

# Energy

First Edition

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# Jordan

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## **Overview of the current energy mix, and the place in the market of different energy sources**

The energy sector plays a vital role practically in every other sector in Jordan. It is essential for increasing the standard of living, as it is fundamental for the establishment of sustainable development in the Kingdom. Despite the Government's continuous efforts, Jordan lacks conventional energy resources and imports the vast majority of its energy.

Jordan is facing serious problems in the energy field and is finding it very difficult to quench the Kingdom's need for energy. The rapid increase in the population size and the growth of the economy in Jordan is creating a high demand for energy.

Over the past year, the energy sector has experienced several setbacks. The increase in the prices of crude oil and its derivatives, as well as the events that occurred in Egypt and the Arab Spring, have significantly affected the energy sector as a whole. The Government is doing its best to attend to and deal with the energy deficit that has resulted.

Before we examine the energy situation and the energy sector in general, a brief overview of Jordan is offered in order to put things into perspective.

The Hashemite Kingdom of Jordan is a Middle Eastern country surrounded by Syria, the Kingdom of Saudi Arabia, Iraq and Israel/Palestine. It is an independent monarchy, which was initially established as the Hashemite Emirates of TransJordan in 1921. In 1945, it joined the Arab League of Nations and thereafter, in 1946, was officially declared as an independent sovereign monarchy.

Currently, Jordan has a total area of 89,318 square km, of which 88,778 square km is land area<sup>1</sup>. The total population at the end of the year 2011 was 6,249,000<sup>2</sup>, which is approximately 2.2% more than that of the year ending 2010. At the end of 2011, Jordan's gross domestic product (GDP) was recorded at approximately 20.477 billion Jordanian Dinars<sup>3</sup>.

## **Changes in the energy situation in the last 12 months which are likely to have an impact on future direction or policy**

Jordan has a small to medium-sized economy. It annually receives financial aid from abroad and has a number of foreign loans. Its recorded public debt constituted approximately 64% of its GDP for the year 2011<sup>4</sup> and is estimated to constitute 65.5% of its GDP in 2012<sup>5</sup>. It has very limited natural resources and relies mainly on imports in order to satisfy the needs of the Kingdom. More specifically, Jordan is experiencing major problems in the energy and water sectors, as both energy and water are limited resources in the Kingdom. Therefore, Jordan imports most of its energy.

Due to the high levels of imported energy and scarcity of Government funds, as well as the excessive amount of financial aid and foreign loans that the Kingdom receives annually, the energy sector is extremely burdensome on the Jordanian economy. In 2011, Jordan imported approximately 97% of its energy<sup>6</sup>, which accounts for nearly 20% of its GDP<sup>7</sup>.

Recent statistics show that Jordan's bill for imported energy for the first quarter of the year 2012 amounts to 1.35 billion Jordanian Dinars, which shows a 69% increase on the same period of the previous year<sup>8</sup>. It is estimated that the imported energy invoices at the end of 2012 will reach

approximately 5 billion Jordanian Dinars and will amount to nearly 25% of the Kingdom's GDP. In light of the above, the weight that the energy sector in Jordan has on its economy is restricting the economic growth of the Kingdom.

#### Energy resources

Unlike its neighbouring countries, Jordan has little or no reserves of oil. The Government has expended great efforts in the past in prospecting for oil and gas, by itself and in collaboration with several foreign companies. The outcome of such efforts only resulted in two findings:

1. small amounts of non-commercial crude oil in Hamza Field in 1985; and
2. natural gas in Al-Risha Field in 1989, which is now being used to generate electricity.<sup>9</sup>

In 2011, Jordan's local production of crude oil and natural gas amount to approximately 135,000 tonne equivalent of oil (toe), which constitutes nearly 3% of its energy needs. In light of the above, its imported crude oil and its derivatives and natural gas from Egypt amounted to 5,978,000 toe and 806 million cubic metres, respectively. Therefore, the total cost of imported crude oil and its derivatives as well as the natural gas was equal to approximately 3,822 million Jordanian Dinars, which is 51% more than that of the year 2010.<sup>10</sup>

