

# Jordan Country Report

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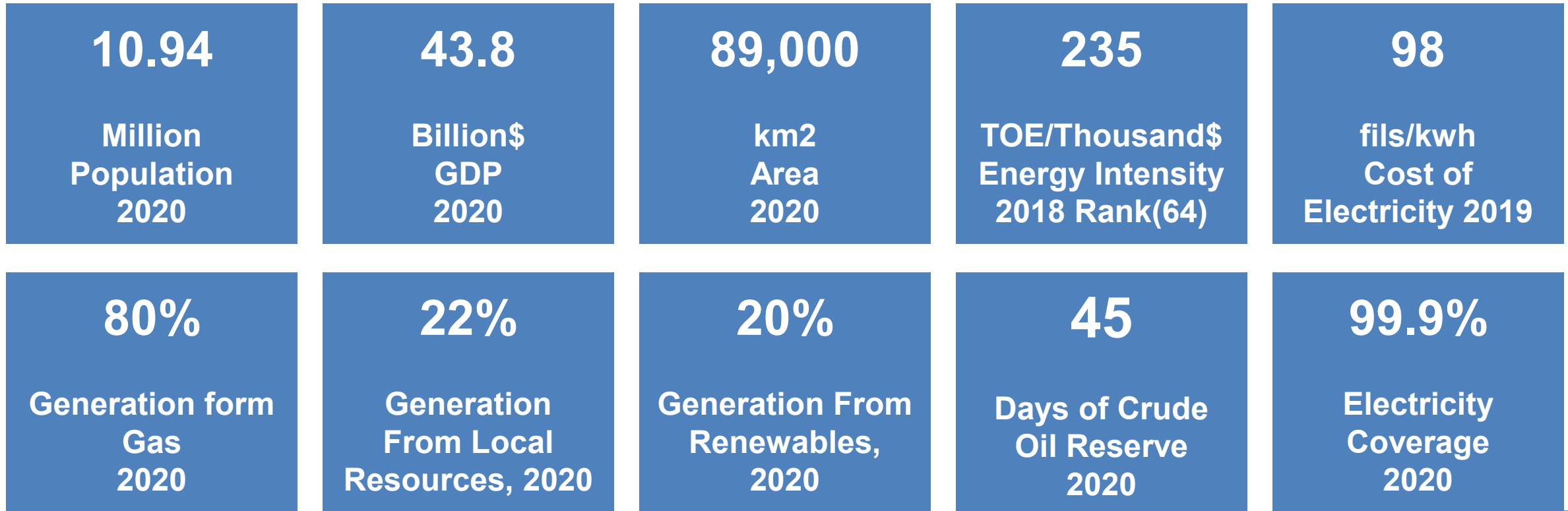
July  
2021



# About Jordan



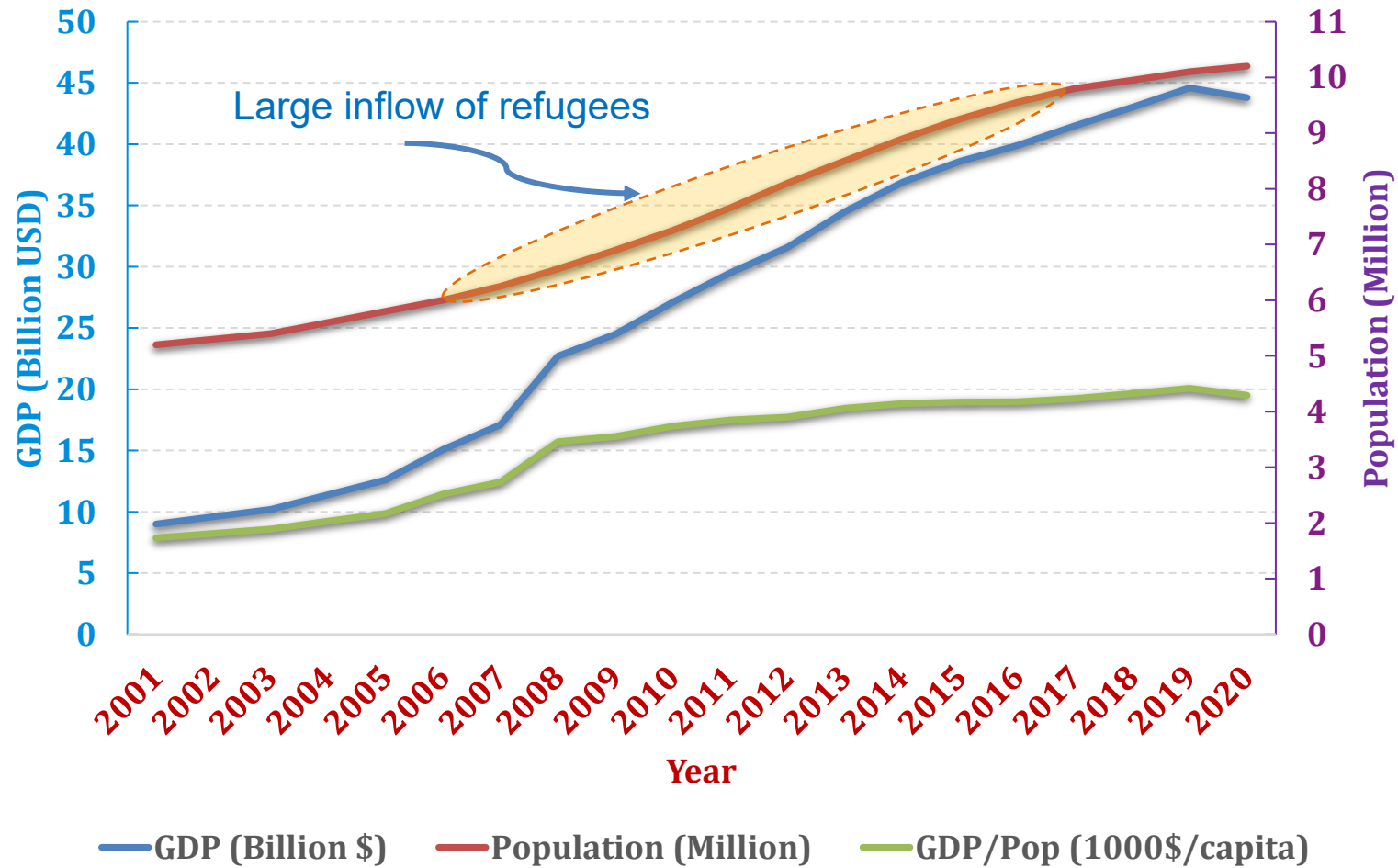
# Jordan in Numbers



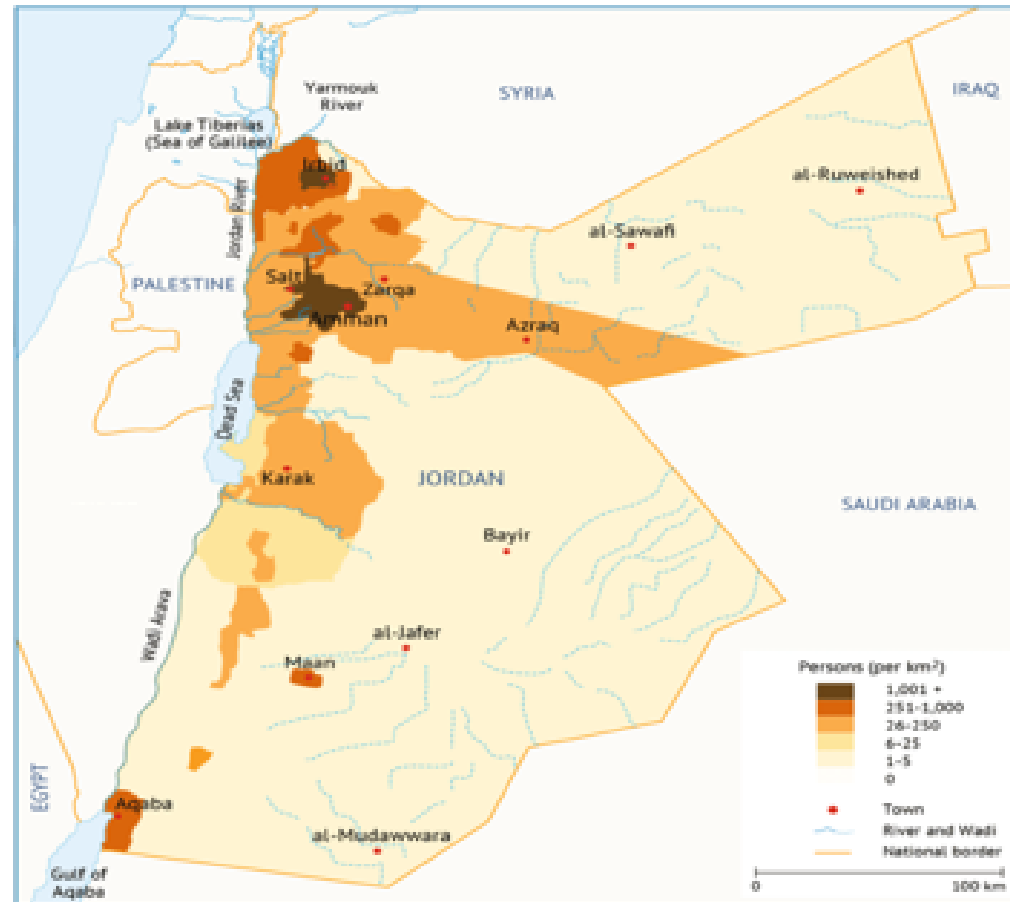
Ranked First in the deployment of renewable energy in the middle east ([Bloomberg](#))

Source: [MEMR Minerals Report](#)

