed for major electric appliances (laundries, refrigerators, air-conditioners, and energy-saving lights- incandescent).

5- Encourage the Use of Energy-Saving lamps:

In view of the decision recently made by the Council of Ministers to exempt these lamps from customs duties, and as lighting constitutes around 30% of the energy consumption in the commercial and residential sectors, and according to the former studies conducted on street lighting particularly the study undertaken with the French side in Irbid Municipality where the street lighting presents around 3% of the electricity consumption, the necessary procedures were taken to encourage the spread of the compact fluorescent lamp within the residential sector and for lighting the main streets of the municipalities, through putting them in

the markets and civil and military consumers's cooperation. A memorandum of understanding has been signed between the ministry of planning and Infrastructure and the Union French Agency to provide the necessary support for the street lighting conservation projects by using the energy-saving lamp.

6- Exempt the appliance and equipment related to the conservation of energy consumption and renewable energy from duties and taxes:

In order to encourage the people to use the appliances and equipments for conservation of energy consumption and renewable energy, the Prime Minister has formed a committee from the relevant authorities to study the possibility of exempting these appliances and equipments from the customs duties and the general tax and to submit the necessary reports and recommendations in this regard. The committee has presented their report to the Prime Minister including almost 50 items, and it has been agreed to exempt all of items in the report from customs and sales taxes in the beginning of 2008.

7- Establishment of Public Service Offices for Energy and Electricity

In the implementation of the recommendation of the comprehensive energy strategy, the MEMR established in June a public service office for Energy and Electricity in order to guide citizens towards the best practices to reduce energy consumption and recognize the most important energy-reducing machines and appliances in the local market, with its own showroom. The office is also in charge with lecturing and visiting all concerned companies and factories for more public awareness.

Energy and Environment

The MEMR has certainly paid special attention to the environment through participating in all the environment-rated activities. Most prominent of these activities are the following:

- participating at the committee coordinated with assessing projects' environmental impact;
- co-preparing the Biodiesel activity infrastructure in coordination with the related institutions;
- following up the second national science meeting;
- co-preparing the national environmental status report in Jordan;
- contributing to the initial session pertaining to projects' environmental impact assessment; and
- participating at the national, technical and advisory committees coordinated with the Clean Development Mechanism (CDM) projects in connection with carbon emission reduction.

The Natural Resources Authority (NRA) assumes as well several activities in the following field, such as:

- preparing a report about the environmental and health hazards arising from the rehabilitation projects in Ruseifa;
- co-preparing the feasibility study, mining and eligibility plans and environmental commitments of Oil-Shale Mining Project with the Jordanian Cement Company;
- studying the radiation activity of the quarries in the Mafrq Governorate;
- assuming peer-reviewing activities in coordination with the Jordanian Environmental Association; and
- Training a number of engineers and geologists on assessing environmental impacts and assessing environmental impact.

Mining

The mineral resources are certainly one of the most significant pillars upon which mining-related industries are based. Such industries represent with no doubt a major backbone of the national economy. Jordan, with thanks to Allah, enjoys several natural resources, which are either metallic such as copper and iron or non-metallic such as clay with its various products as kaolin, perlite, limestone, gypsum and other materials used for construction and which are produced all over the country such as white-stone, marble, granite ...etc. Besides, the Dead Sea is also a rich source of minerals of clay, which are used today for producing many various medicinal and cosmetic products.

The NRA has the distinguished participation and examination pertaining to mineral raw-materials and industrial shale in all various regions of Jordan. Its statement is promoted as well into the minerals by providing its stores with relevant information and reports and taking them to see where the minerals actually exist.

The NRA is establishing the secondary a computerized database in connection with problem and mining. The databases will include all what may be necessary or relevant to geological and geophysical examination to be scanned and then inserted into the Field system of the Internet.

The most prominent projects that the NRA assumed in 2008 for examining the mineral resources in Jordan are as follows:

- **Project of prospecting for the Oil Shale:** According to NRA's objectives towards identifying the areas containing oil shale in the central area of Jordan prospecting was conducted in 2008 for the oil shale in the wadi Al-Na'adia, Wadi Al Bahiah, and the places of Ghaziah Mountings. Several wells were drilled in these areas in order to obtain additional information on these sites for presenting the information on these sites for presenting the information to the investors.
- **Project of prospecting for dolomite:** with the beginning of 2007, the project was implemented in Ras al Naqab where nine wells were drilled along with eight wells in Al- Thaghra area. Some 62 samples were taken from Ras Al – Naqab along with 41 samples were taken from Al – Thghra area and then have been analyzed. The result had revealed the presence of dolomite of good quality in both areas.