#### **Developments in government policy/strategy/approach**

The Government is searching for more crude oil and natural gas mainly in areas such as Al-Risha Field, East and South areas of Al-Safawi and Zarqa<sup>11</sup>. It is working in collaboration with several foreign companies with extensive technical expertise and financial capability to conduct the relevant searches and studies in order to determine if there are viable and commercial energy resources in the Kingdom and to exploit them if and when applicable. For example, the Government through the Natural Resources Authority, worked in cooperation with the British Petroleum Company (BP) to produce 3-dimensional seismic surveys of a specific area in Al-Risha Field. The seismic survey was produced by BP and submitted to the Natural Resources Authority in 2011.<sup>12</sup>

Jordan is blessed with excessive amounts of oil shale, which may be used to generate electricity through either direct combustion of oil shale or distilling the same to produce crude oil. After a series of technological breakthroughs and successful global efforts to use oil shale for the generation of electricity, the Government has adopted a strategy to market oil shale and attract international firms with technical expertise and financial capabilities to use the same for the generation of electricity.<sup>13</sup>

In terms of renewable energy, Jordan has high amounts of solar and wind energy which may be used to generate electricity. Solar energy in the Kingdom is considered to be one of the highest rates worldwide. Its rates range between 5-7 KWh/m<sup>2</sup>. With respect to wind energy and in areas like Alfujeij, Hoffa, Alkamsha and Aqaba, the average wind speed reaches approximately 7 metres/second, which is significantly high<sup>14</sup> and may be used to generate significant amounts of electricity if properly and efficiently used. However, as of now, renewable energy sources are not being utilised properly and efficiently for the generation of electricity.

Studies show that Jordan has large amounts of underground uranium deposits, which may be used to generate electricity through nuclear energy for peaceful purposes. Currently, no nuclear energy or electricity is being generated and the prospect of utilising nuclear energy for the generation of electricity is still under investigation.

#### The energy mix

The current energy mix in Jordan can be summarised thus:

1. crude oil and its derivatives;
2. natural gas;
3. imported electricity; and
4. renewable energy.

#### *Crude oil and its derivatives*

At present, Jordan's consumption of crude oil and its derivatives creates a key component of the Kingdom's energy mix. It constitutes approximately 82% of the primary energy consumption of the

Kingdom. Nearly all of Jordan's crude oil comes from the Kingdom of Saudi Arabia and Iraq which, according to the Ministry of Energy and Mineral Resources, amount to approximately 90% and 10%, respectively.

Jordan depends on the Jordan Petroleum Refinery Company for the supply of refined crude oil and/or its products. It previously awarded Jordan Petroleum a concession, creating a monopoly over the supply of crude oil and its products. However, this concession expired in 2008. After the expiry of the concession, the Government signed a services agreement with Jordan Petroleum Refinery Company for the supply, storage and distribution of crude oil and its products<sup>15</sup> which additionally granted the company exclusive rights over the supply of the oil. The services agreement was for a period of approximately 2 years and, therefore, was renewed several times<sup>16</sup> and is currently still valid until 18 September 2012.

Jordan Petroleum's capabilities were limited and the company faced many challenges in attempting to find a strategic partner. Finding a strategic partner is crucial to Jordan Petroleum to improve its infrastructure and position itself in the market. The company is now exerting maximum effort to finally succeed in this enterprise.

Jordan has executed a memorandum of understanding in connection with the supply of Kirkuk oil to the Jordan Petroleum Refinery Company. According to the memorandum, the agreed amount of Kirkuk oil to be imported was 30,000 barrels per day<sup>17</sup>. However, due to the prevailing limitation on the capabilities of Jordan Petroleum, the persisting problem arising from failure to find a strategic partner, and the characteristics of the oil imported, the amount of Kirkuk oil which was imported in 2011 was only 10,000<sup>18</sup> barrels per day.

There has been an increase in the consumption of crude oil and its products, which is primarily due to the increase in the consumption of fuel oil and diesel. This increase resulted in a total growth in the consumption of such products of 24%<sup>19</sup>. Such an increase is a direct result of the decrease in the amount of natural gas imported from Egypt as detailed below, and the overall increase of energy demand in the Kingdom.

In light of the increase in the consumption of fuel oil, Jordan has signed an agreement with the Iraqi Government for the acquisition of fuel oil. The total amount of fuel oil to be purchased is equivalent to 30,000 tonnes per month.

