وزارة الطاقة والثروة المعدنية

Summary of Jordan Energy Strategy 2020-2030

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Introduction

"Energy is the heart of the economy. We were amongst the first countries in the region to realize the importance of gradual diversification of energy sources to protect our country against the fluctuations of global prices, thus entrench the sovereignty and stability of our economic and development decisions".

His Majesty King Abdullah II Ibn Al Hussein

Proceeding from the tasks of the Ministry of Energy and Mineral Resources posed by developing energy policies and legislation, progress is being made continuously to update and develop the sector-related strategies; the most recent of which was the Energy Sector Strategy for (2015-2025); therefore, a high committee , chaired by the Minister of Energy and Mineral Resources and the membership of a number of stakeholders from various sectors related to the energy sector was formed to enhance the value of the participatory approach towards developing Jordan Energy Strategy (2030-2020) along with providing an overview prospects through 2050 to cope with all challenges and the ever-changing developments confronting various political, economic, social, technological and environmental areas to maintain substantially of energy security, taking into account the impact and the relationship between the energy sector and other energy-intensive industries.

To achieve this goal, technical committees have been established, including all relevant stakeholders to develop a strategy technically supported and funded by the European Renewable Energy and Energy Efficiency Program (REEE II-TA) in Jordan based on previous strategies, developments, achievements and lessons learned to identify the available scenarios with the most appropriate options to develop an executive operational plan includes the projects required and implement the best alternative.

Jordan Energy Sector Achievements and Challenges up to the end of 2018

Energy Sector Achievements

The energy sector is one of the most vital sectors in the Hashemite Kingdom of Jordan due to its major impact on sustainable development and significant achievements during the past period despite the great challenges posed by lack of indigenous energy resources given the 93% of the country's dependence on imports of its total energy needs in 2018, comparing with 97% in 2014.

Over the past few years, an effective energy policy was adopted towards sustainable energy aiming at substantially in achieving energy security by diversifying energy sources and forms imported, developing and utilizing traditional and renewable local energy sources. Furthermore, it adopted liberalizing energy markets policy including oil products markets, encouraging private investment in energy infrastructure projects,

promoting regional connectivity projects by maximizing their values, and improving energy efficiency in all sectors to ensure integrative policies implemented within specific programs and mechanisms.

Electricity

The Jordanian electrical system was frequently strengthened and developed to face the electric demands and accommodate the new traditional and renewable power plants. The construction of the Green Corridor Project connecting Ma'an to El-Qatraneh perhaps is one of the most important achievements which increased the capacity of the electricity transmission from the south to the center of the Kingdom from 500 MW to 1400 MW. The Rural Electrification Program has played an important role reaching 99% of electricity coverage by developing the distribution networks and providing electricity access to most consumers covering most regions of the Kingdom.

Jordan's electrical connection with the neighboring countries has been completed and the existing interconnection lines were improved. The exchange of electricity with Egypt continued, which led to stability of Jordan's electricity, agreements were concluded to raise the export capacity of the Jericho region, negotiations on contracts to supply Iraq with electricity were made and memos were signed to connect Jordan and Egypt electrically with the GCC countries. Currently, a feasible agreement with the Saudi side was concluded on electrical connection serving both sides.

Renewable Energy & Energy Efficiency

The Ministry of Energy and Mineral Resources has succeeded in building a legislative and procedural base in renewable energy which led to a significant increase in the participation of renewable energy in the energy mix, whether by signing a number of energy purchase agreements needed by introducing Direct Proposals Schemes or the use of the solar energy to cover consumptions of different sectors using net metering and wheeling systems that led into significant rise in the contribution of renewable energy (solar and wind) in electricity generation mix to about 1130 MW by the end of 2018 rating 10.8% of the total electric power generated.

This has created a good economic mobility in the local investment sector especially where projects are located by creating hundreds of direct and indirect jobs and revitalization of supporting works of different sectors.

The Jordan Renewable Energy and Energy Efficiency Fund (JREEEF) was established by the Renewable Energy & Energy Efficiency Law, Law N. (13) of 2012.

When the Ministry of Energy and the private sector have succeeded in completing major investment projects, JREEEF has succeeded in covering the other side of small-scale projects for various sectors, which constituted an overall integrated effort in the sector, this time to include measures to improve energy efficiency, in addition to small-scale interventions for renewable energy. The Ministry's project funded by Rural Fils completed the Ministry's efforts to enhance the use of renewable energy and reduce the cost of electricity for indigent families by providing 2 kW per household of solar systems under specific conditions set to this purpose.

In parallel and in April 2018, the government has approved The National Energy Efficiency Action Plan (NEEAP)-(2020-2018), which the Ministry is implementing together with the partners as an important strategic step that includes the implementation of parallel sector plans in line with renewable energy plans, including public and private institutions. The plan aims to boost energy efficiency to achieve a 20% reduction of energy consumption by 2020 compared to the average energy consumption during 2010-2006 with mitigating greenhouse gas emissions in line with the global GHG emissions reduction.

Natural Gas

Since the commercial operation of Sheikh Sabah LNG terminal in Aqaba in July 2015, the LNG import project has contributed to achieve the strategic goal of increasing the contribution of natural gas to the overall energy mix by securing an additional source of natural gas supply for Jordan and the terminal has secured the power system with its full need of electricity ever since reaching about 88% by end of 2018.