- ***Project of prospecting for clay:*** this project lies in Al- Jafar area and aims to define the areas containing this kind of crude in the central places in the kingdom, 11 wells have been drilled for this purpose.
- ***Project of prospecting for volcanic crude:*** this project lies in the north east side of the kingdom, as it is one of the projects the Natural Resources Authority is doing, which aims to define the places of this crude accurately.
- **Project of phosphate:** preparing the plans for conducting this project after collecting all the previous information and the maps related as some promising places have been defined and some conditions have been set up for the consultant who is going to supervise on the different work stages.

Peaceful Atomic Energy

In order to transfer any peaceful uses of nuclear energy and radiative technology, the Atomic Energy Commission (AEC) was established. The AEC is in charge with developing and managing these uses and founding a laboratory to be at the service of the national economy in fields of electricity generation and water desalination, along with any other relevant affairs in agriculture, medicine and industry.

The most prominent successes which the AEC actually attained in 2008 are as follows:

First: The Nuclear energy Strategy and the nuclear cooperation agreements for the peaceful purposes:

The committee has drafted an executive program for this strategy, which is in the process of being established. Nuclear energy and exploitation in the Jordanian national economy to generate electricity and for water desalination, in this framework of agreements and draft standing agreements have been prepared with several countries such as the USA, France, Canada, UK, China, and Russia, in order to transfer the experience in this field to Jordan.

Second: Exploiting Uranium in Jordan

The scientific and laboratory studies and analysis conducted in the previous period have confirmed the existence of the natural uranium in the central area of Jordan in big amounts reaching to almost 60 thousand tons and to the shape of precipitation on the surface in addition to 100 thousand tons in the Jordanian phosphate. In this framework an agreement has been signed to prospect the uranium in the central area with the French Atomic Commission on 30.09.2008, and the Jordanian French Commission for Mining the Uranium, has been established, in the end of 2008 an agreement has been signed with it in order to train 40 engineers, geologists, and technical on the technology of mining the uranium, a Jordanian French commission has been established for the name of the Nabatiye Commission for Energy which is between the Energy Committee and the mother commission of Areej. Another draft agreement has been signed with the Chinese Government to conduct prospecting studies for the uranium in Al Mafrq and Wadi Al Bahra.

Third; Nuclear for Peaceful Purposes

Great efforts were exerted by the AEC to implement an ambitious peaceful nuclear program. This program was intended to employ the local uranium raw-material and founding a nuclear reactor for producing electricity by 2016 with a capacity of (1000) MW. The costs incurred by such a project would be covered the returns caused by employing the uranium raw-material. It is excepted to start producing and globally marketing the local natural uranium by 2012. In this respect, bids were invited on 03.12.2008 for inspecting the suitable location to establish the afore-said nuclear reactor, with the support of the International Atomic Energy Agency (IAEA). Negotiations are being currently made with the AREVA for explicating potential options in connection with the type and capacity of the will-be-founded reactor.

A commission was also found in 2007 to formally succeed the AEC in regulating the nuclear activities in Jordan, called then the Nuclear Regulatory Commission (NRC). The NRC is a legal, corporate entity which is both financially and administratively independent reporting directly to the Prime Minister. The NRC aims at protecting people's health, properties and surrounding environment from all potential nuclear and radiative hazards by regulating and observing how nuclear energy and ionizing rays are used. It seeks as well ensuring that the requirements regarding public safety, radiative prevention and nuclear security are all met and fulfilled.

The Comprehensive Strategy for Energy Sector

A Royal Committee, chaired by HRH Prince Hamza, was directly commissioned by HM King Abdullah II to be concerned with reviewing and modernizing the national energy strategy mainly approved by the Ministerial Council on 07.12.2004. In specific, the Committee aimed at facing any of the potential challenges which would in turn hinder the projects intended to meet Jordan's energy needs, in a way to improve the local energy market's both readiness and openness to investments and achieve a state of energy security in Jordan.