The cost for importing crude oil and its products has increased significantly in the past 12 months. The total cost for importing it is 63% more than that of the previous year, amounting to approximately 3.7 billion Jordanian Dinars<sup>20</sup>. The increase in the cost of the crude oil consumption is due to the increase in the amount of fuel oil, diesel and gasoline which have been imported. The percentage of the increase of such products was recorded at 21%<sup>21</sup>. Additionally, the increase in the prices of crude oil, generally, played a major role in the rise of the total cost of importing the same.

With the increase in the demand for crude oil and the rising cost of its products, the Government is trying hard to minimise the cost for the transport of the products, as well as increase the efficiency of such transport. Currently, crude oil is being transported from Iraq and the Kingdom of Saudi Arabia through ships to the port of Aqaba and thereafter in special vehicles to the refinery in Zarqa. The cost of transport is increasing significantly with the increase in the cost of gasoline and diesel. The Government has previously studied alternatives, by itself and in collaboration with Jordan Petroleum Refinery Company, in order to reduce such costs. The following are some alternatives which the Government has considered:

1. Building a pipeline directly from Iraq to Jordan.
2. Building a pipeline from Aqaba to the refinery in Zarqa.
3. Rehabilitating the tap-line between Jordan and the Kingdom of Saudi Arabia.
4. Implementing a national rail project.

The Government is struggling to reach a decision on the way to increase the efficiency of transport and decrease its cost because it is experiencing obstacles in connection with the alternatives listed above. With respect to the pipeline, Jordan is experiencing great difficulty in reaching an understanding with the Iraqi side. The discussions on the Jordanian-Iraqi pipeline date back to before 2007. Shortly after 2007, all discussions concerning the pipeline ceased and until now such discussions have not resumed.

As for the pipeline proposed to be built between Aqaba and the refinery in Zarqa, Jordan Petroleum Company has taken the initiative and proposed to build the pipeline. Jordan Petroleum began the application for the licence and procured an approval from the Ministry of Energy and Mineral Resources. However, Jordan Petroleum never followed through and the licence was never granted.

In connection with the rehabilitation of the existing tap-line (pipeline) between Jordan and the Kingdom of Saudi Arabia, the tap-line presently is in extremely poor condition and cannot be used in any way. Therefore, a new pipeline in its entirety needs to be built which implies considerable cost.

Finally and regarding the implementation of a national rail project, the Government is encouraging such a project and leans towards implementing it, as it is not just beneficial for the energy sector, but also aids and supports the transport sector as well, as it reduces transport costs in the long run. However, Jordan Petroleum Refinery Company is opposing the implementation of the project as it is more expensive than building the Aqaba-Zarqa pipeline.

Additionally, the Government is trying to reduce transport costs using another approach. It is working on replacing the crude oil storage facility currently present on Jerash, a floating ship in the Port of Aqaba, by building a storage facility in Aqaba with a capacity of 230,000 tonnes. The Government is proposing to build the facility in two phases. Currently, the Government has released a tender for the first phase to build underground storage for only 100,000 tonnes. In the event that there are sufficient funds to build the entire underground storage with a capacity of 230,000 tonnes, then the Government is willing to reconsider the two-phase project and make the necessary adaptation of the tender in order to convert it into a one-phase project.

#### *Natural gas*

Natural gas is one of the primary consumable energy resources in the Kingdom. It comprises approximately 12% of Jordan's energy mix. On the other hand, prior to 2011, natural gas constituted 31%<sup>22</sup> of the Kingdom's energy mix. However, in light of the events that occurred in Egypt earlier in 2011, the amount of gas imported from Egypt decreased considerably: at the rate of 65%<sup>23</sup> due to a series of explosions which occurred on the Arab gas pipelines in February, April, July and September 2011.

Natural gas is an important element of the energy mix in Jordan. It was used to replace costly crude oil and its products and was often used to generate electricity. In 2010, 68%<sup>24</sup> of the electricity generated in Jordan was from the natural gas obtained from Egypt. Consequently, with the current political turmoil and the continuing financial struggle, Jordan is struggling to sustain a somewhat healthy economy. The Government is currently considering different methods to overcome the struggle to secure natural gas, such as:

1. Introducing liquefied natural gas into the energy sector in order to be able to easily and readily transport it and source supplies from across the world.
2. Implementing a new jetty project in the port of Aqaba to make the transport of liquefied natural gas easier.
3. Leasing a ship fully equipped for the transport of liquefied natural gas.