# GDP, Population, and GDP/Capita



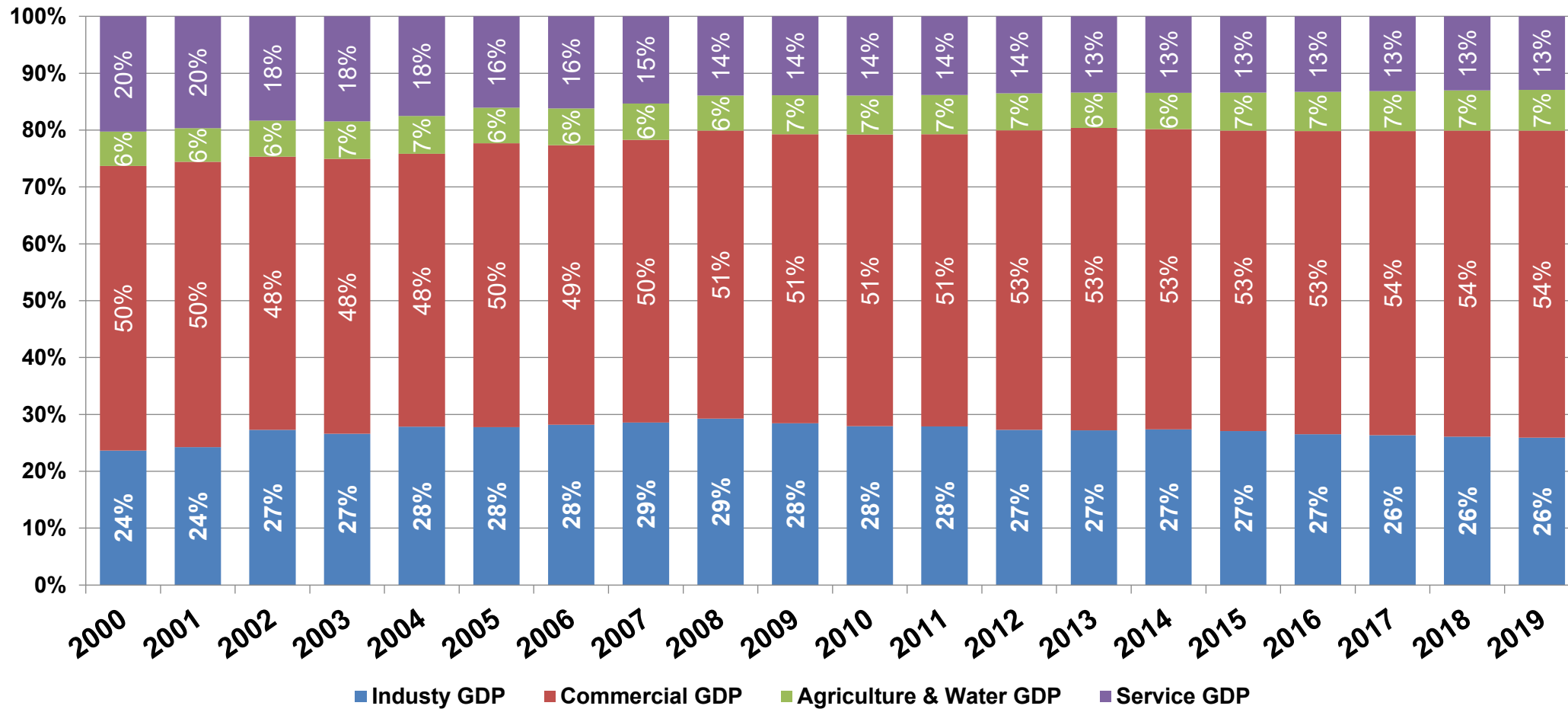
# Population Distribution in Jordan



# GDP and Population Growth

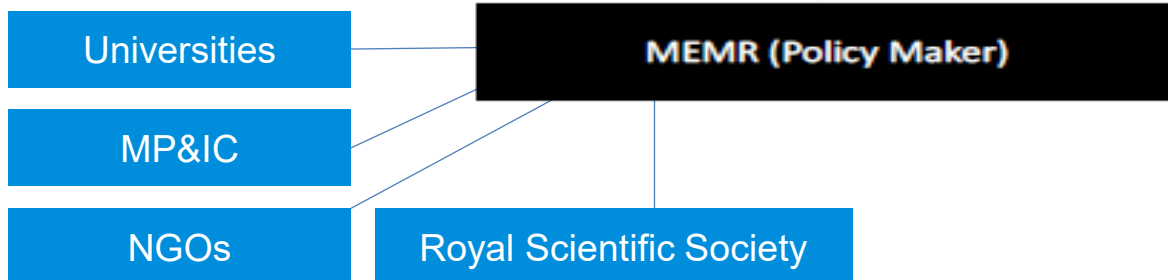
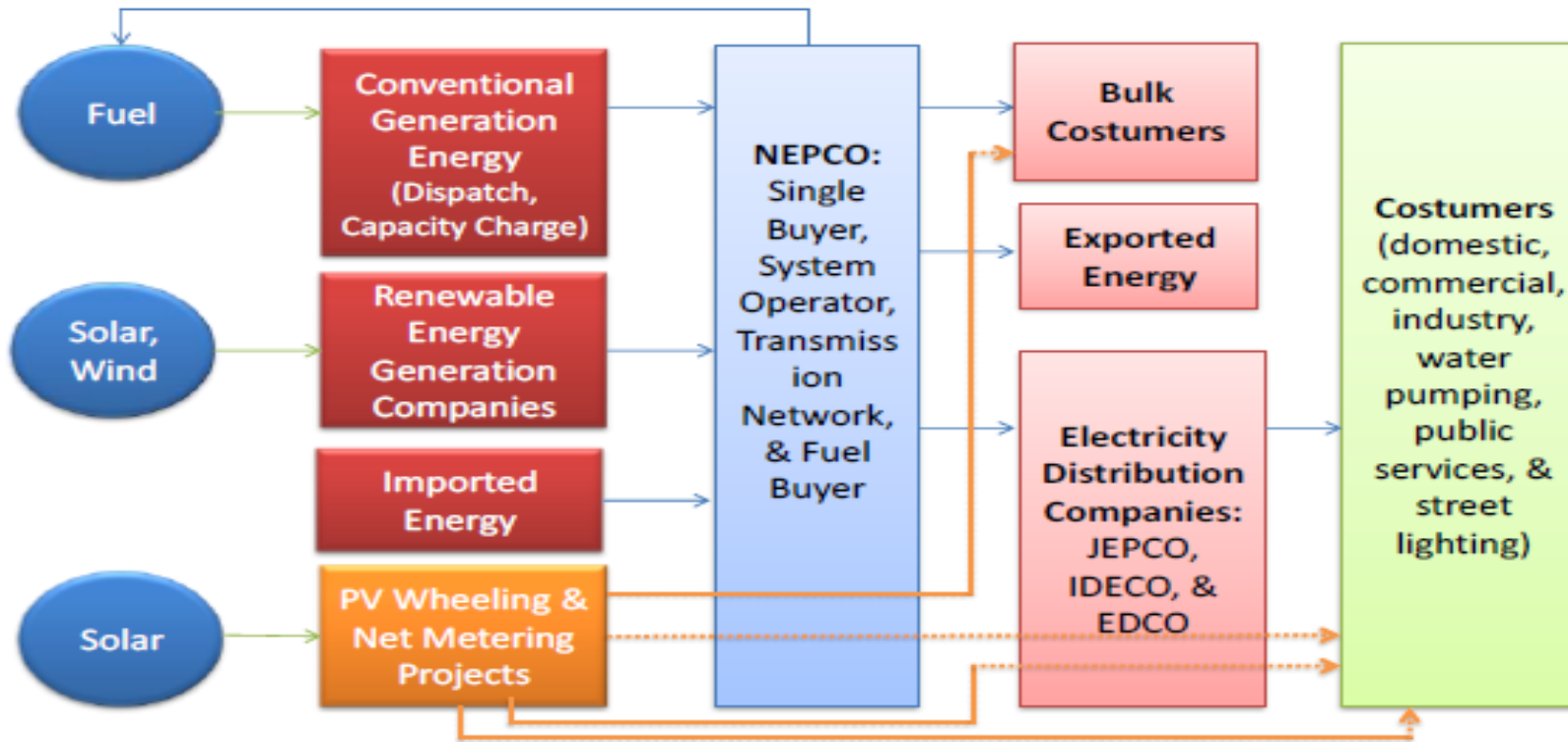


# GDP Per Sector





# Organizational Structure

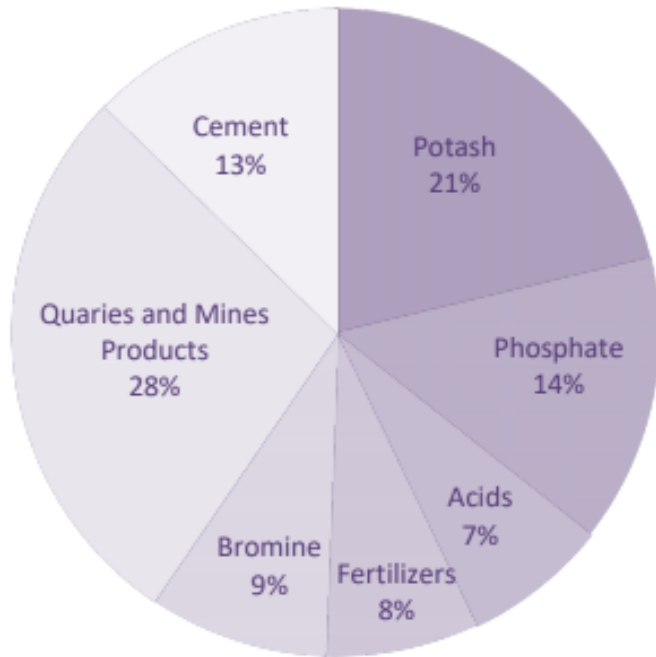




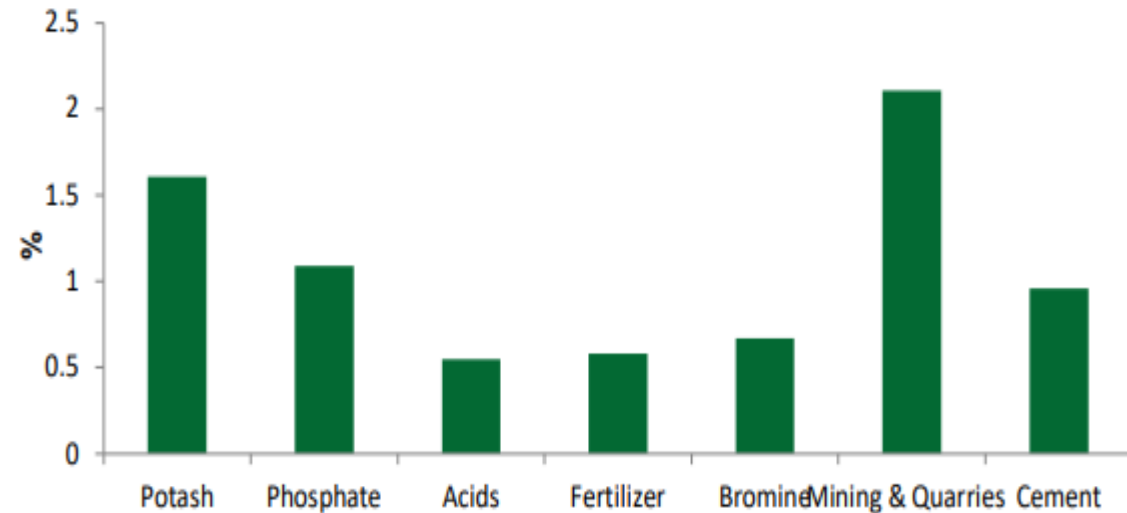
# Reserves of Mineral Resources

<b>310</b> Mt Basalt 2020	<b>1336</b> Mt Limestone 2020	<b>96</b> kt Zircon 2020	<b>&gt;20,000</b> Mt Silica Sand 2020	<b>28</b> Mt Copper 2020
<b>138</b> Mt Feldspar 2020	<b>2986</b> Mt Kaolin 2020	<b>5826</b> Mt Schalk 2020	<b>162</b> Mt Dolomite 2020	<b>2037</b> Mt Zeolite 2020