The flow of Egyptian natural gas imports to Jordan has been resumed since September 2018 to provide additional resources of natural gas supply under agreements and MOUs by both countries. Noble Energy has signed a gas sales and purchase agreement (GSPA) with the National Electric Power Company (NEPCO) to supply Jordan with 215 (MMSCF/d) of natural gas over a -15year term starting from the date of the expected commercial supply at the beginning of 2020.

An important step for expanding the base of natural gas use in national industries was made to identify the regulatory, contractual and technical requirements to supply industries with natural gas. Exertive efforts were made to encourage industries switching to natural gas instead of using expensive fuel, in an effort from the government to increase the competitiveness of industries and reduce production costs.

The equipment associated with the extension of natural gas lines to the factory door was granted exemptions of the Investment Law No. (30) of 2014 and the special tax imposed on natural gas for industries was reduced from 16% to 7% in addition to an exemption from the special tax for the first three years starting the use of natural gas.

Oil Sector

As part of the Ministry's efforts to increase the security of energy supply, The Jordan Oil Terminals Company (JOTC), a government-owned company, was established in 2015 to manage and operate the oil storage and logistics services across Jordan. The project was carried out to build strategic storage capacities of 440,000 cubic meters (300-250 thousand tons of oil products and 8,000 tons of LPG) in the center of the Kingdom. Three LPG tanks with a capacity of 11 thousand cubic meters (6000 tons) were added alongside with building six reservoirs of crude oil and oil products storage in Aqaba, with a total capacity of 120,000 cubic meters (100,000 tons), and the construction of three spherical LPG storage tanks with a total capacity of 11,000 cubic meters (6000 tons).

Since 2013, three companies have been licensed to market oil products, which strengthened energy supply security, developed the oil products distribution market and improved services to consumers. Companies started importing part of the Kingdom›s needs of diesel by mid-2016, and gasoline 95 by end of 2016. Marketing companies were able to import all their needs of oil products starting May-2018.

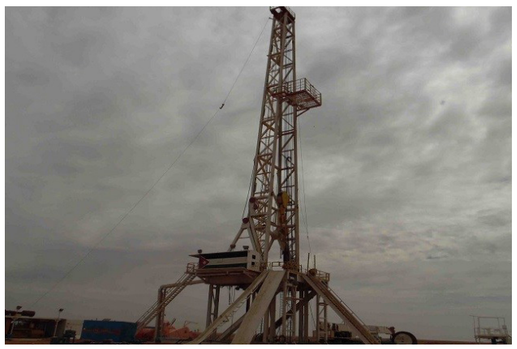
In terms of oil refining, the Jordan Petroleum Refinery Company is currently working on the Fourth Expansion Project, which aims mainly to increase the refining capacity of the Jordan Petroleum Refinery Company up to (120) thousand barrels per day (bpd), convert heavy products (fuel oil) into viable light products (gasoline and diesel) and improve the specifications of the oil products produced in the refinery to meet Jordanian and international specifications. It is planned to complete the expansion in 2023.

Congruently, at the end of 2017, significant features of the strategic project between Jordan and Iraq, namely the activities of the strategic project between Jordan and Iraq characterized by constructing an oil pipeline linking Basra to Aqaba become clearer by finalizing the Jordan-Iraq Framework Agreement Draft to sign it by both governments post obtaining the necessary approvals as appropriate.

Iraq completed the technical preparations to extend an oil pipeline to export one million barrels per day (bpd) through Jordan territories from Basra to the export ports at Aqaba. Tanks with a total capacity of 7 million barrels and a port to export oil will be built in Aqaba. It is expected that the project will benefit Jordan through providing an opportunity to supply Jordan with crude oil for domestic consumption purposes via its territory under purchase contracts signed between the competent authorities of the two countries, in addition to the transit fees costs met by the Iraqi side due to transporting Iraqi crude oil through Jordanian territory during the -25year project agreement period starting the project operation alongside with creating direct and indirect job opportunities during the period of the project construction and operation.

Oil & Gas Exploration

The National Petroleum Company (NPC) has increased natural gas production from the Risha gas field by expanding exploration operations in its concession area. An ambitious action plan adopted in 2019 enabled The National Petroleum Company (NPC) to increase the rates of natural gas production to 16 (MMSCF/d) by mid-2019 compared to about 9 (MMSCF/d) in 2018.



The Ministry of Energy and Mineral Resources is also focusing on developing Hamza oil field production and technical maintenance of existing wells.

As for marketing of open exploration areas, expressions of interests of oil and gas exploration were submitted in six open areas by end of October 2017, including Es-Sarhan, El-Azraq, West Safawi, the Northern Highlands, El-Jafr and the Dead Sea, beside the recent opening of the Es-Sarhan Development Zone for exploration. Meanwhile, companies interested still have the possibility to submit their requests.

Oil Shale

Ministry has supported four companies incessantly for signing concession agreements to implement projects of oil shale mining by using various technologies of surface retorting or thermal injections for oil production.

In addition to the aforesaid areas, the Ministry decided to divide the areas of oil shale in Jordan into 21 newly explored open areas for investment purposes. The open areas were categorized based on quantity and quality of the ore to motivate new investing companies and promote feasibility.

Currently, a direct combustion of oil shale project for electricity generation with a capacity of 470 MW to be operative in 2020.

Annex 1 includes energy performance indicators until the end of 2018.