The Government has taken the initiative and accepted the introduction of liquefied natural gas into the energy mix. It has released a tender, in May 2012, for the establishment of purpose-built storage in Aqaba for the storage of the liquefied gas.

As previously indicated, Jordan has natural gas in Al-Risha Field. The Government granted the National Petroleum Company a concession agreement for 50 years starting in 1996. The total production of natural gas for the year 2011 has been documented at 6.4 billion cubic feet.<sup>25</sup>

#### *Electricity*

The need for electricity has increased in the past 12 months due to the increase in the temperature in the summer, which in turn increased the use of air conditioning units in most sectors. The increase was most significantly shown in the industrial sector, and thereafter the housing sector.<sup>26</sup>

The Government is trying to digest the unexpected demand for electricity in the Kingdom. It is looking to increase the size and efficiency of the overall market for electricity in Jordan. It has participated in a series of projects, which present promising outcomes for the current electricity situation.

Jordan currently has four main electricity generation projects and is working on the introduction of two more. The main electricity generation projects comprise CEGCO electricity generation projects, two Independent Power Generator (IPP) projects, and the Samra electricity generation project, details of which are as follows:

1. CEGCO electricity generation projects were implemented by the Central Electricity Generation Company (CEGCO), a company previously wholly owned by the Government, which was privatised in 2007. Currently, CEGCO is still implementing the projects undertaken by it prior to its privatisation;
2. IPP 1 was granted by the Government on 26 September 2009 to AES – Jordan PSC<sup>27</sup>, a joint venture company established by AES Electric and Mitsui<sup>28</sup>, and officially launched the project on 26 October 2009<sup>29</sup>;
3. IPP 2 was granted to Al-Qatraneh Company, a consortium made up of Korean Electric Power Corporation (KEPCO) and XENEL, which operated as a single cycle on 31 December 2010. The project was completed to include a combined cycle at the end of 2011<sup>30</sup>, and it has begun its operation early in 2012; and
4. Samra electricity generation project was granted to Samra Electric Power Generation Company. It has undergone three expansions, the last of which was in 2011<sup>31</sup>.

The National Electric Power Company (NEPCO), a company owned by the government, is the sole licensed bulk supplier in the Kingdom, and is the electricity system operator as well as the transmission licensee. It is responsible for securing electricity in the Kingdom by working in collaboration with the private sector and is, therefore, working on the introduction of two more power generation projects. Currently, NEPCO is in the process of negotiating the project agreements and has granted:

1. IPP 3 to a joint venture company owned by KEPCO, Mitsubishi Corporation and Wärsilä Development Financial Services OY; and
2. IPP 4 to a joint venture owned by AES Electric and Mitsui.

Jordan relies on an interconnection grid made between Jordan, Syria, Egypt and Lebanon for any minor deficit in electricity. The interconnection grid cannot be used as a stable alternative to relieve the Kingdom from any major shortfall in electricity, as it only has a maximum capacity of 400 Gigawatts. However, the interconnection grid was excessively used in 2011 and recorded an increase of 159%<sup>32</sup> in electricity imported from Egypt and Syria.

The interconnection grid is a key component of imported electricity. It helped in introducing imported electricity to the energy mix of the Kingdom. Previously, imported electricity played a minor role in the energy mix, constituting between 1% and 2% of the energy mix<sup>33</sup>. However, with the increase of the energy imported through the grid, imported electricity now constitutes around 4% of the energy mix.

Even though total electricity consumption for the year 2011 has increased at the rate of 5.4%, it is worth noting that the electricity generated in that year is less than that of the previous year by 0.9%<sup>34</sup>.

Despite the rise in the cost of electricity and energy generally, the Government is using its best endeavours to attend to the people's needs, and continued to electrify rural areas through its rural electrification project via the relevant electricity distribution company. Approvals were given to 657 requests for electrification, which amounts to approximately 3.8 million Jordanian Dinars. By the end of the year 2011, 1,920 houses were electrified.

#### *Renewable energy*

The Government is trying to relieve the burden created by importing energy through the use of renewable energy resources. However, at present renewable energy plays a minor role in the energy sector. It comprises approximately 2% of the energy mix.

Renewable energy in the Kingdom can be divided into the following categories:

1. solar;
2. wind;
3. bio;
4. hydro; and
5. thermal.

