KAPSARC
مركز الملك عبدالله للدراسات والبحوث البترولية
King Abdullah Petroleum Studies and Research Center

IEF-IRENA Renewables Seminar

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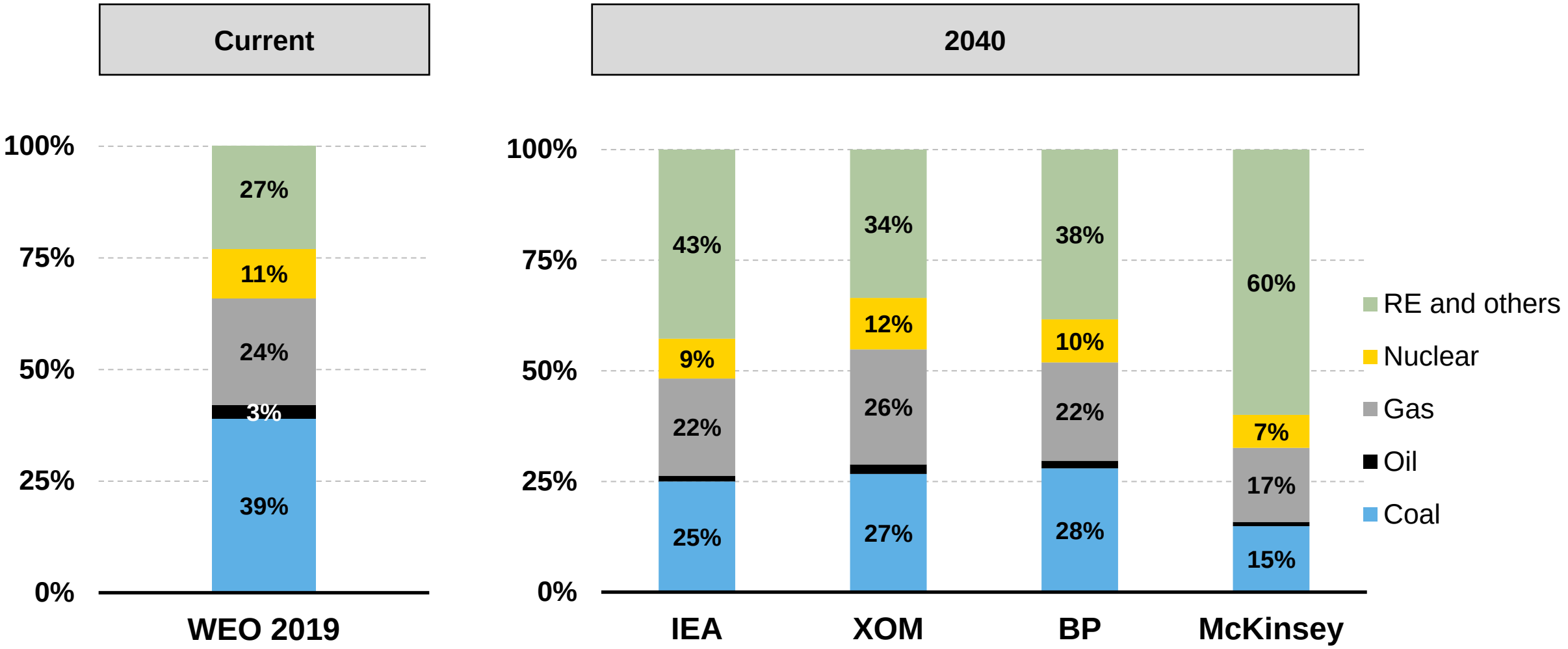
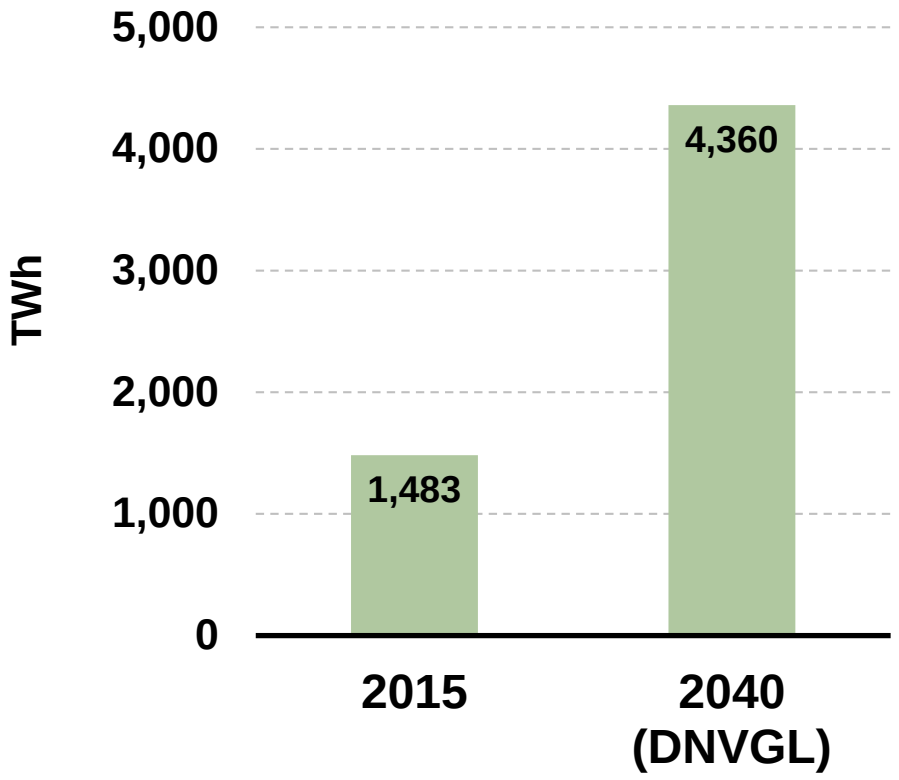
Electricity in 2040: (1) Total consumption to reach ~40,000 TWh from current ~25,000 TWh; **(2)** Oil virtually non-existent; **(3)** McKinsey is the most aggressive WRT renewables