# Reserves of Mineral Resources



Mineral Products Contribution in Mining Sector during 2018



Mineral Products Contribution of GNP during 2018

# Energy Reserves: Oil Shale

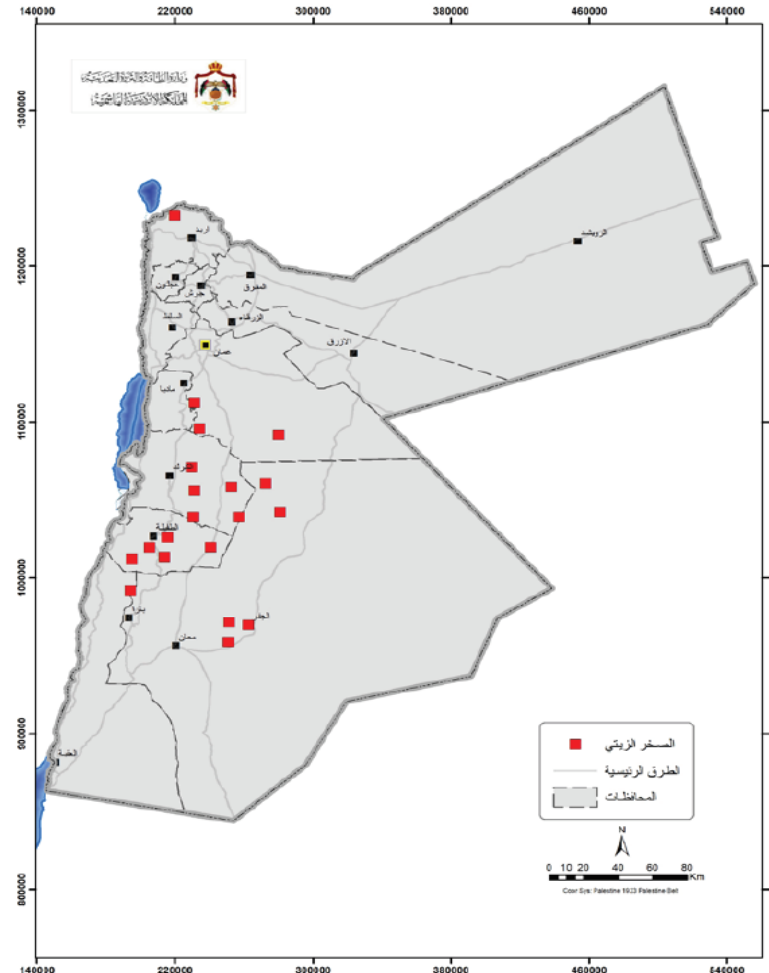
Oil Shale (red spots in first figure):

Area	Lajjun	Sultani	Jurf Ed-Darawish	Attarat Umm Ghudran	Wadi Maghar
Area (km <sup>2</sup> )	25	19.23	114.5	340	625
Oil Shale Thickness (m)	1-87	2-65	157-18	21-104	13-108
Overburden Thickness (m)	7-78	34-90	33-58	36-150	33-70
Geological Resource (million ton)	1200	1180	8000	2400	13600

**21**  
Mining  
Sites

**>26**  
Billion ton  
Reserve

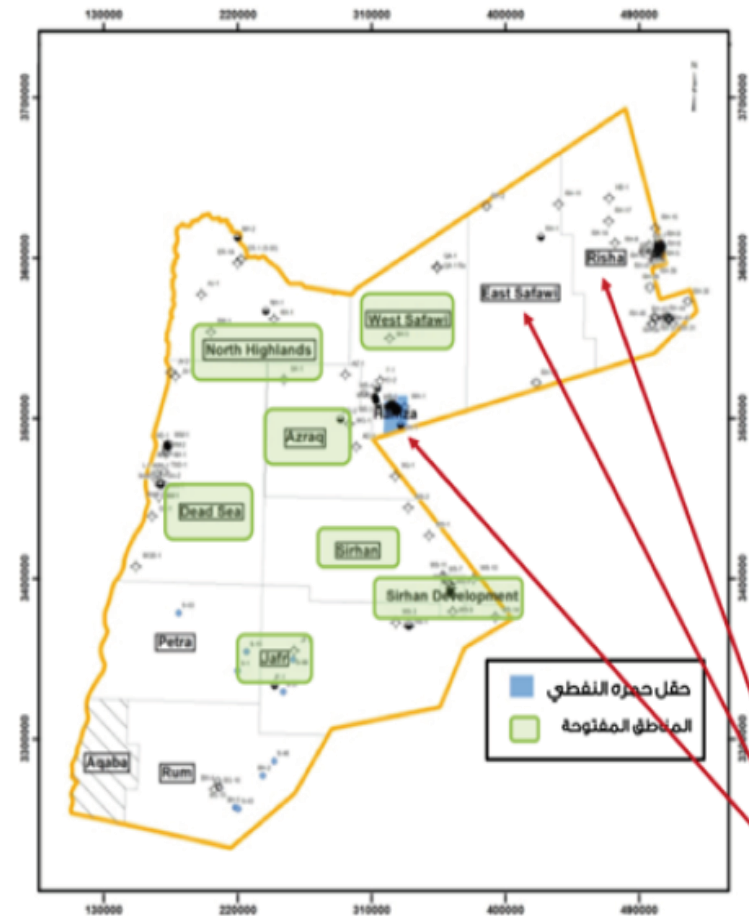
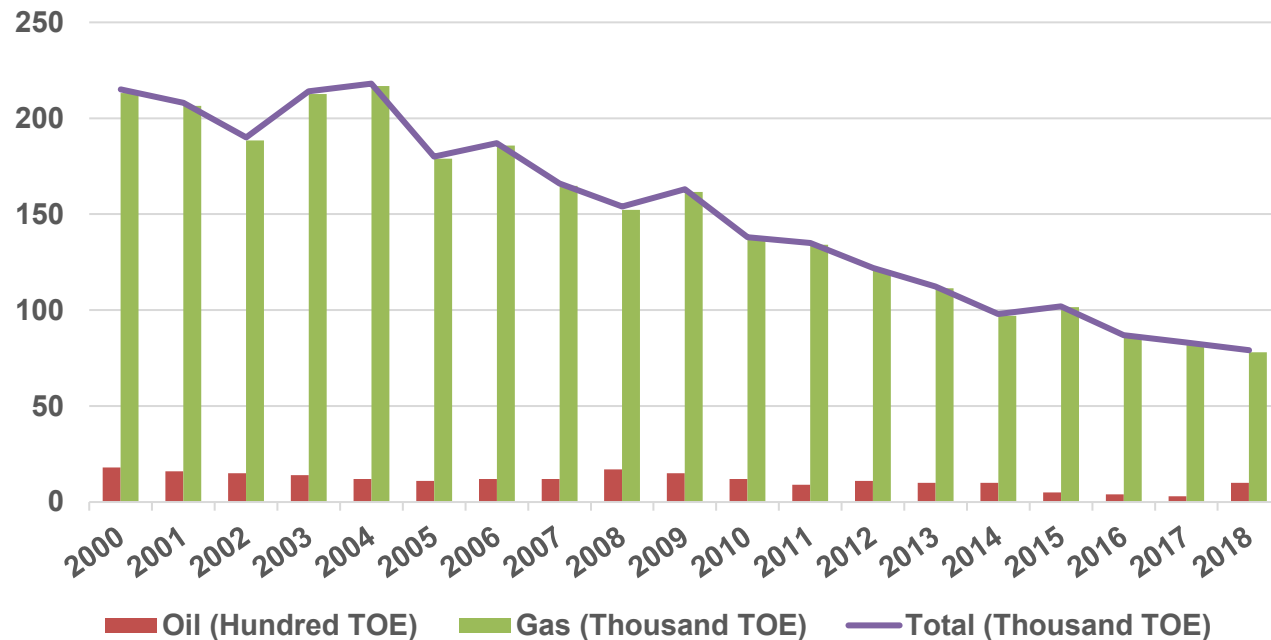
**5**  
Mining  
License



# Energy Reserves: Gas and Oil

Gas (indicated by arrows) and Oil (Blue area):

Oil and Gas Production (Thousand TOE)



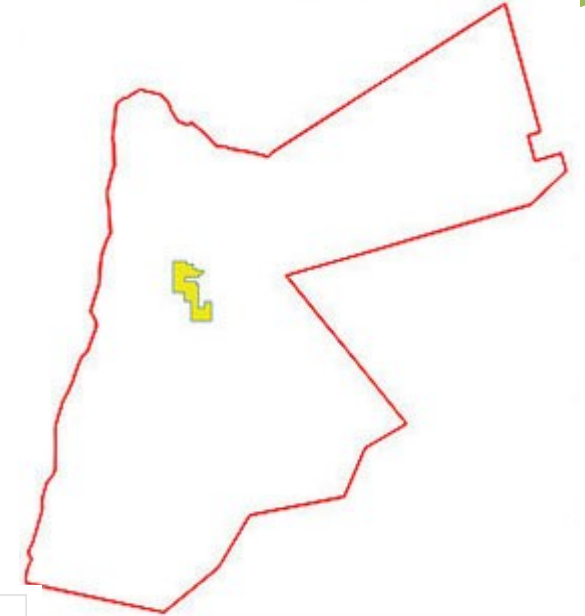
**57%**  
More Gas production 2020 compared with 2019

# Energy Reserves: Uranium

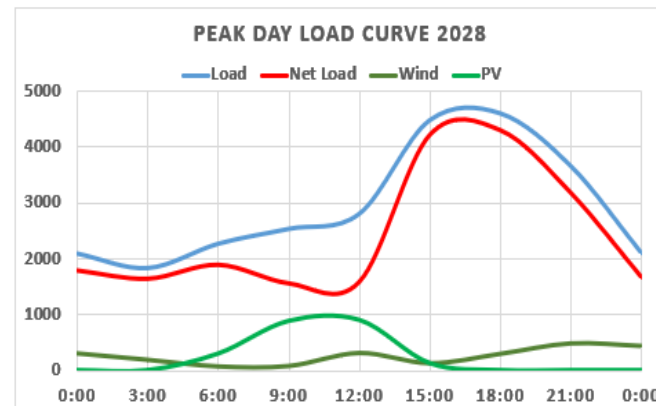
## Uranium Reserves

**36,000**  
Metric tons  
Reserve

- Research started in 1980s under Natural Resources Authority
- Jordanian Atomic Energy Commission (2008)
- Jordanian Uranium Mining Company (2013)
- Synchrotron-Light Experimental Science and Applications in The Middle East (2017)
- Jordan Research and Training Reactor (2017)