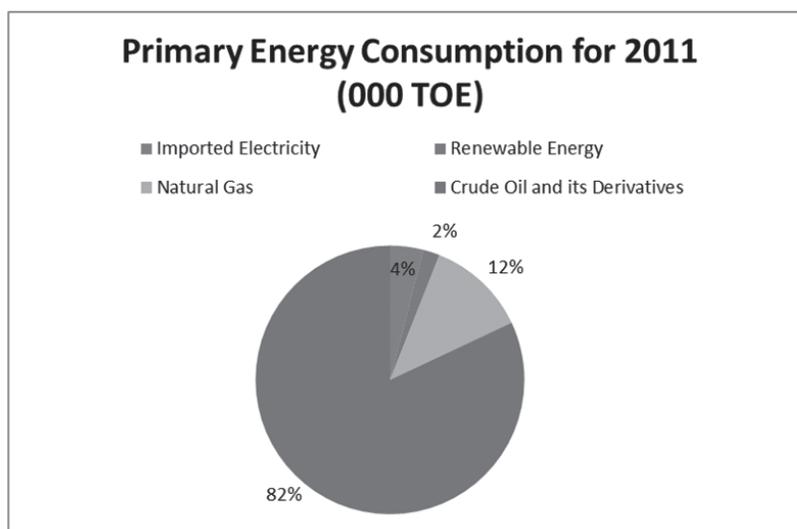
Even though Jordan is blessed with high rates of solar and wind energy, it does not depend on them for the generation of electricity. The Government is trying to utilise wind and solar energy by participating in several projects. In the area of wind, there are presently two main projects in progress:

1. *Al-fujeij wind project*: the Government is currently in the phase of assessing the technical and financial proposals submitted by 4 companies, and is expecting to continue the assessment of the proposal and announce the winner of the project by the third quarter of the year 2012<sup>35</sup>; and
2. *Alkamsha wind project*: TERNA, a Greek company, was chosen as the first place winner for the project. However, due to the rise of some environmental issues directly related to noise pollution, negotiations on finalising the transaction documents were frozen until an amended proposal was submitted, taking into account the acceptable noise limits. In 2011, the amended proposal was submitted and is currently under review and assessment by the relevant technical committee.<sup>36</sup>

On the other hand, there are several solar projects in which the Government is involved. One example is the solar energy project for the generation of electricity through photovoltaic cells: the Government is working in collaboration with a Spanish consultant to prepare tender documents for this. The project is for the generation of electricity using photovoltaic cells of a capacity of 1 Megawatt and is financed by a grant given by Spain. The grant agreement restricts the implementation of the project and the award of the project to Spanish companies only.<sup>37</sup>

Currently, bio energy is one of the very small contributors to renewable energy in the Kingdom. There is only one company that is presently working on the treatment of organic waste for the production of bio energy. In 2011, the Bio Gas Company generated around 8,005 Megawatt hours of electricity, around 7.6 million cubic metres equivalent.<sup>38</sup>

Jordan has very limited water. Therefore, the generation of hydro energy is very limited. There are no projects for the generation of electricity from hydropower; only experimental projects have been conducted on King Talal Dam. Additionally, thermal energy's contribution to renewable energy in Jordan is negligible. Recent studies conducted by Japanese consultants indicate that the hot water springs in Ma'in, Zara and Alazrak cannot be used for the generation of electricity.<sup>39</sup>



Source: the diagram was drawn using the figures in the Ministry of Energy and Mineral Resources, draft Annual Report 2011

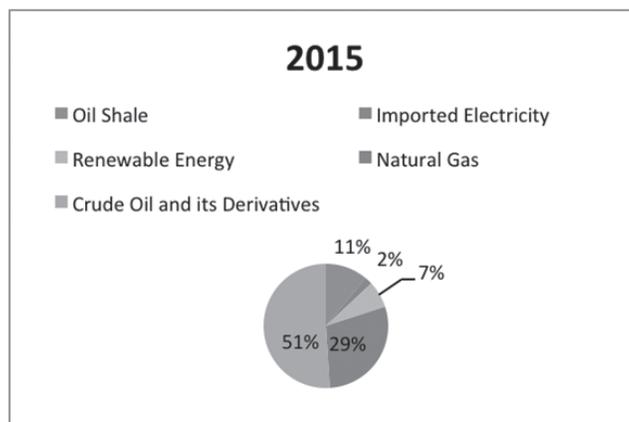
### Major events or developments

The Government is working hard to alleviate the current energy situation and lift the burden this sector has on the Jordanian economy. As documented in the Master Strategy, Jordan is intending to rely more on the very limited resources it has for the generation of electricity by encouraging local energy production to replace pricey imported energy.