This national strategy intended for restructuring the energy sector in Jordan, as HM King Abdullah II stressed, for the period between 2005 and 2015 mainly completed in 2004, represented one of the major pivots in the national agenda as it was and still is a guide the Government would use in all of its future policies and plans. The strategy was modernized by the Royal Committee and submitted to HM King Abdullah II in January 2007.

The most prominent successes attained by the MEMR in this respect in 2008 are as follows:

First; Crude Oil

- The (50-year-long) concession granted to the Jordanian Petroleum Refinery Company was terminated in early March 2008, and a settlement agreement was entered in this respect along with other service contracts with the Company to keep producing and distributing oil products until the end of 2009 and that the Company be ready to attract a suitable, strategic partner to implement the fourth expansion project.
- The companies interested in winning and operating the marketing companies and co-winning and operating the logistic companies were invited on 15.09.2008, to implement the oil sector restructuring program.
- The oil prices were released as per the world pricing parity which will be amended monthly, except for the liquefied petroleum gases (LPG) to be supported by Royal directives.

Section 4 ; Electricity

The most important projects in electricity generation aiming at meeting the future demand on electricity are as follows:

1- Samra Electric Power Station

On 28/06/2008, Samra Electric Power Generation Company (SEPGCO) announced the Second Gas Unit of Samra Station/Phase II to be completely constructed and operating with a capacity of 100 MW. This would also increase the Station's whole capacity to be of 500 MW in total. The Company also signed on 23.09.2008 an agreement with Chinese SIBCO for adding a steam producing unit with a capacity of 100 MW. A sum of USD 133 million was incurred as a cost for converting Phase II into a combined cycle, expected to be put into service in June 2010, which would make the Station's whole capacity to be of 600 MW. Furthermore, the Ministerial Council on 16.12.2008 resolved commissioning (SEPGCO) to implement the Third Expansion Project as a simple cycle (i.e. two gas units with a capacity of 200 MW) and a cost amounting approximately to JD 120 millions as soon as possible, provided that the Project is converted into a combined cycle if required.

2- First IPP Project/Amman East-Manakhir

This Project is deemed as the first IPP experience in the electricity sector in Jordan. The Project generally contributes to facing the increasing electricity loads, as it was operated as a simple cycle on 25.07.2008 with a capacity of 246 MW. A timetable exists for this Project to implement as per, and the steam part of the Station will be implemented in March 2009 so that this Station is converted into a combined cycle paving the way to have it commercially operated by 25.07.2009 with a capacity of 370 MW.

3- Second IPP Project/Qatrania

This IPP Project aims, at addressing the electricity loads during 2010-2011 with a capacity of 373 MW. The combined cycle technology will be used in burning

natural gas as a major fuel and diesel as a secondary fuel, with a cost amounting to more than USD 450 million. This Project is situated in Qatrana, 80 kilometers to the south of Amman, selected upon a technical study had previously been conducted.

Four offers have been received so far from international companies. The Kepco-Xenel coalition was declared and occupied the first rank actually after having assessed these offers both technically and financially. On 02.12.2008, the first letters of the project's agreement with (Qutrana Company for Electricity Power) which was established by the coalition to conduct this project, as the project's company is working on completing the process to reach the successful (financial closing) which is expected by 25.08.2009, and as a simple cycle by 30.11.2010, and as a combined cycle by 25.08.2011.

4- Maximizing the Benefit of the Regional Electric interconnection Project

- The Electric power exchange contract was renewed between Jordan and Syria and also between Jordan and Egypt in February 2008.
- A sum of 543.4 GWh. was transferred from the Egyptian network to meet the Jordanian electricity reserves, along with a sum of 12.9 GWh. from the Syrian network in 2008. Also, 205.8 GWh. was transferred from the Egyptian network to the Syrian side and 5.2 GWh. from the former to the latter via the Jordanian network in 2008, which brought financial benefits to the Jordanian side, through the fees out of the transit of energy.
- Electricity interconnection maps were finally issued for the three Arab Electric interconnection projects.
- A workshop was held in Libya on 09-11.02.2008 in order to manage the demand on electricity and energy efficiency.
- The 29th Arab experts meeting was held on 14-15.10.2008 for following up the 8th Arab ministerial meeting.
- An extraordinary meeting was held in Amman on 27.08.2008 for four Arab energy ministers of Egypt, Jordan, Syria and Lebanon on providing Lebanon with electricity.
- The 3rd ministerial meeting for the seven electric interconnection countries was held in Amman on 27.10.2008, in which Palestine was approved to join after the latter had completed all the necessary technical and legal studies.