هيئة الطاقة الذرية الاردنية  
Jordanian Atomic Energy Commission



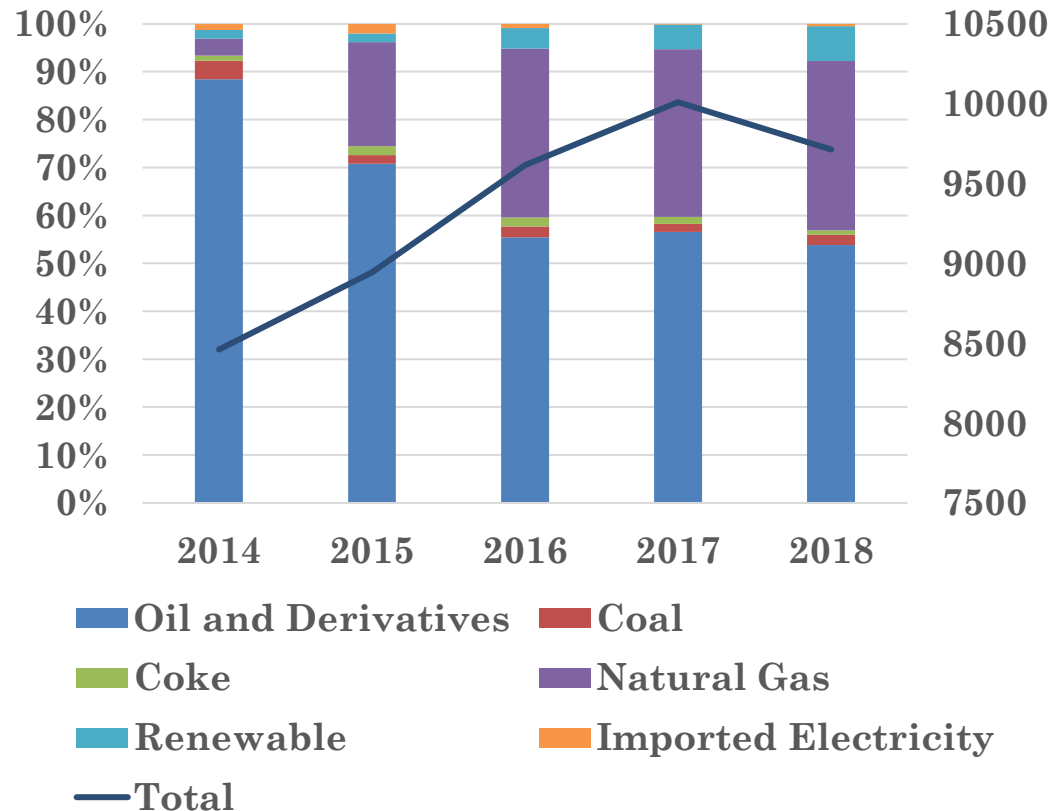
# Current Situation and History

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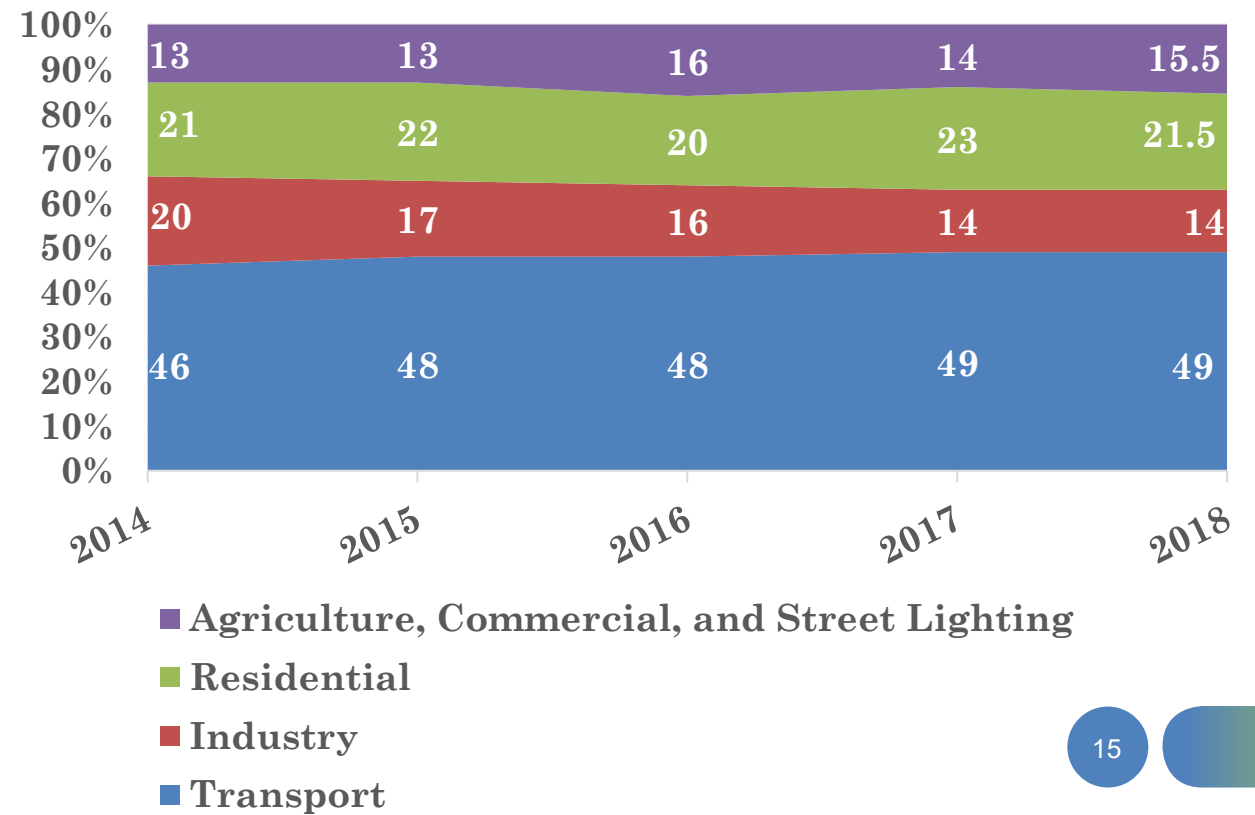


# Primary Energy Consumption

## Primary Energy By Type



## Primary Energy Consumption Per Sector





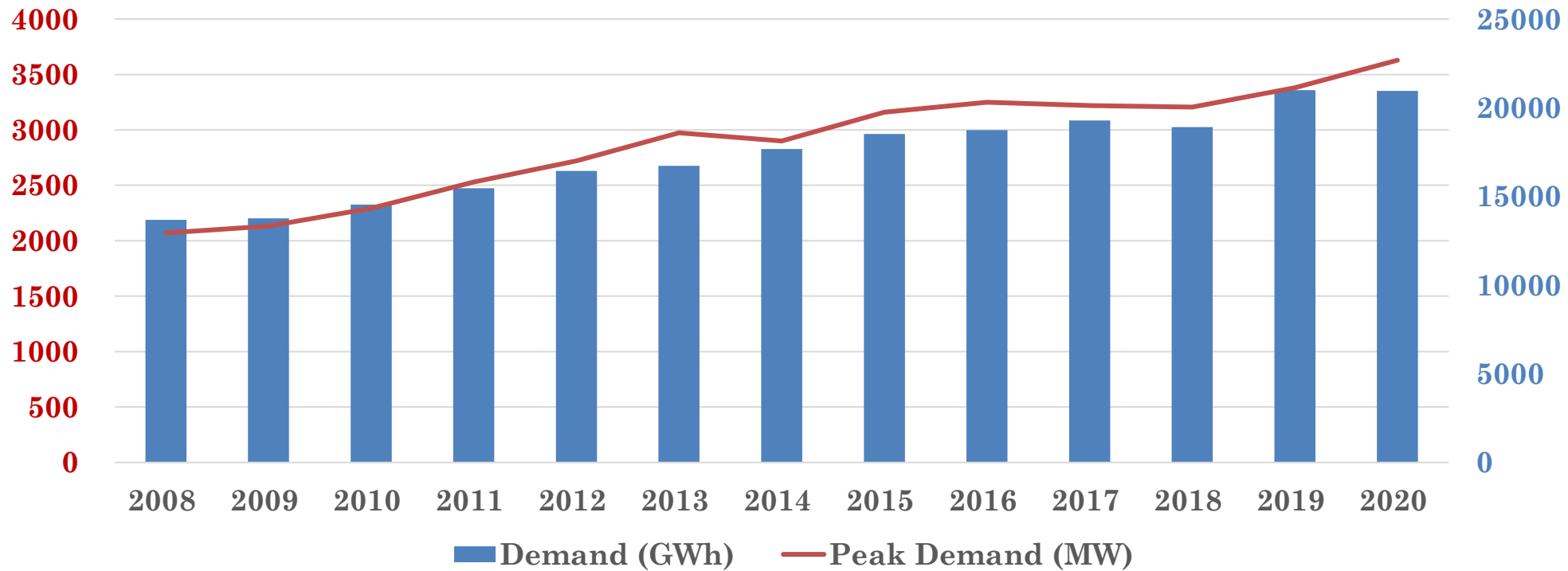
# Sample of Energy Balance Sheet

Jordan Energy Balance 2018 (000TOE)

Sector	Crude Oil	Fuel Oil	Diesel	Gasoline	LPG	Kerosene	Jet Fuel	Pet Coke	Other	Total Oil	Coal	L Coke	N. gas	Electricity	Solar Energy	Bio Mass	Total Energy
Indigenous Production	1.0									1.0			77.9	443.1	214.0	54.0	790.0
Imports	2412.8	0.0	1184.7	1031.0	403.5	40.2	71.7	91.5	6.3	5241.8	162.4	42.8	3608.8	47.4		17.5	9120.8
Exports										0.0			-249.1	-23.5			-272.7
Bunkers		0.0	-4.2				-51.3			-55.5							-55.5
Stock Changes	-11.1	2.2	31.3	56.1	6.8	31.9	12.5		-0.6	129.1							129.1
Primary Energy Supply	2402.7	2.2	1211.9	1087.2	410.3	72.1	32.9	91.5	5.7	5316.3	162.4	42.8	3437.6	467.0	214.0	71.6	9711.8
Oil Sector	-2402.7	439.5	764.1	517.2	73.6	-10.7	329.6		162.6	-126.8							-126.8
Electricity		-120.0	-4.2							-124.2			-3437.6	1694.0			-1867.8
Transp. & Dist. Losses														-229.5			-229.5
Cons. Energy Supply		-155.3	0.00						-41.8	-197.1				-33.44			-230.5
Final Energy Consump.	0.0	166.4	1971.8	1604.3	483.9	61.4	362.4	91.5	126.5	4868.2	162.4	42.8	0.0	1507.7	214.0	71.6	6866.8
Industry		152.0	159.9		11.5			91.5		414.9	162.4	42.8	0.0	333.4			953.5
Transport		6.0	1382.0	1613.0			362.4			3363.4							3363.4
Household			117.9		378.6	61.4				557.9				691.2	160.8	53.6	1463.5
Services			88.5		72.6					161.1				215.6	53.2	18.0	448.0
Others			242.8	0.8	21.3					264.8				267.5			532.3
Non-Energy use									126.5	126.5							126.5
Statistical Differences	0.0	8.4	-19.2	-9.5	0.0	0.0	0.0	0.0	0.0	-20.4	0.0	0.0	0.0	0.0	0.0	0.0	-20.3