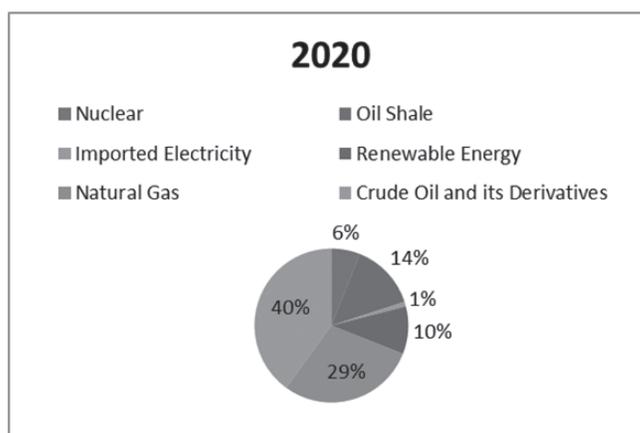
The Master Strategy of the Energy Sector in Jordan was last updated in December 2007. It sets out

an overview of the issues in the energy sector and general feedback on how they may be overcome. Additionally, the Master Strategy indicates the Government's approach and how the energy mix will change by the year 2020. It documents the introduction of oil shale, a new element to the current energy mix, as well as the increase in dependency on renewable energy sources to replace the Kingdom's dependency on oil products, natural gas and imported electricity.

According to the Master Strategy and the Government's approach, the changes in the energy mix can be shown in 2 main phases, which can be illustrated in the forecasts presented below for the years 2015 and 2020.



Source: Document obtained from officials at the Ministry of Energy and Mineral Resources



Source: Document obtained from officials at the Ministry of Energy and Mineral Resources

The Government, together with the NRA, is currently working on methods for the introduction of oil shale to the energy mix in Jordan in order to implement the Master Strategy and allow the contribution of oil shale to the energy mix to be 11% in 2015, rising to 14% in 2020<sup>40</sup>. The Government is currently taking three approaches to using oil shale for the generation of electricity and its contribution to the energy mix:

1. surface mining of oil shale for the production of oil;
2. utilising deep oil shale for the production of oil; and
3. direct combustion of oil shale for the generation of electricity.

The Government was able to attract many international companies with distinguished technical expertise for the surface mining of oil shale. Such companies must submit their feasibility studies prior to entering into any negotiations on the concession agreements to be granted. There are many companies who are presently preparing their feasibility studies. However, two companies have already been awarded concessions in Attarat and Allajoun, namely Jordan Oil shale Company (a special purpose vehicle owned by Enefit, an Estonian company) and Karak International Oil Company

(a company established by Oil Shale Development Limited, a Channel Island company), respectively. Currently, there is only one project for the utilisation of deep oil shale for the production of oil. Awarded to Shell Oil through a concession, the company is currently using its own technology (*in situ* conversion process) to exploit deep oil shale without actually mining it. The company began implementation of the project on 16 August 2009.<sup>41</sup>

At present, there are only two proposed projects for the generation of electricity by the direct combustion of oil shale. However, neither project has been finalised, nor any agreements signed in this respect.

Even though not explicitly stated in the Master Strategy, the Government is trying to introduce yet another element into the energy mix in order to utilise Jordan's limited resources. The introduction of nuclear energy into the energy mix dates back to 2007, the date of the establishment of the Jordan Atomic Energy Commission (JAEC). JAEC was established in order to implement peaceful uses of nuclear energy in the Kingdom.<sup>42</sup> Areva, a French company, and JAEC have formed a joint venture company which was granted a concession for the mining and exploitation of uranium. Currently, Jordan's nuclear programme is still under research, the preparation of financial and technical feasibility studies are still under preparation, and no nuclear power plants have been established as of yet.

The nuclear programme is experiencing great opposition from different sections of the Jordanian community due to the danger it may represent and its high capital cost, as well as the large amounts of water it consumes. The Government through JAEC is trying its best to market the introduction of nuclear energy into the energy mix, as Jordan is in desperate need of local sources of energy.