Challenges of the Energy Sector

Despite the great achievements made by the energy sector over the past few years, the sector has faced and is facing various challenges, the most important of which can be summarized as follows:

Oil & Gas

The Kingdom highly depends on imports to cover its needs of primary energy sources such as oil and gas. The regional events have contributed recently in creating disruptions causing high prices. The sector faced two tough and terrible experiences in power supply; the first of which was Jordan stopping to import Iraqi oil at preferential prices post 2003, the other fluctuating and interruption of the Egyptian natural gas supply during (2011-2018).

Exploration of Oil & Gas

The exploration of oil and gas in Jordan is not very much on track, mainly due to the lack of allocated amount of money in the government budgets needed to facilitate exploring the promising oil and gas fields.

In addition, the insufficient seismic studies and surveys on open oil and gas exploration areas made it difficult to attract investment due to the scarcity of financial allocations.

Utilization of Oil Shale

The most important challenges facing investment in the oil shale retorting can be summarized in the high cost of shale oil production compared to the conventional oil prices, the difficulty of securing the large financial close for the retorting projects, and the technical difficulties facing the retorting projects due to the dependence of the retorting technologies on the quality of the oil shale.

The main challenge facing the oil shale direct firing power projects is the high cost of electricity generation out of oil shale compared to further generation methods.

Electricity

Jordan›s electricity sector has been characterized over the past few decades by the stability of its technical performance. Jordan power system is one of the best electrical systems in the region and operates within the best technical standards, but the sector in the past few years is recently facing major financial challenges, most notably the financial challenge faced by the National Electricity Power Company post exceeding (5) billion dinars of accumulated debts due to Egyptian gas interruption during (2011-2015) and the use of other types of fuel in light of the high prices of oil in same period without affecting the consumers.

The recent drop in electricity demand due to consumer-owned renewable energy projects, the expansion of the use of energy efficiency devices, the slowdown in economic growth has decelerated the growth of electricity loads as expected, and the rise in fuel prices has led to a rise in electricity tariffs on most consumer categories, especially the productive sectors, which resulted in large consumers to exit the grid and a dramatic decline in the electricity tariff revenues.

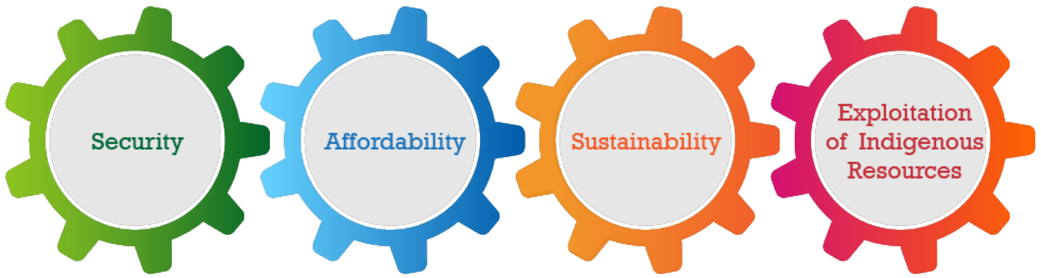
The significant increase in the contribution of renewable energy sources to the electric power mix in a relatively short time has also created several technical and financial challenges, the most important of which is the difficulty of operating the power system in line with the optimal economic and technical model and the exhaustion of the available capacities in transmission and distribution networks along with the rise in electricity loss in distribution networks, of which a non-technical loss constitutes a large ratio.

Improve the Use of Energy Efficiency

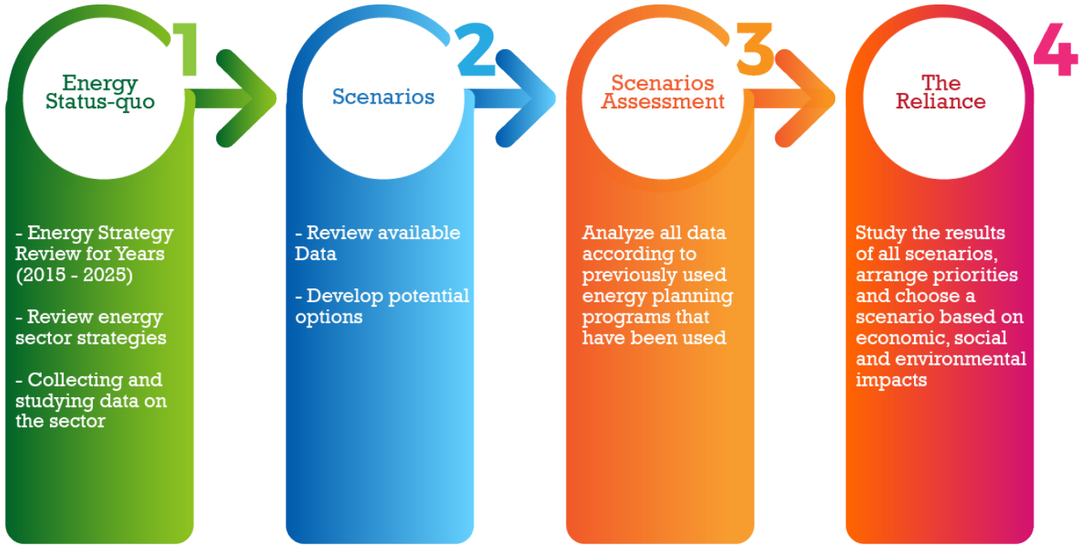
The lack of sufficient awareness among consumers of the means available to improve energy efficiency and its financial returns is one of the major challenges thereon. However, the demand is still below the expected rates despite the provision of numerous incentives for various sectors to implement and improve energy efficiency measures. In addition, there is no inclusive vision for integrative planning between all sectors to improve energy efficiency, such as the lack of public transport required to encourage citizens to use instead of individual modes of transportation alongside with the high loss in the transport networks and circulation of water systems, which consumes approximately 15% of the total electricity consumed in the Kingdom.