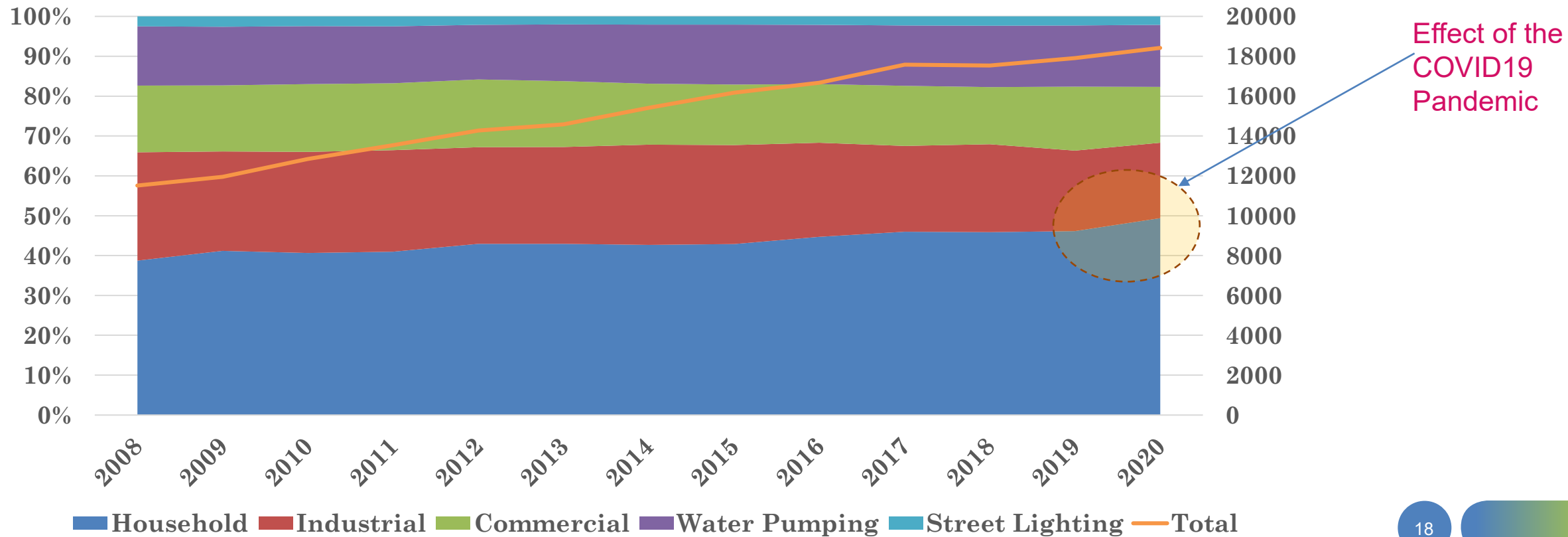
# Energy and Peak Electricity Demand

Peak Electricity Demand and Energy Demand History



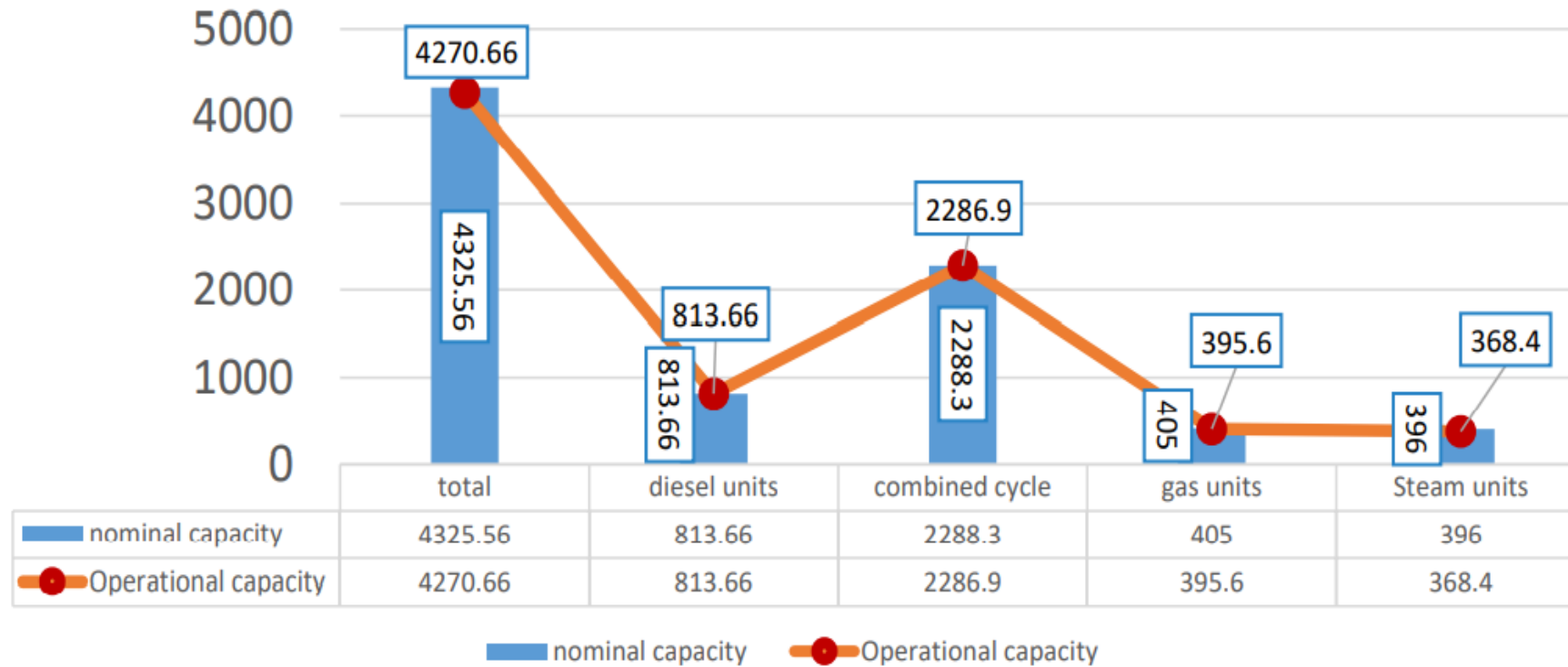
# Electricity Consumption Per Sector

Electricity Consumption Per Sector

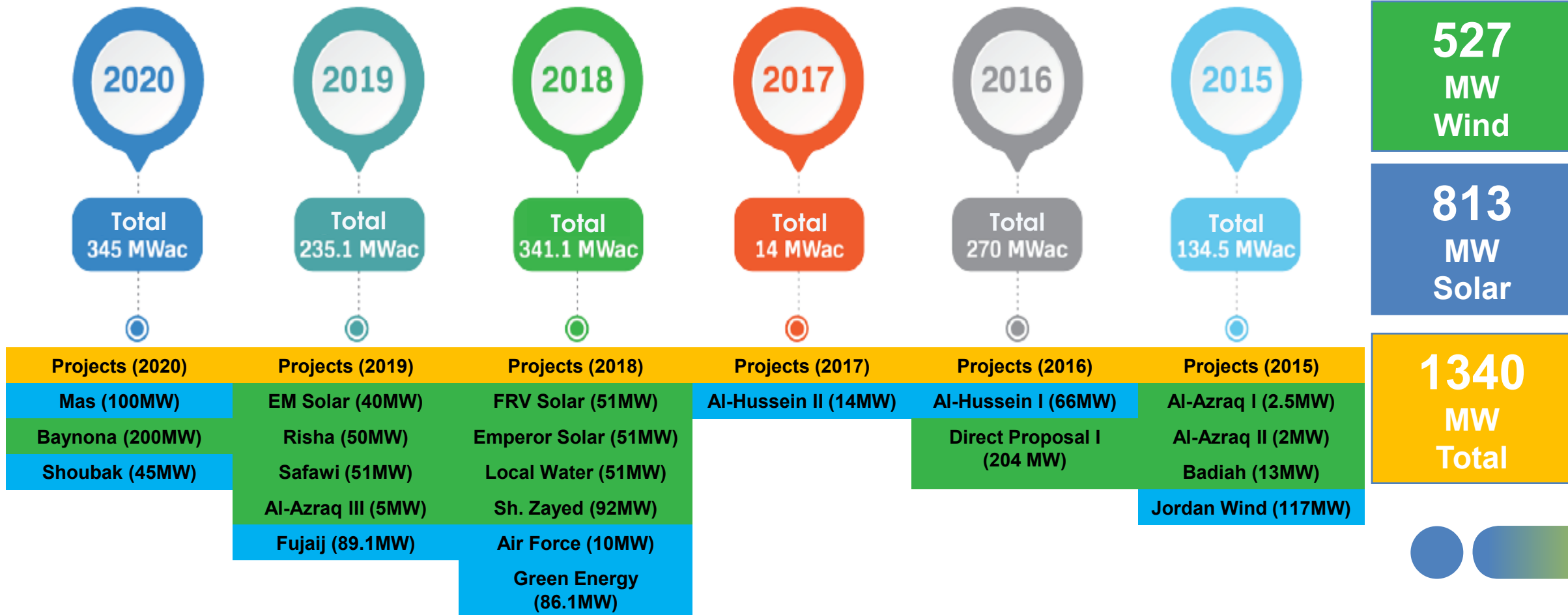


# Conventional Power Generation

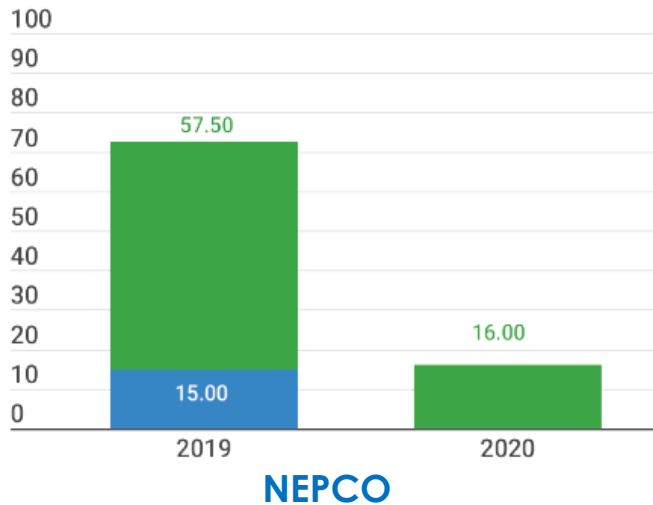
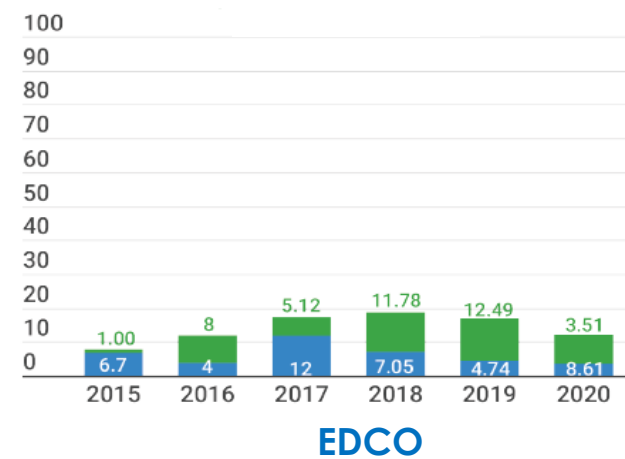
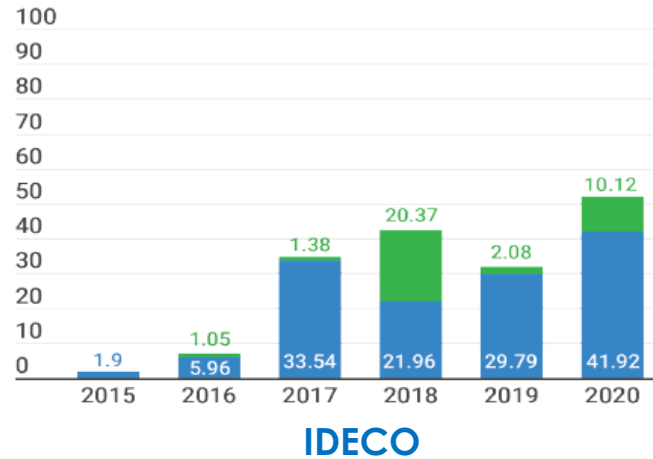
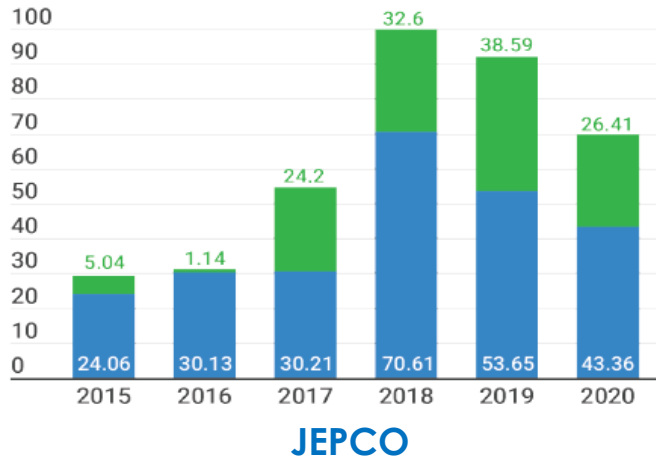
Nominal and operational capacity (MW) for power plants