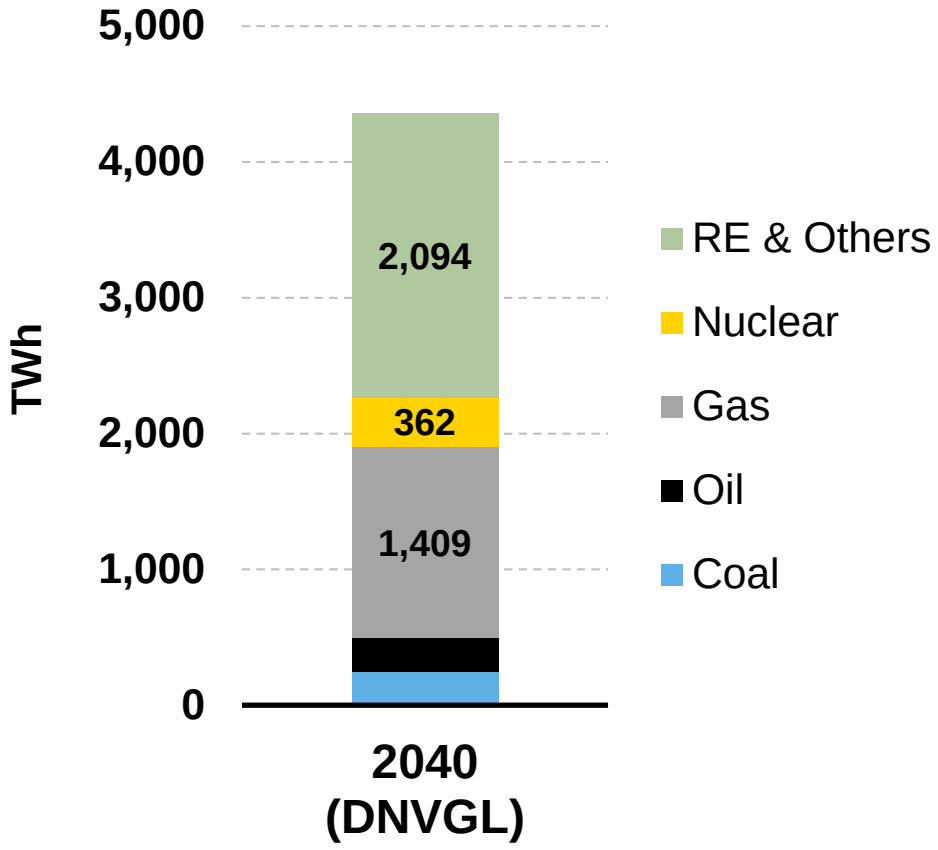


Electricity in MENA: (1) In 2040, demand in MENA grows 3x; **(2)** KSA represents ~20% of MENA consumption; **(3)** Substantial RE growth expected

Electricity Consumption in MENA



Electricity Consumption in MENA by Technology



Trends for the *Global* Power Sector

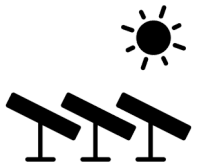
1	**DEMAND:** grows significantly despite all energy efficiency adoption initiatives

2	**OIL SHARE:** virtually nonexistent

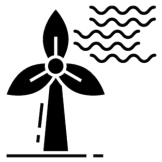
3	**COAL:** continues to be prevalent. Demand for **GAS** will grow significantly