Main Pillars

The main pillars for the analysis of the Jordanian energy system are the following:



Methodology



PESTEL Analysis

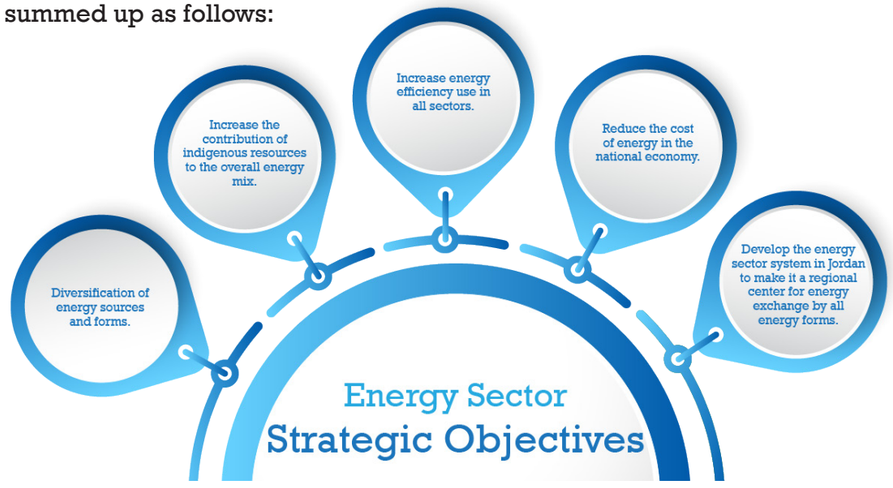
Opportunities	Threats
1.Political Variables	
Reform, openness and political stability in Jordan.	Political instability in the region.
Jordan's good relations with the neighboring countries.	The need for long-term agreements with the neighboring countries to ensure continued energy supplies.
	Political instability in the region could affect oil prices.
2. Economic Variables	
Increased partnership with the private sector.	Low economic growth.
	Rising national deficit and debts.
Grants and assistance.	The need for a balanced budget for the National Electric Power Company to maintain the low electricity tariff.
	The mutual relationship between energy cost and economic growth requires lower energy prices to enhance economic growth.
3. Socio Variables	
Competencies availability in different disciplines.	High rates of population growth.
Youth is the majority of the population, making it possible to promote energy efficiency and the environment protection.	Influx of Syrian refugees.
	The majority of households have low incomes and are more vulnerable to rising energy prices.
4. Technological Variables	
Large turnout towards the renewable energy projects RES.	
Technological development in energy applications (renewable energy, storage).	
5. Environment Variables	
Effective environmental laws and compliance with the international agreements.	Need to use desalination plants.
	PV panels show low performance due to dust storms even if solar radiation is excellent.
	The sulfur content of Jordan Petroleum Refinery Company products (Gasoline and diesel) exceeds international standards.
6. Legislations and Laws	
Laws aimed at activating partnership with the private sector.	
Update sector-related laws and legislations.	

The Vision and the Strategic Goals

The Vision: Achieving a secure sustainable supply of energy and optimal utilization of natural resources.

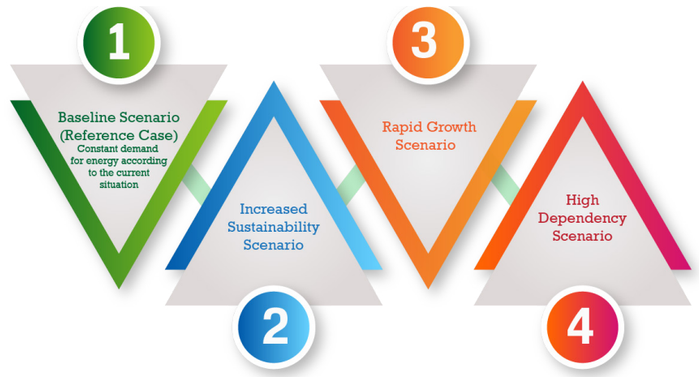
To meet the changes of the external environment studied, the challenges of the high dependency on imports, the high annual costs of energy imports and the high intensity of energy consumption; the National Objectives that the Ministry contributes to achieve based on the Jordan 2025 Vision Document and Jordan plan outlining government's priorities towards 2020 "Road to Renaissance" (following the renaissance lead) for the two years (2019-2020) in line with (the rule of law, production and symbiosis), were outlined as follows:

To achieve the National Objectives, the Strategic Objectives of the Energy Sector have been summed up as follows:



Scenario-Modelling and Study of Alternatives

In order to achieve the Strategic Objectives of the Energy Sector and to meet the challenges, four energy demand scenarios were studied to reach more accurate and closer results and recommendations to simulate reality using specialized programs as follows:



First Scenario: Baseline Scenario (Reference Case)
(constant demand for energy according to the current situation)

The analysis comprises current trends of energy demand, taking into account all the projects and contracts committed by the government.