# Large-Scale Commercial Renewable Power Generation Projects



# Small-Scale Renewable Energy Projects



- Total Installed Capacity of RE reached **2063MW** at both consumer side and grid side in **2020**
- Total number of systems at consumer side reached **24,458** in **2020**

**445.2**  
MW  
Net Metering

**278.4**  
MW  
Wheeling

**723.6**  
MW  
Total

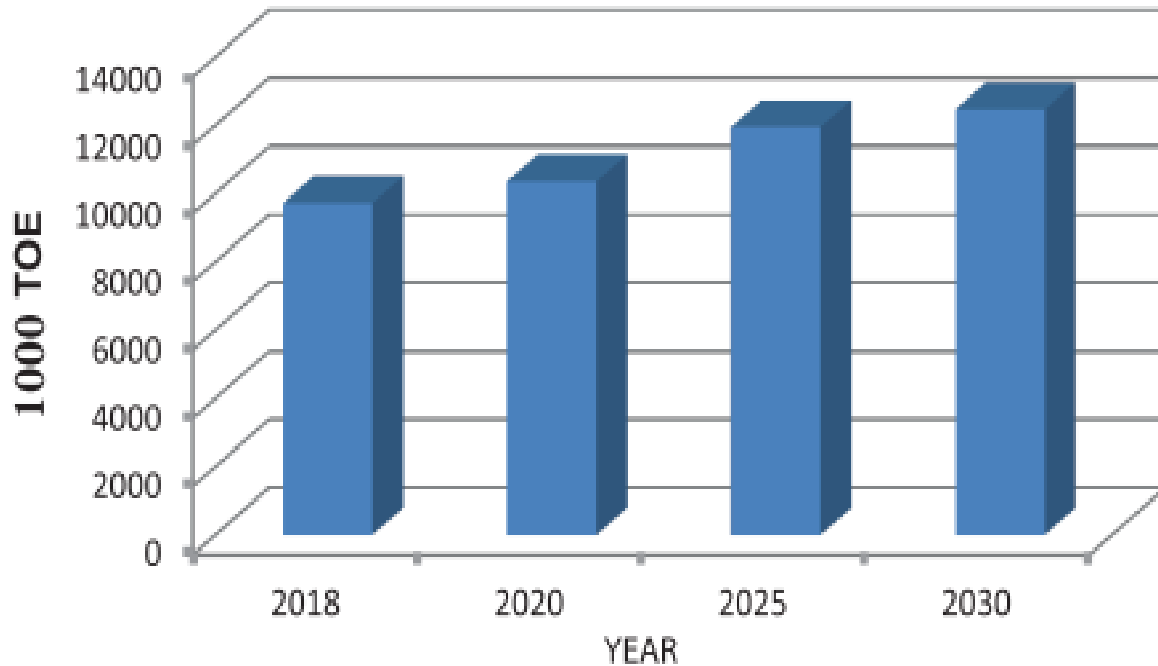
# Forecasts



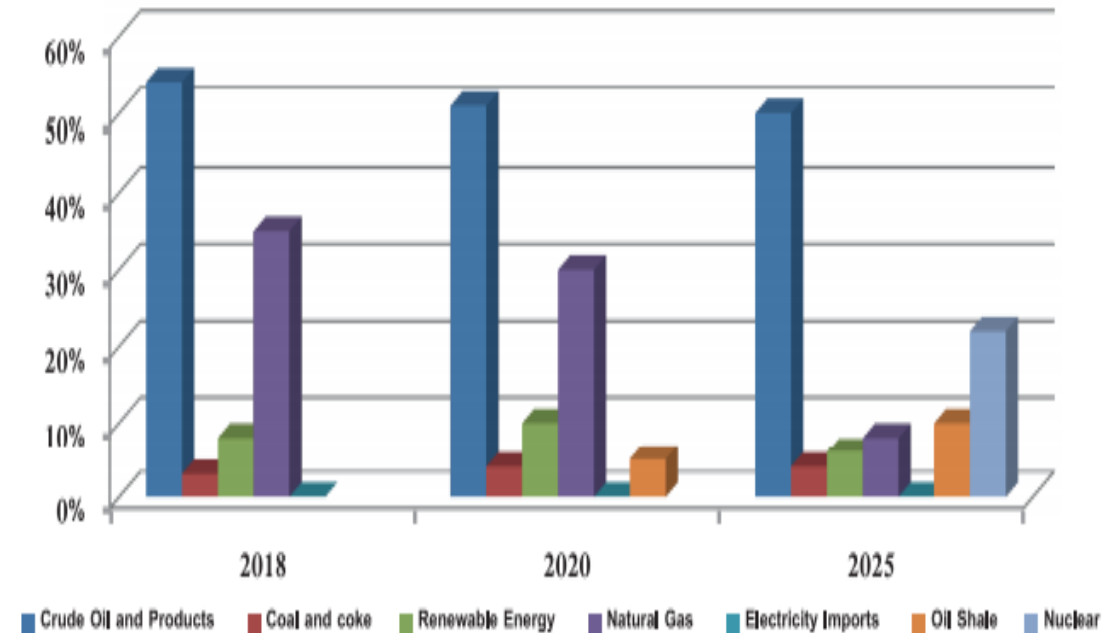


# Primary Energy Demand Forecast for 2018 (Under Revision)

Primary Energy Demand Forecast (2018-2030)

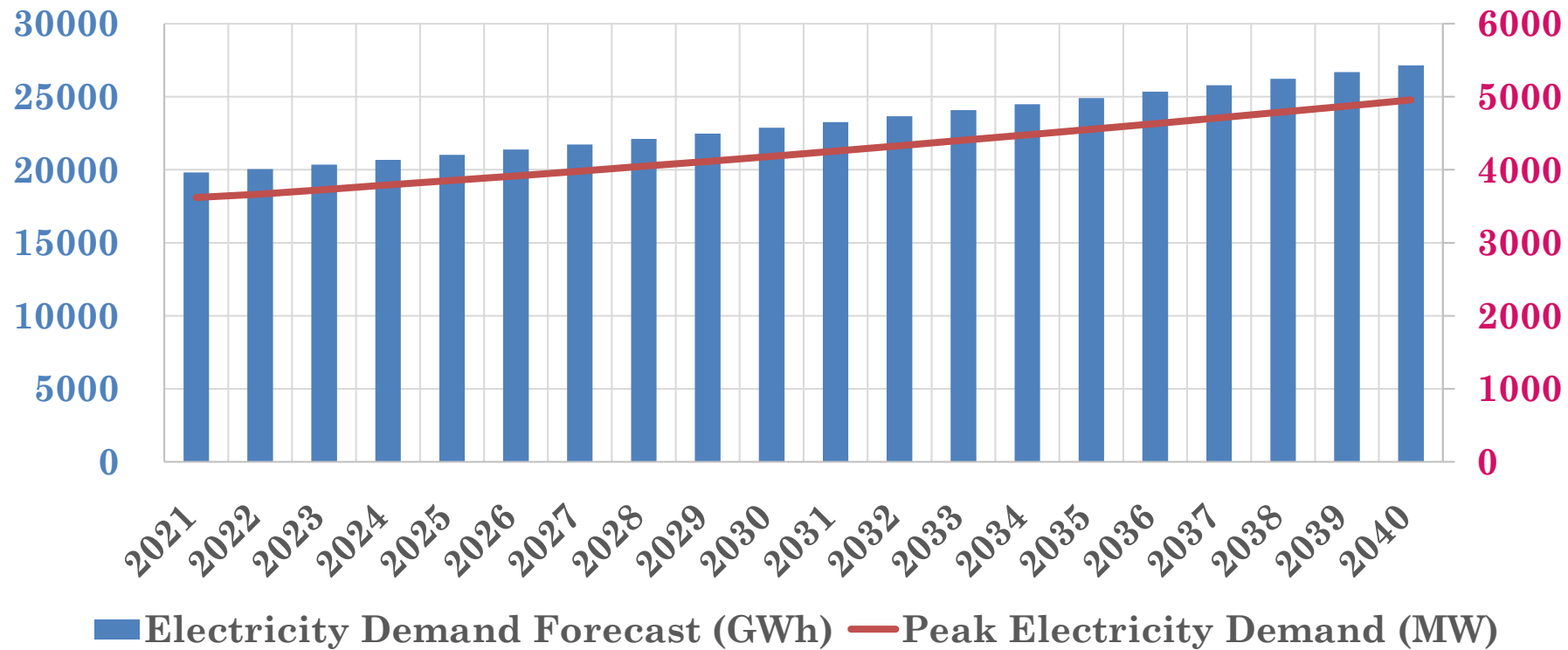


Jordan's Primary Energy Sources (2018-2025)