4	**RENEWABLES:** significant growth

According to IEA, **only 4 out of 38 technologies are on-track** to meet climate goals, indicating that more significant R&D efforts and expenditure are needed



1	Solar



2	Onshore wind

3	Energy Storage (various technologies – mainly Li-ion)

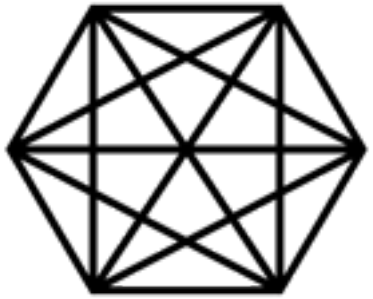
4	Electric Vehicles

Technological Development is key in achieving our future aspirations. Further, it is equally important to capitalize on **Framework Innovation** including **Circular Carbon Economy**

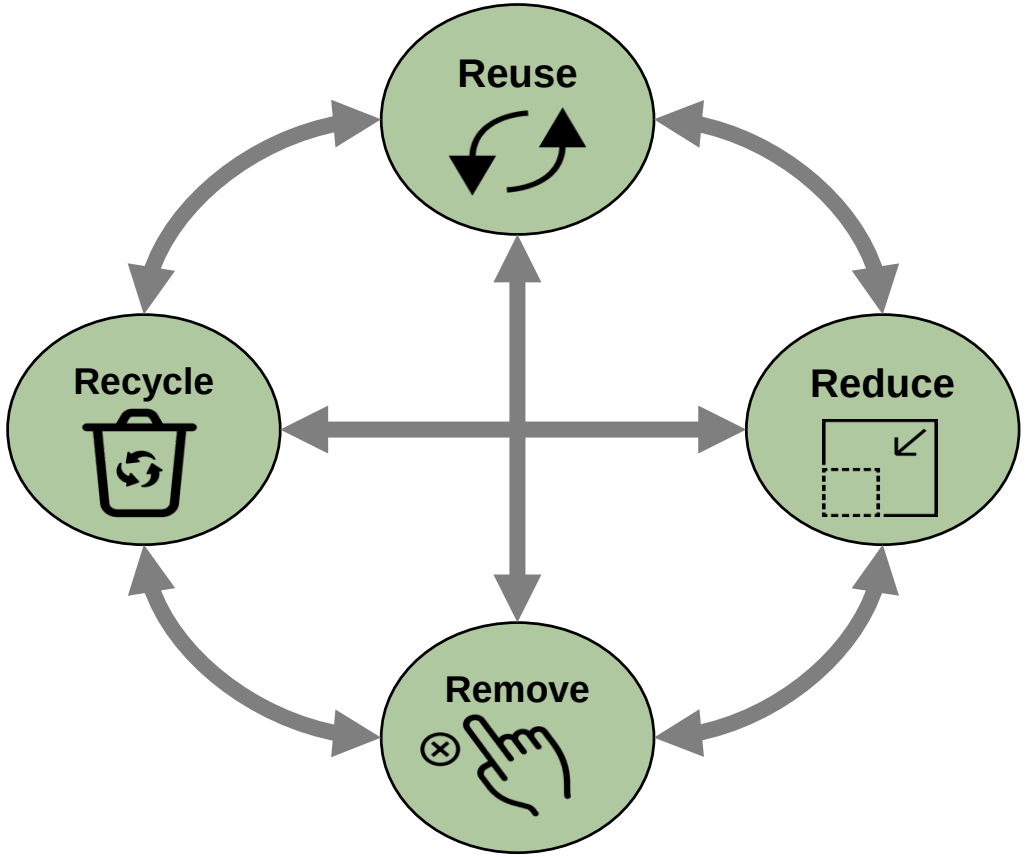
What distinguishes Circular Carbon Economy