Second Scenario: Increased Sustainability Scenario

The analysis assumes the commitments to the National Energy Efficiency Action Plan (NEEAP), taking into account higher participation of energy applications, renewable energy technologies, counting storage, in light of Jordan›s Fourth National Communication on Climate Change.

Third Scenario: Rapid Growth Scenario

The analysis presupposes an ambitious growth to the Gross Domestic Product (GDP), consequently a revised scenario has been drafted and analyzed for the baseline scenario.

Fourth Scenario: High Dependency Scenario

With increased requirements concerning energy security is formulated and analyzed taking into consideration the committed projects and contracts and the current policies of MEMR, NEPCO and the other stakeholders of the Energy Sector in Jordan.

The main philosophy of this scenario is to achieve high dependency as well as maximum GHG emissions reduction through increased energy sustainability (for example, by charging electric vehicles with Renewable electricity and thus reducing emissions).

Scenario adopted by Jordan Energy Strategy for (2030-2020): High Dependency Scenario

Building upon all results to the prioritized scenarios studied to select the adopted scenario, based upon the economic, social and environmental impacts; it has been demonstrated that the high dependency scenario is the most appropriate scenario to achieve the Strategic Objectives of diversifying energy sources and forms, increasing the contribution of domestic energy sources to the overall energy mix, increasing energy efficiency of all sectors alongside with the energy costs reduction in the national economy and developing the energy sector system in Jordan to make it a regional center for energy exchange.

High Dependency Scenario Assumptions

The main assumptions for the constitution of the high dependency scenario are related to the following parameters:

1. The dependency of GDP growth based on the current situation.
2. The contracted projects of renewable energy.
3. The National Energy Efficiency Action Plan (NEEAP) to reduce the final energy demand Improve energy efficiency in the water sector by 15% up to 2025 counting the year 2018 as the base year.
4. Oil quantities planned to be produced from oil shale retorting projects.
5. Increase the production of Risha gas field.
6. Technical parameters for operating the power system based on the plans and agreements committed by the National Electric Power Company (NEPCO).
7. Increase transport sector dependency on compressed

Primary Energy Demand Forecasts of the High Dependency Scenario

Table -1-

Primary Energy Demand Forecast for (2020-2030)

Year	Primary Energy Demand (Overall domestic consumption) (toe)
2020	10,039
2021	10,267
2022	10,420
2023	10,595
2024	10,668
2025	10,967
2030	11,760

Figure -1-

The ratio of fuel contribution to the total primary energy mix (2030 -2020)

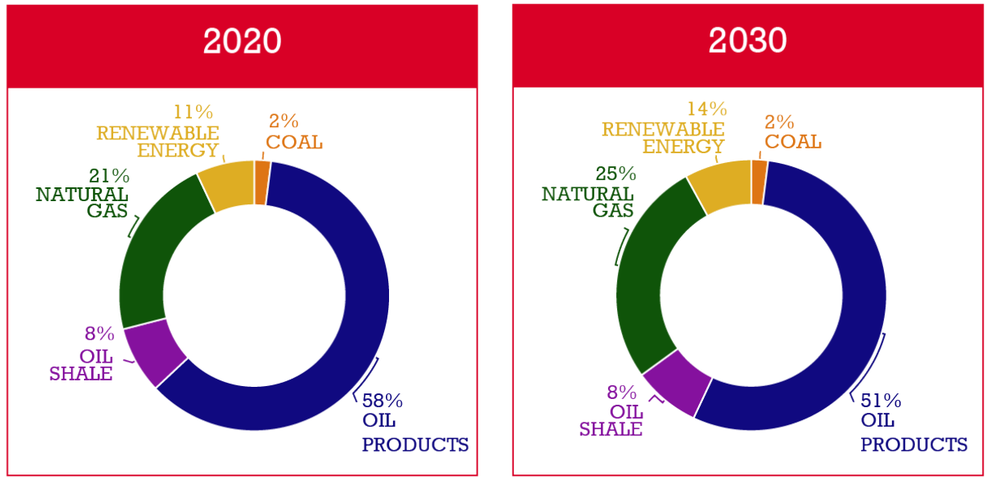


Figure -2-
The ratio of fuel contribution to the total primary energy mix

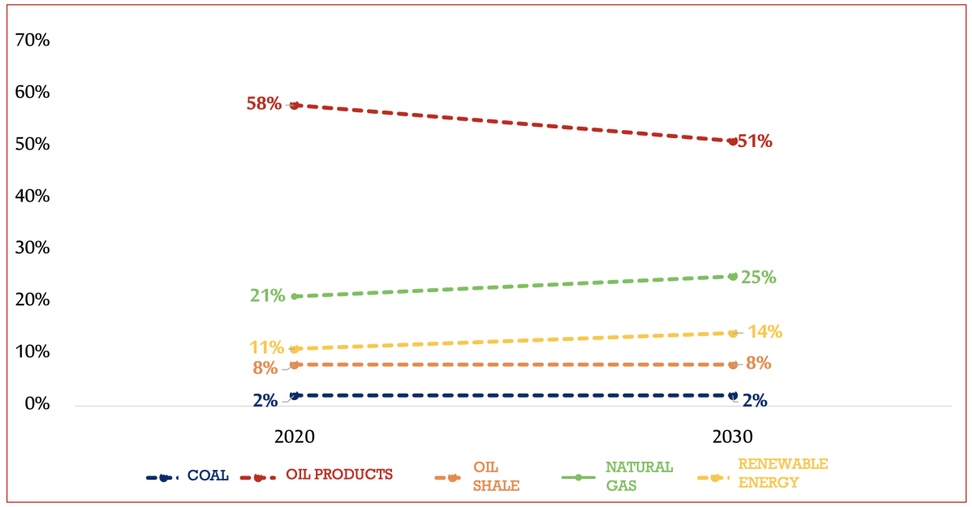


Table -2-
Electricity Demand Forecast for (2020-2030)