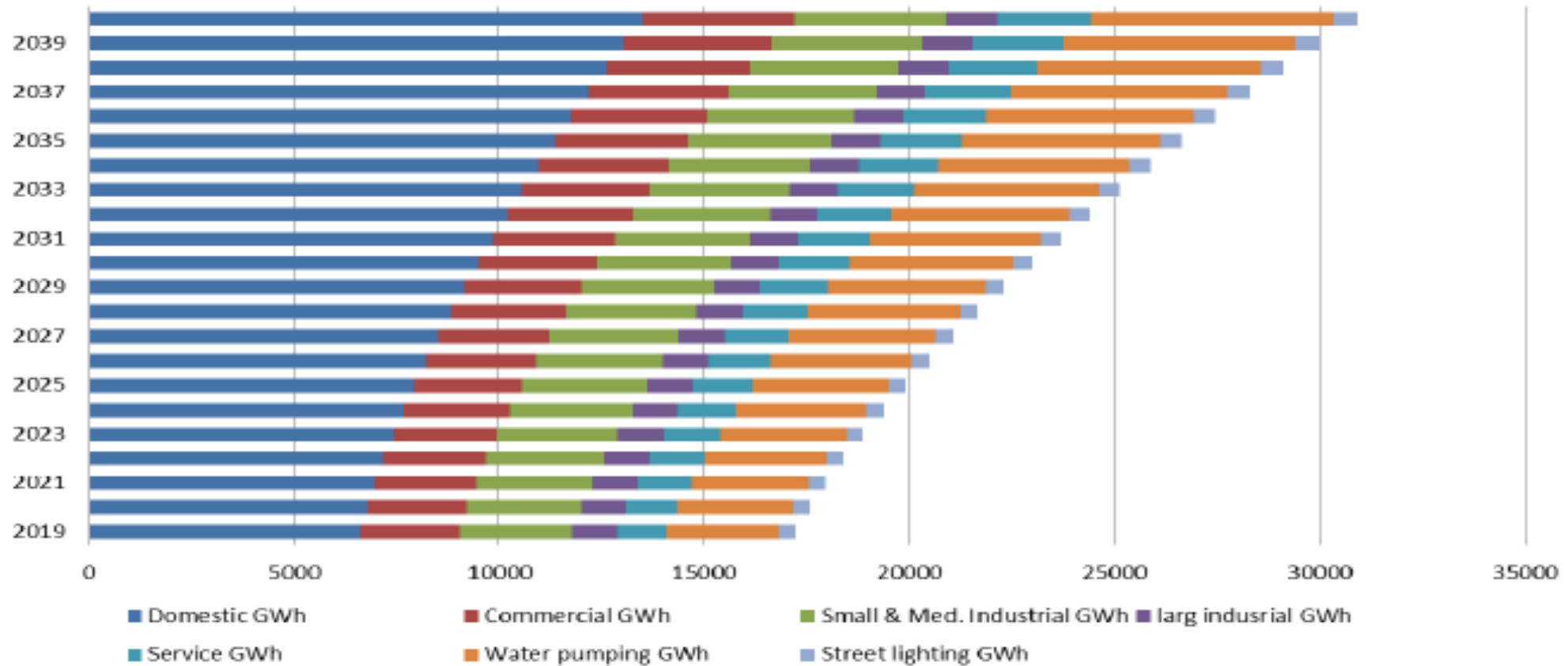
# Peak Load and Energy Forecast

## Energy and Peak Demand Forecast



# Electricity Consumption Forecast By Sector

**Total Consumption Forecast/Sector**

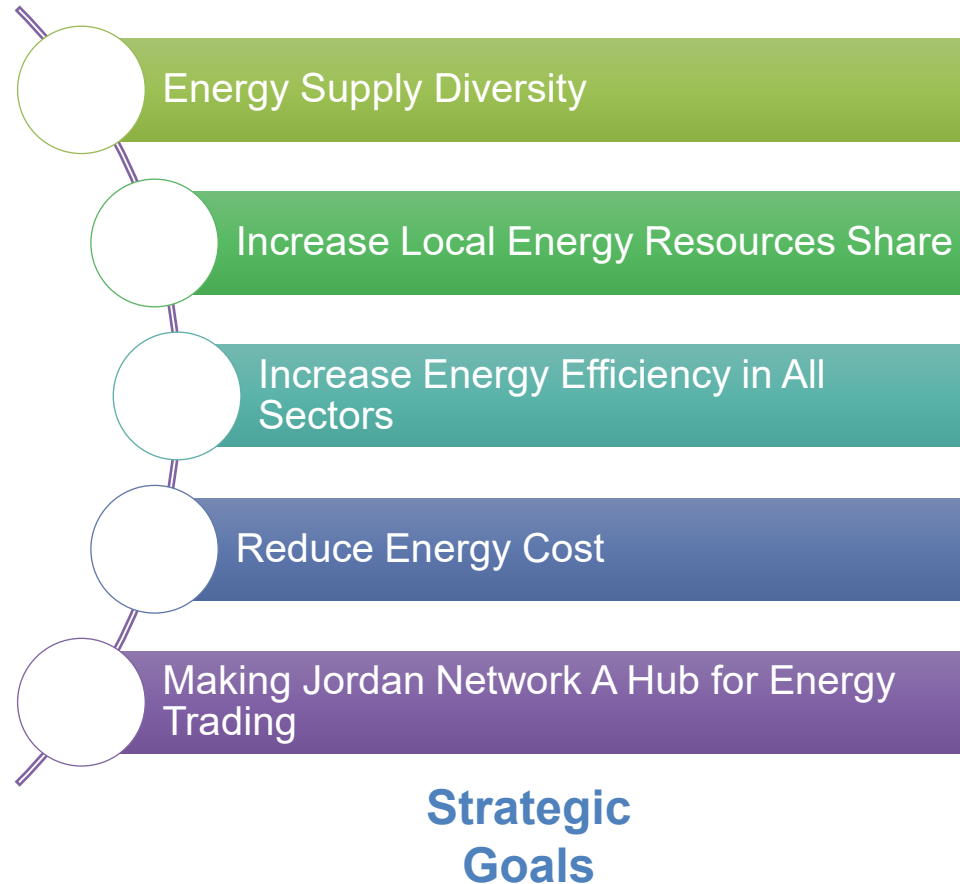
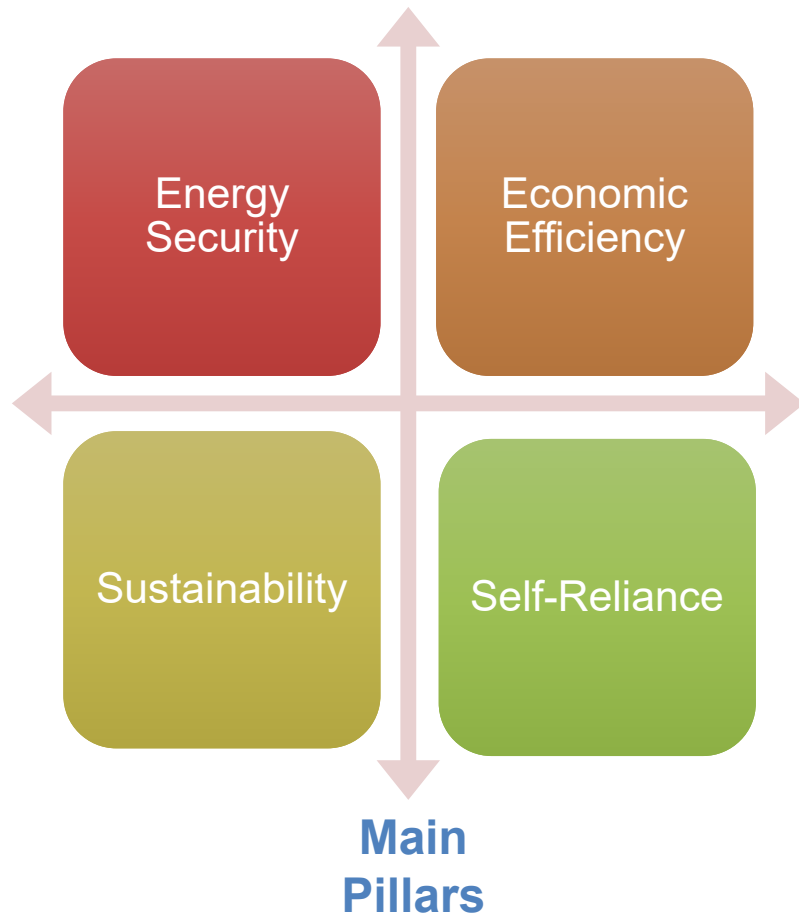


# Energy Strategy (2020-2030)

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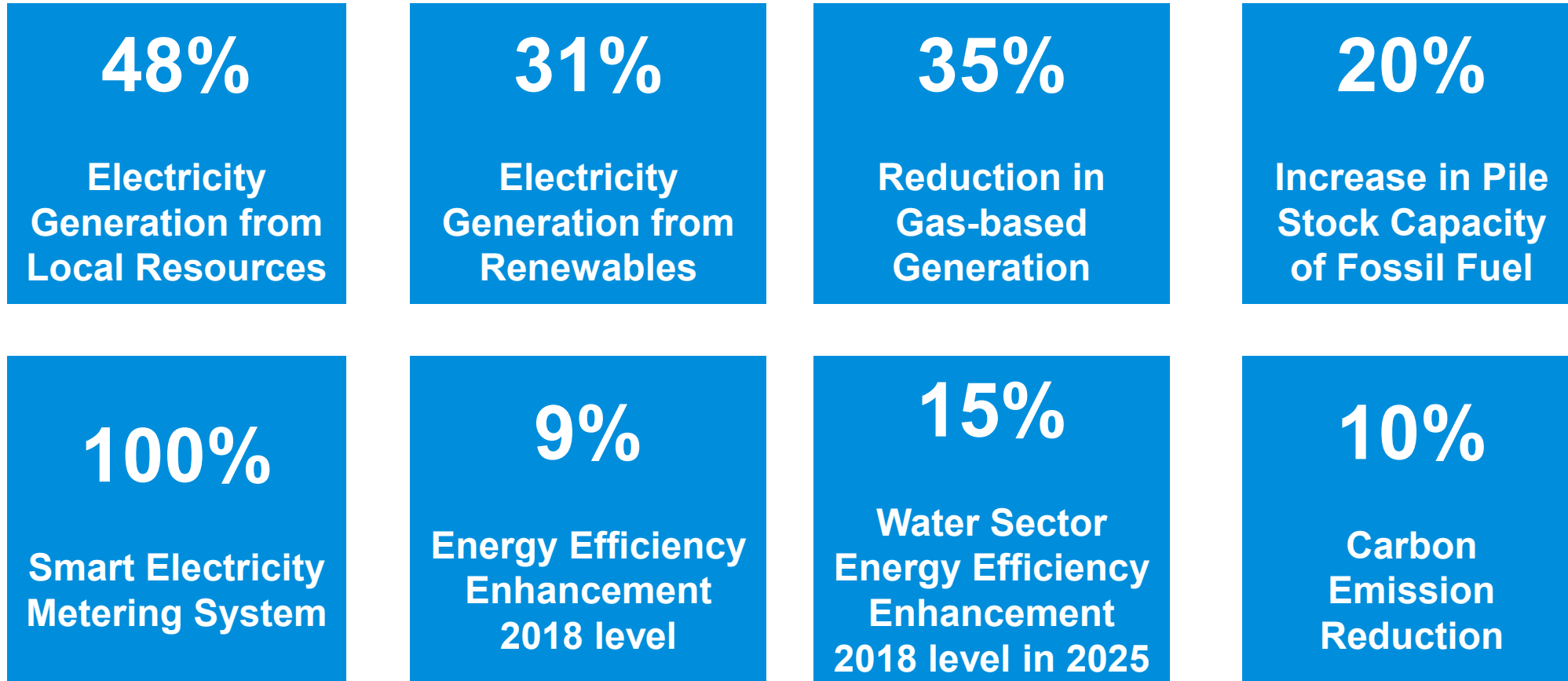
# Jordan Energy Strategy (2020-2030)