Despite the Government's efforts in trying to attend to the energy situation in the Kingdom, Jordan lacks expertise in areas like nuclear. However, the Government is investing great energy in trying to overcome the scarcity of technical expertise in nuclear energy and is encouraging the relevant personnel to obtain such expertise from abroad. The Government is trying to promote expertise in the nuclear field by arranging for grants to send the relevant personnel for continuing higher education and obtain Masters degrees from countries with extensive expertise such as France<sup>43</sup>. Additionally, the Government's approach is somewhat soft in trying to increase the contribution of renewable energy and local energy into the energy mix. Currently, the Government is merely promoting the use of renewables and local energy and is not enforcing any stringent rules in this regard. By way of an example, there is no law to restrict the import of bulbs which are not energy-saving.

Governments in Jordan are constantly changing and last for approximately 10-11 months in office. With the constant changes in the Government, this greatly impacts the decision-making process. This in turn affects development in many sectors like the energy sector.

Even though the Government adopted the Updated Master Strategy of 2007, with the current slow decision-making process, its soft approach to promoting local energy production, and the lack of expertise in certain areas, as well as the considerable pressures that different sections of the community are imposing on the Government, Jordan is facing many obstacles in the implementation of the Master Strategy and may be prevented from reaching its targets as set forth therein.

### **Developments in legislation or regulation**

The Kingdom does not have a single piece of legislation that deals with the energy sector as a whole, but rather a series of different legislation that deal with certain aspects of the energy sector. There are 5 main laws that deal with the energy sector, namely:

1. The Temporary Public Electricity Law No. 64 of 2002 (Electricity Law);
2. The Law for the Regulation of Natural Resources Affairs No. 12 of 1968 (NRA Law);
3. The Nuclear Energy Law No. 42 of 2007;
4. The Radiation Protection and Safety and Nuclear Security Law No. 43 of 2007 (RPSNS Law); and
5. The Renewable Energy and Energy Efficiency Law No.1 3 of 2012 (Renewable Energy Law).

Earlier in 2012, the adoption of the new Renewable Energy Law took place. The new energy law is deemed to be a step forward in the energy sector generally as it documents the Government's growth and development in the energy field. The introduction of the new law is in conformity with the Kingdom's Master Strategy as it aids and enhances the increase of renewable energy in the energy mix.

The Renewable Energy Law allows the private sector to engage directly in direct proposals. It also encourages the use of renewables by granting renewable energy projects certain exemptions such as tax exemptions.

### **Proposals for changes in laws or regulations**

Other than the enactment of the Renewable Energy Law, no recent amendments were made to any of the other energy laws.

The Ministry of Energy and Mineral Resources is presently working on a draft new energy law, to be named the Energy and Minerals Law. The Energy and Minerals Law is drafted in a way that combines the Electricity Law, the NRA Law and the RPSNS Law into one piece of legislation as well as establishing one entity for the regulation of the energy sector (The Energy and Minerals Regulatory Commission).

Additionally, the Government is currently working on a draft regulation for the Regulation of the Methods of Energy Conservation. This Regulation creates an essential feature in the energy sector as it enriches the Government's current energy conservation methods and aids the overall development of the energy sector.

### **Conclusion**

The energy sector is one of the most crucial elements of economic, social and environmental growth of the Kingdom. At present, it is greatly restricting the development of the Jordanian economy as it places a great burden on the Jordanian economy and consumes enormous amounts of funds that Jordan does not have.

Jordan lacks conventional energy resources and relies mainly on imported energy. Jordan's current energy mix comprises crude oil and its products, natural gas, renewable energy and imported electricity. The Government is currently working on the introduction of new elements in the energy mix, namely: oil shale; and nuclear energy for peaceful uses.

The Government is working to minimise the drain of the energy sector on the economy by promoting the local production of energy in order to replace the vast majority of imported energy. This strategy is extremely promising, but the implementation has been somewhat slow. The Government needs to be more affirmative and impose stricter rules, which need to be documented in the energy laws for the local production of energy and energy conservation, rather than mere promotion of the same.

With the increase in the demand for electricity and the Government's approach in overcoming the struggle imposed by the energy sector and the promotion of local production of energy, Jordan's energy sector is slowly flourishing. Therefore, the energy sector offers good investment opportunities for local and foreign investors. Jordan is in great need of local energy production in order to sustain a healthy, stable economy.

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### **Endnotes**

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