Year	Electricity Demand Gigawatt hour (GWh)
2020	17,672
2021	17,831
2022	17,860
2023	17,950
2024	17,958
2025	18,686
2030	19,701

Figure -3-
The ratio of fuel contribution to the electricity generation
(2030 -2020)

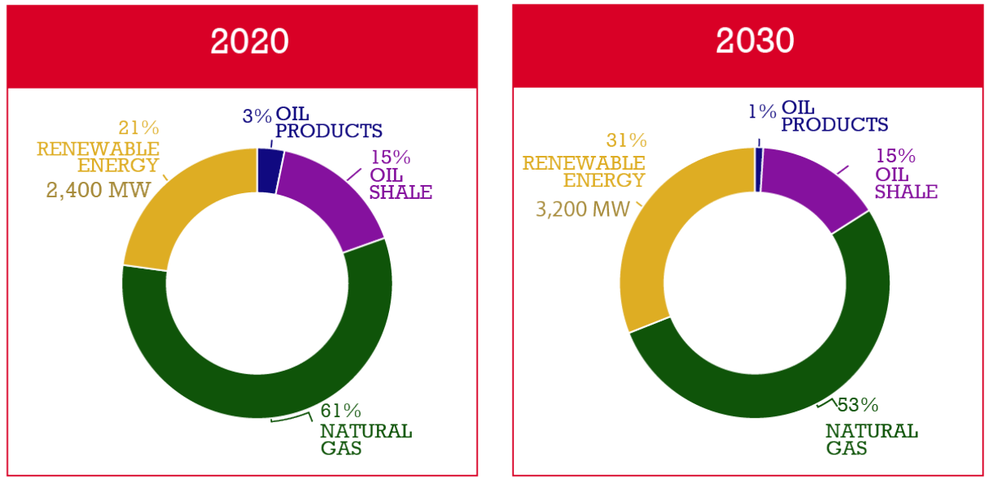
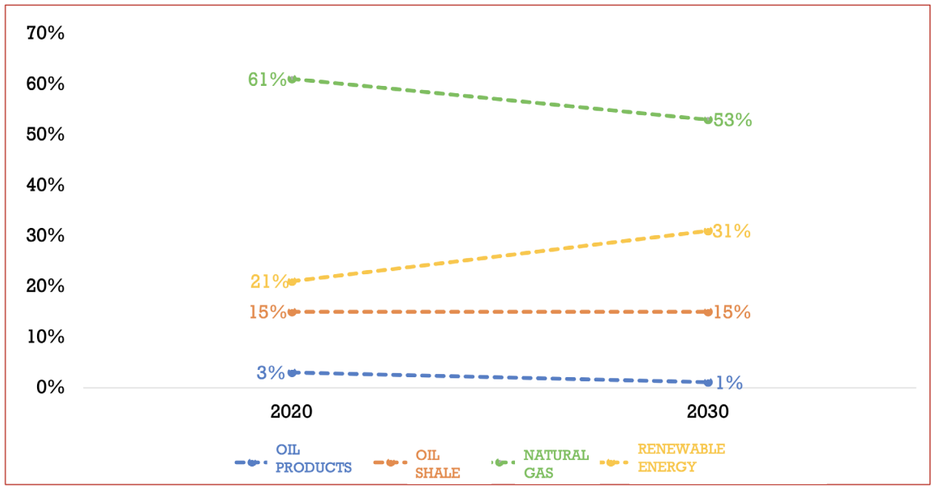


Figure -4-
The ratio of fuel contribution to the electricity generation



Outcomes & Recommendations
High Dependency Scenario

Based on the above scenarios, Jordan Energy Strategy data presented herein has led into the following conclusions and recommendations:

Electricity

1. Diversification of power generation sources
   - 1.1. Use natural gas to generate electricity alongside with renewable energy projects and other committed projects in the Kingdom.
   - 1.2. Increase the contribution of renewable energy projects to cover the Kingdom›s electricity requirements to 2400 MW by 2020 growing to 3200 MW by 2030.

2. Enhance safety of the electricity system and upsurge system availability and reliability.
   - 2.1. Make the necessary expansions to the power system to include the generating units and enhance the transmission and distribution networks and technical specifications to the best international practices in accordance with the system's requirements.
   - 2.2. Enhance the current interconnection projects and start new projects.
   - 2.3. Introduce storage projects into the power system (batteries, water dams) to avoid the curtailment of the power generated from the renewable energy projects and sustain grid stability.
   - 2.4. Reduce the loss of the power system to keep pace with global practices.
   - 2.5. Gradual transformations into smart grid networks and complete the transformation process by the end of 2022.
   - 2.6. Boost expansion by introducing electric modes of transportation.
   - 2.7. Enhance integration between energy and water sectors to cover the water sector needs to electricity to the best alternatives and engage both sectors to develop joint ventures.

3. Sustain the financial situation of the electricity sector.
   - 3.1. Move from a single purchase model to a competitive system to improve services provided to citizens.
   - 3.2. Implement the roadmap for the financial sustainability of the electricity sector to reduce the electricity prices for consumers due to lowering electricity costs.