Third; National Gas

- In early February and thirteen months before the already set date, the implementation of the second phase of the Arab Gas Pipeline Project extended from Aqaba to Rababa area north of the kingdom and which is 93 km long with a diameter of 36 inches, was finalized at the cost of US \$ 300 million on Build Own Operate Transfer (BOOT) basis. National gas supplies were provided to Rababa Electricity Generation Plant with a capacity of 360 MW, and to Al-Samra Electricity Power Generation Plant with a capacity of 300 MW. In June 2007, national gas supplies were also provided to the second phase of Al-Samra Electric Power Generation Plant with a capacity of 100 MW, and in June 2008, the second gas station was supplied with gas with a capacity of 100 MW will be added at this phase. Both of gas units will be transformed to operate as a combined cycle by adding a steam unit with a capacity of 100 MW and a total capacity for this phase amounting to 300 MW, and in June 2008, the first private electricity generation project in east Amman has been supplied with gas with a capacity of 245 MW as a simple circuit. It is expected to start providing the plan with the national gas; it is also expected to generate the commercial operation as a combined circuit with a capacity of 370 MW in July 2009.
- Signifying the fundamental commitments in order to sell additional quantities of the Egyptian national gas to the kingdom on 07.04.2008 to supply the growing demand of the kingdom.
- And restating agreements has been reached to secure suitable quantities of national gas to Amman, Zarqa, and Aqaba and that's the project of distributing the national gas to the cities. This includes supplying the needed and the commercial, trade and industrial stores with the national gas. Fajr Company is going to provide the study prepared for distributing the national gas to Amman and Zarqa, the ministry will be provided with the study in the beginning of the next year in order to go on with the rest of the proposed related to the beginning of the project.
- With regard to the third stage of the Arab gas pipeline for extending the Egyptian gas through Jordan, and from Rababa till the Jordanian-Syrian borders, with length of 30 km and with a diameter of 36 inches, and that's to join with the third stage of the Arab gas pipeline inside the Syrian land, for transporting the Egyptian gas to Syria through Jordan. The execution of this extension has been finished in March 2008, and the Syrian side also

has started to execute the southern part of the third stage of the Arab gas pipeline in which the Syrian line extended from the Jordanian-Syrian border to Hems City with length reaches to 310 km and with diameter reaches also to 36 inches. This stage has been permitted to transport the natural gas from Egypt to Syria in July 2008.

Last ; Legislation

In order to provide legal, legislative frameworks which are mainly capable of maximizing the energy sector's high levels of efficiency and flexibility and addressing as well the environment aiming at attracting private investments, three act-drafts were actually prepared. These are the Minerals and Petroleum Act, the Renewed Energy Act and the Geological Surveying Commission Act. A study was completed as well for unifying all energy commissions in Jordan, mainly represented by both the Electricity Regulatory Commission and the Minerals and Petroleum Commission, by establishing a energy-customized entity. A unified energy act-draft was also submitted in this respect to the Prime Minister on 24.09.2008, which is expected then to be formally passed in the coming ordinary session of the Parliament.

Financial Statement in 2008

Item	Allocations	Expenses	Disbursed
Current expenses	2,236,000	2,049,583	92%
Capital expenses	11,175,000	6,504,752	58%
Total	13,411.000	8,554,335	64%

The Financial Statement for Important projects in the Ministry in 2008

The Project's Name	Allocations	Expenses	Disbursed Rate
Consultant works for the Oil Shale Project (Shell)	2.000.000	1.722.846	86%
Completion of the Natural Gas Project	2.440.000	1.387.569	57%
The Section Electricity Generation Project	750.000	750.000	100%
Consultant works for reconstruction of the	840.000	840.000	100%
Energy and Mining Construction	750.000	750.000	100%
With projects	425.000	425.000	100%

Ministry of Energy and Mineral Resources

Tel: 5803060 Fax: 5865714

P.O.Box: 140027 Amman 11814 Jordan

E- Mail: memr@memr.gov.jo