**Self Reliance  
and Resilience**

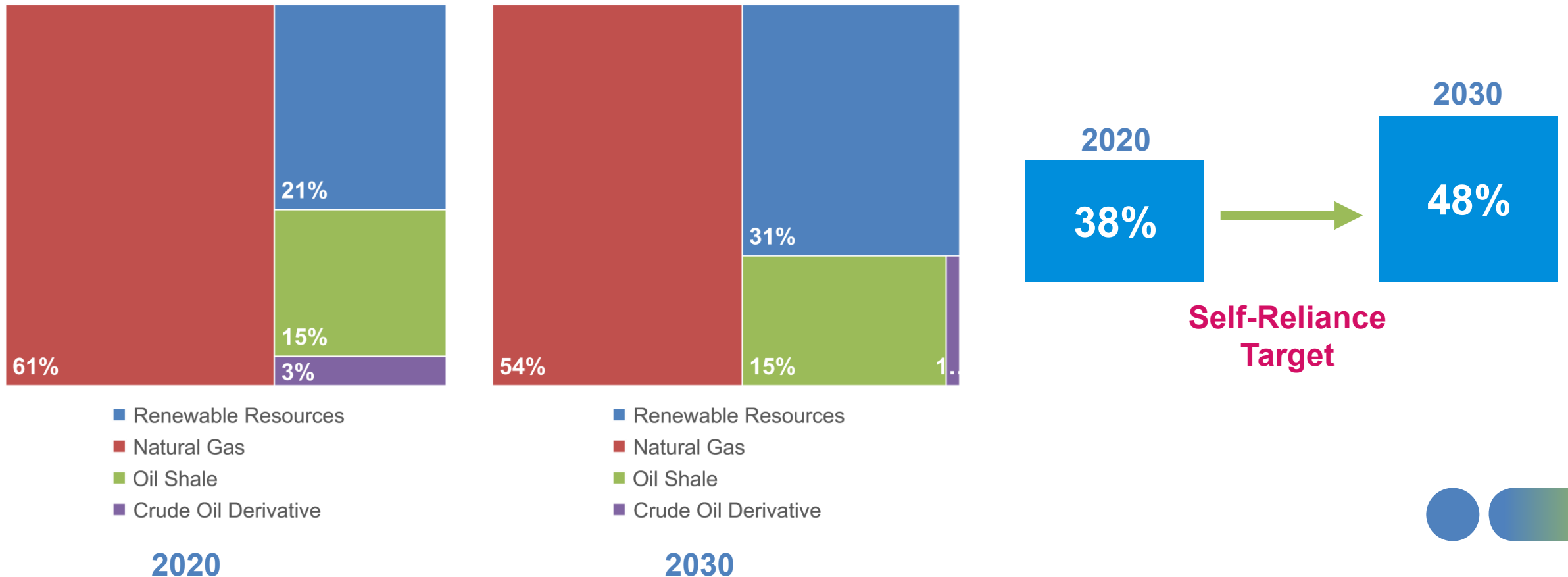
**Main  
Focus**

# Jordan Energy Strategy (2020-2030)



# Jordan Energy Strategy (2020-2030)

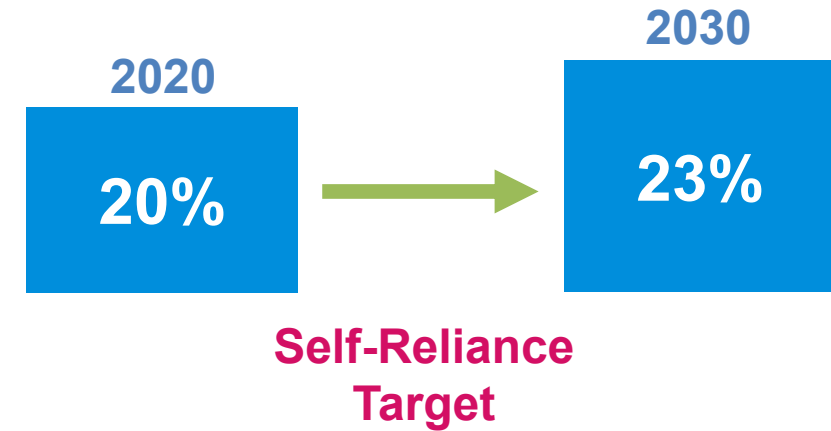
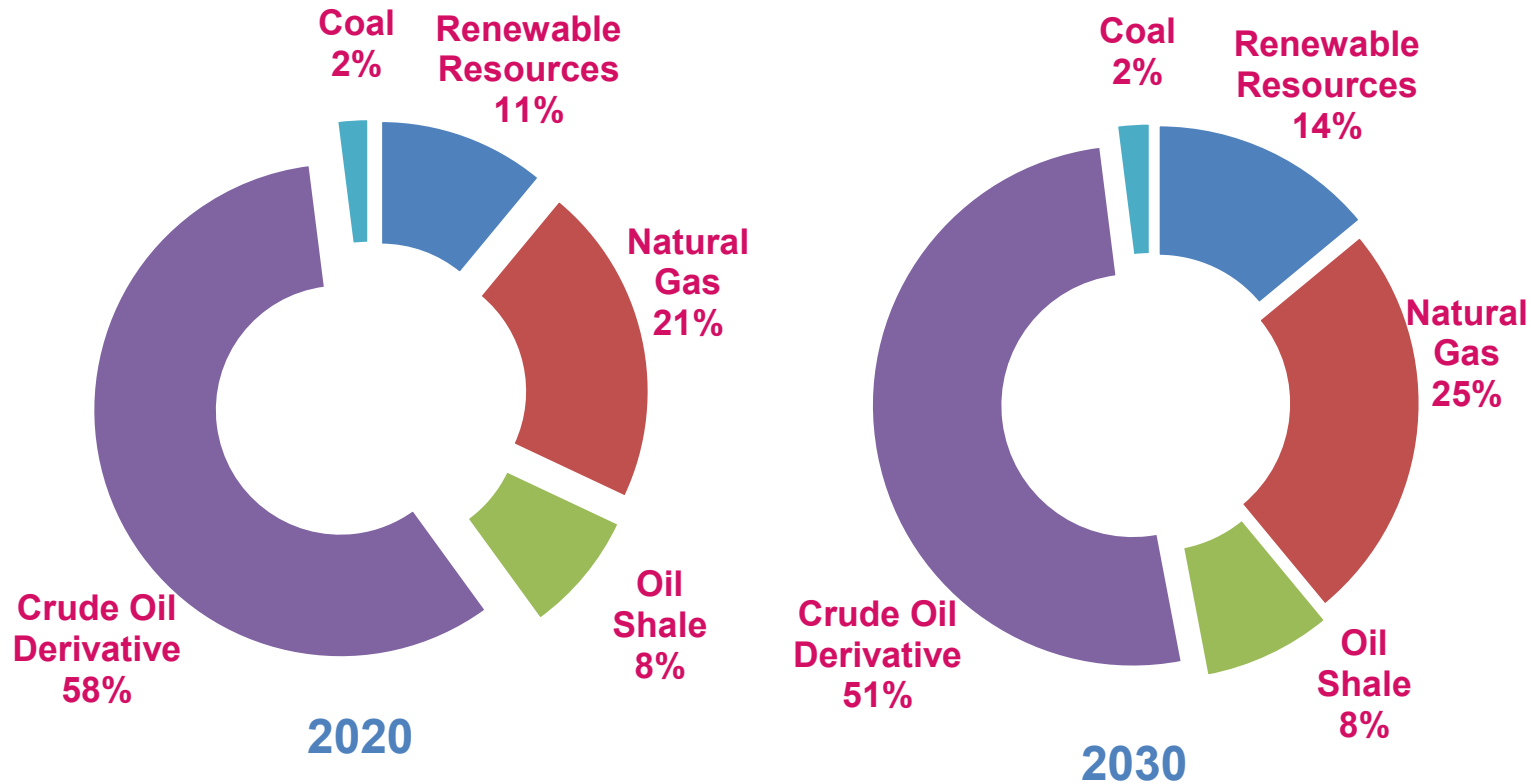
## Contribution of Different Types of Fuel to the Electric Power Generation Sector





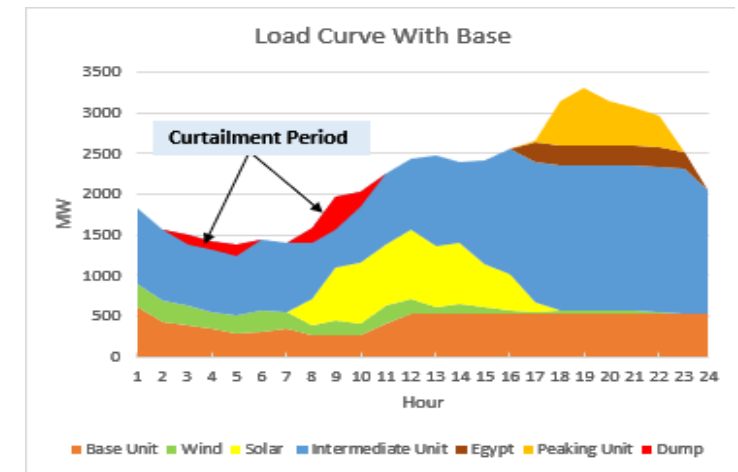
# Jordan Energy Strategy (2020-2030)

## Contribution of Different Types of Fuel to the Main Energy



# Challenges and Bottlenecks

- ▶ Several challenges faced the energy sector in Jordan could be summarized through the following points:
  - ❖ **Energy Security: High dependence on foreign energy resource, as Jordan lack for natural gas and oil resources.**
  - ❖ **Economic dependence of the country on the energy sector (Major resource for governmental income is from energy tax).**
  - ❖ **Improper electricity tariff.**
  - ❖ **Long period with high-cost power purchase agreements.**
  - ❖ **Climate change and lack for water resources.**
  - ❖ **High-level of renewable generation integration compared to isolated network and low-level demand.**
  - ❖ **lack for unified and sufficient information management system acts a reference database for planning and setting the requirements on the structure and nature of the information that is required from each sector.**



# Aims To Learn



- ▶ **Benefit from other countries experience and how they approach similar challenges.**
- ▶ **Having a discussion dialogue regarding forecasting techniques and tools that could be used for renewable energy generation forecasting.**
- ▶ **Get updated with the recent demand forecast methodology and identified the different tools and methodologies used by participating countries.**
- ▶ **Having a close look at the energy conservation and associated energy policy measure that are designed to meet the goals.**



**Need to Know More ??  
Visit Jordan !!**

# THANK YOU!

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