Oil Sector

1. Diversification of crude oil sources.
   - 1.1. Diversification of sources of crude oil imports via Aqaba terminal, land transport and the Iraqi oil pipeline.
   - 1.2. Develop oil production of Hamza Oil Field.
   - 1.3. Attract global companies to invest in oil exploration in open areas.
   - 1.4. Attract global companies to invest in oil shale retorting and exploration in open areas.
   - 1.5. Establish and construct crude oil and oil products pipelines.

2. Improve the performance of the oil sector.
   - 2.1. Open new markets for oil products.
   - 2.2. Adopt the latest international specifications of oil products to the Jordanian market requirement.
   - 2.3. Open the way for refining activity based on the principles of the market.
   - 2.4. Strengthen Jordan's role in providing logistics services for transporting oil products to and from the neighboring countries.
   - 2.5. Increase storage capacities of oil products to meet the international standards and improve the domestic logistics services.
   - 2.6. Move from a regulated market to an open market by liberalizing the prices of oil products.

Natural Gas Sector

1. Diversification of natural gas supply sources.
   - 1.1. Cover the Kingdom's natural gas needs of available natural gas supply from current sources, which cover the Kingdom›s requirements up to 2030.
   - 1.2. Develop production of Risha Gas Field.
   - 1.3. Attract international companies to invest in traditional and non-traditional gas exploration in open areas.
   - 1.4. Keep importing LNG via The Sheikh Sabah Al Ahmad Terminal in Aqaba as an option to ensure the security of energy supply, with an assessment of possible alternatives to replace the Floating Storage Regasification Unit (FSRU) with less expensive substitutes.

2. Use of natural gas in various sectors.
   - 2.1. Support and encourage the use of natural gas and compressed natural gas in the industry and transport sectors to replace oil products and mitigate gas emissions.
   - 2.2. Construct the distribution of natural gas networks in major cities.

Improve Energy Efficiency

1. Improve the use of energy efficiency in various sectors to range %9 by 2030 compared to the average energy consumption in 2018.
   - 1.1. Update and follow-up the legislations and The National Energy Efficiency Action Plans.
   - 1.2. Implement and improve energy efficiency programs in the water sector to reduce the electricity demand to %15 by 2025.
   - 1.3. Enhance and optimize public transportation, rapid Bus and railway transit systems.
   - 1.4. Improve energy efficiency of the domestic, industrial, government, commercial and service sectors.

Figure -5-
Reduce the Costs of Energy Production

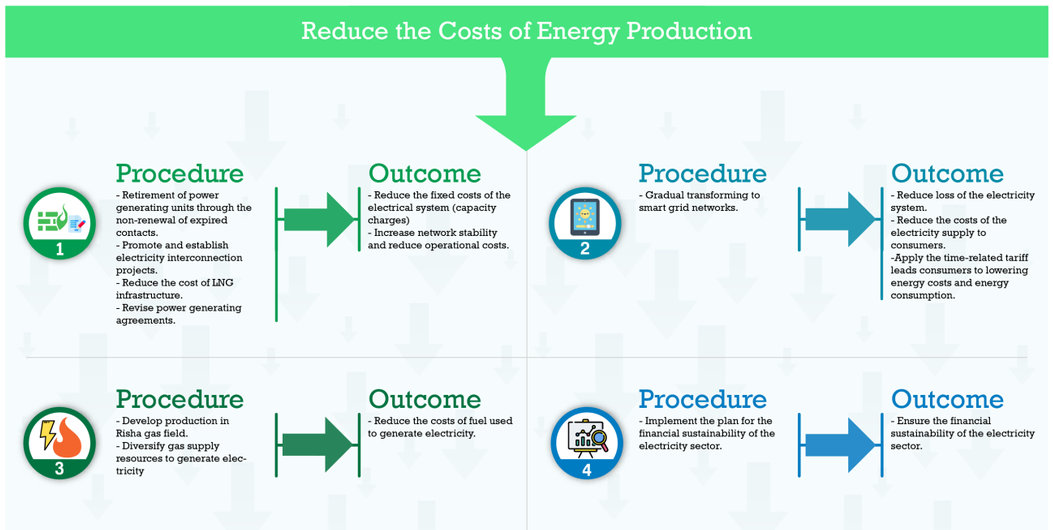
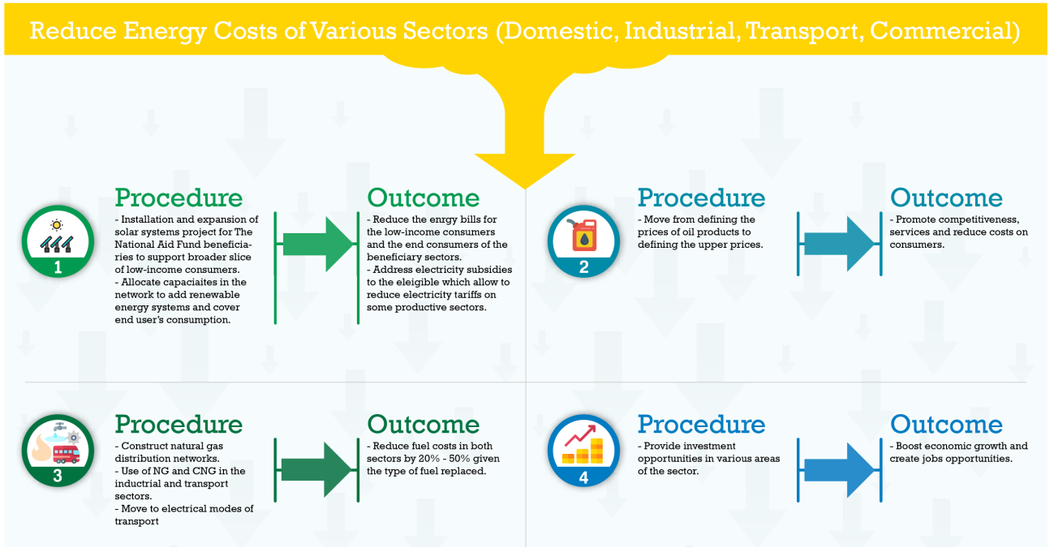


Figure -6-
Reduce Energy Costs of Various Sectors
(Domestic, Industrial, Transport, Commercial)



Annex (1)

Energy Sector
Key Performance Indicators

Energy Sector Key Performance Indicators up to the end of 2018

Item	Unit	Value
Energy Intensity	kgoe/US$1000 Fixed Price	235
Per capita energy consumption	kgoe	942
Per capita electricity consumption	kWh	1701
Electricity Generation	GWh	19755
Electricity Consumption	GWh	17532
Population access to electricity	% of Population	99
Domestic energy production (crude oil and natural gas)	1000 toe	79
Energy Imports	1000 toe	9121
Primary Energy Consumption	1000 toe	9712
Cost of Consumed Energy	million JD	3010
The Cost of Energy Consumed		
Exports	%	64.5
Imports	%	21
Gross Domestic Product	%	10

Domestic Production of Crude Oil and Natural Gas during 2018-2014

Year	Crude Oil (kt)	Natural Gas (BCF)	Contribution of Domestic Production of Oil and Natural Gas to the Overall Energy Consumption %
2014	0.8	4.6	3.0
2015	0.5	4.3	3.0
2016	0.4	4.1	5.0
2017	0.3	3.6	6.0
2018	1.0	3.3	8.0

Imports of Crude Oil, Oil Products and Coal 2018-2014 (thousand ton)

Year	Crude Oil	Fuel Oil	Liquefied Gas	Diesel	Gasoline	Avtur	Coal	Pet Coke	Total
2014	3221	1255	282	2373	552	51	474	130	8338
2015	3513	848	335	1121	670	34	230	204	6955
2016	2978	0	327	967	832	64	327	210	5705
2017	2795	0	368	1029	923	125	255	170	5665
2018	2366	0	357	1145	964	67	292	105	5296

Primary Energy Consumption during 2018-2014 (Thousand toe)

Total	Primary Energy						Year
	Crude Oil	Coal	Pet Coke	Natural Gas	Renewable Energy	Imported Electricity	
2014	7479	332	88	301	152	109	8461
2015	6331	161	165	1944	160	183	8944
2016	5327	220	182	3389	412	84	9614
2017	5671	165	148	3510	515	13	10009
2018	5242	205	92	3438	711	47	9712

Sector Distribution Ratio of Final Energy Consumption 2018-2014

Total	% Sector				Year
	Transport	Industry	Domestic	Other*	
2014	46	20	21	13	100
2015	48	17	22	13	100
2016	48	16	20	16	100
2017	49	14	23	14	100
2018	49	14	21.5	15.5	100

**Commercial, agricultural, street lights.*

Development of Oil Products Consumption 2018-2014 (Thousand Ton)

Year	Oil Products							Total
	Liquefied Gas	Gasoline	Avtur	Kerosene	Diesel	Fuel Oil	+Asphalt Other	
2014	371	1187	339	49	3274	2041	159	7420
2015	416	1319	321	91	2235	1705	185	6272
2016	433	1446	355	108	1726	606	238	4912
2017	431	1431	396	88	1859	505	226	4936
2018	429	1410	412	69	1672	*515	168	4675
Growth Rate %	-0.5	-1.5	4	-22	-10	2	-25	-5

** includes exported fuel oil.*

Growth of Electricity Production and Peak Load 2018-2014

Year	Peak Load MW	Growth Rate %	Electricity Generated GWh	Growth Rate %
2014	3020	-2.5	18704	8.4
2015	3300	9	18911	1
2016	3250	-1	19390	2.5
2017	3320	2	20760	7
2018	3205	-3.5	19755	-1.5

Sector Distribution of Electricity Consumption and Growth Rate 2018-2014 (GWh)

Year	Total	Sector					Growth Rate %
		Domestic	Industry	Commercial	Water Pumping	Street Lights	
2014	6580	3877	2358	2287	316	15418	5.9
2015	6938	4013	2460	2426	336	16173	5
2016	7448	3939	2447	2485	350	16669	3
2017	7879	3910	2510	2683	403	17504	5
2018	8038	3877	2508	2706	404	17532	0.2

Electricity Sector Consumption Ratio 2018-2014

Year	Sector%					Total
	Domestic	Industry	Commercial	Water Pumping	Street Lights	
2014	43	25	15	15	2	100
2015	43	25	15	15	2	100
2016	45	23	15	15	2	100
2017	46	22	15	15	2	100
2018	45.5	22.5	14	16	2	100

Annex (2)

The Executive Action Plan of Jordan Energy Strategy

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