Approaches climate goals by implicitly valuing all efforts and options

Focuses on dynamics and interlinkages between all mitigation options



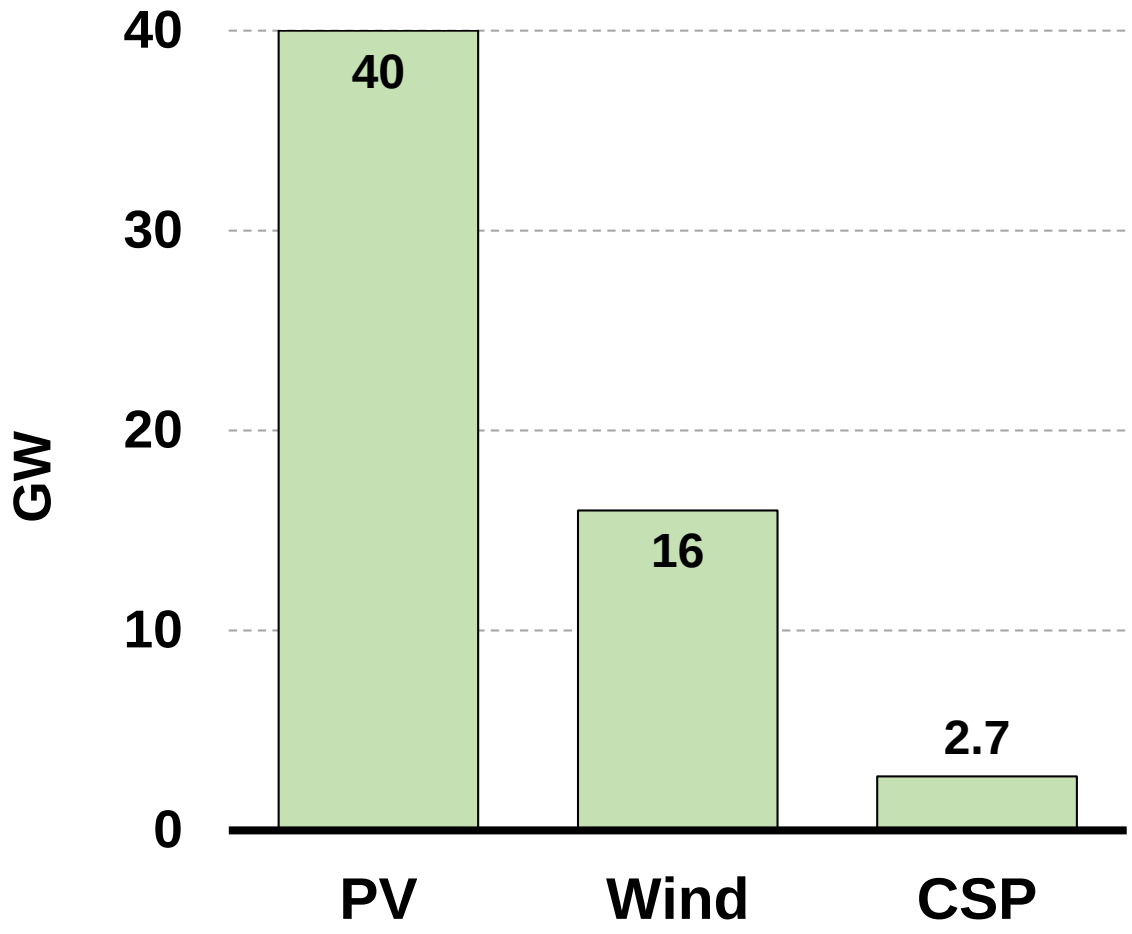
Framework

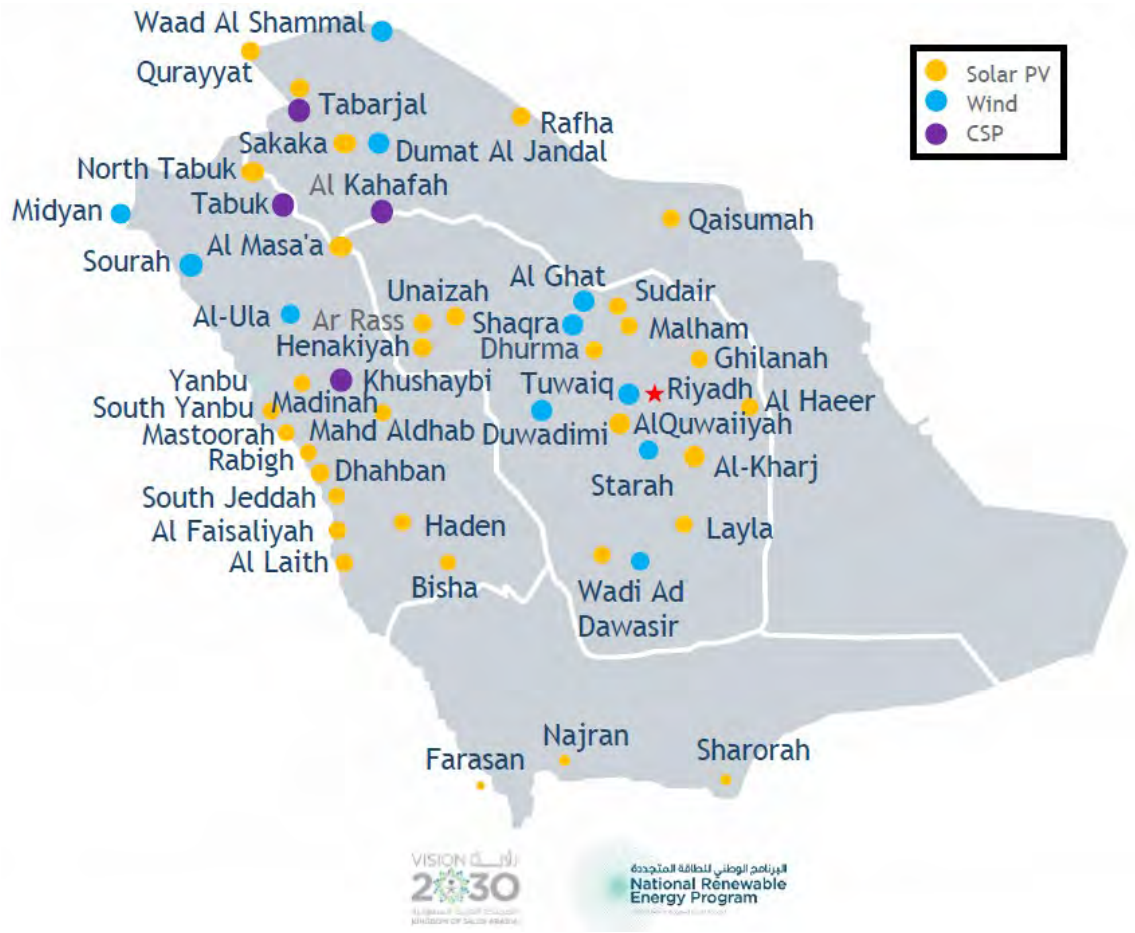


Likely Trends for the *Saudi* Power Sector

1	Significant **RENEWABLES** coming online
2	**NUCLEAR PLANS** under discussion
3	**GAS** supply will increase
4	Price of **HFO** will decrease and/or HFO will become more abundant due to IMO regulations

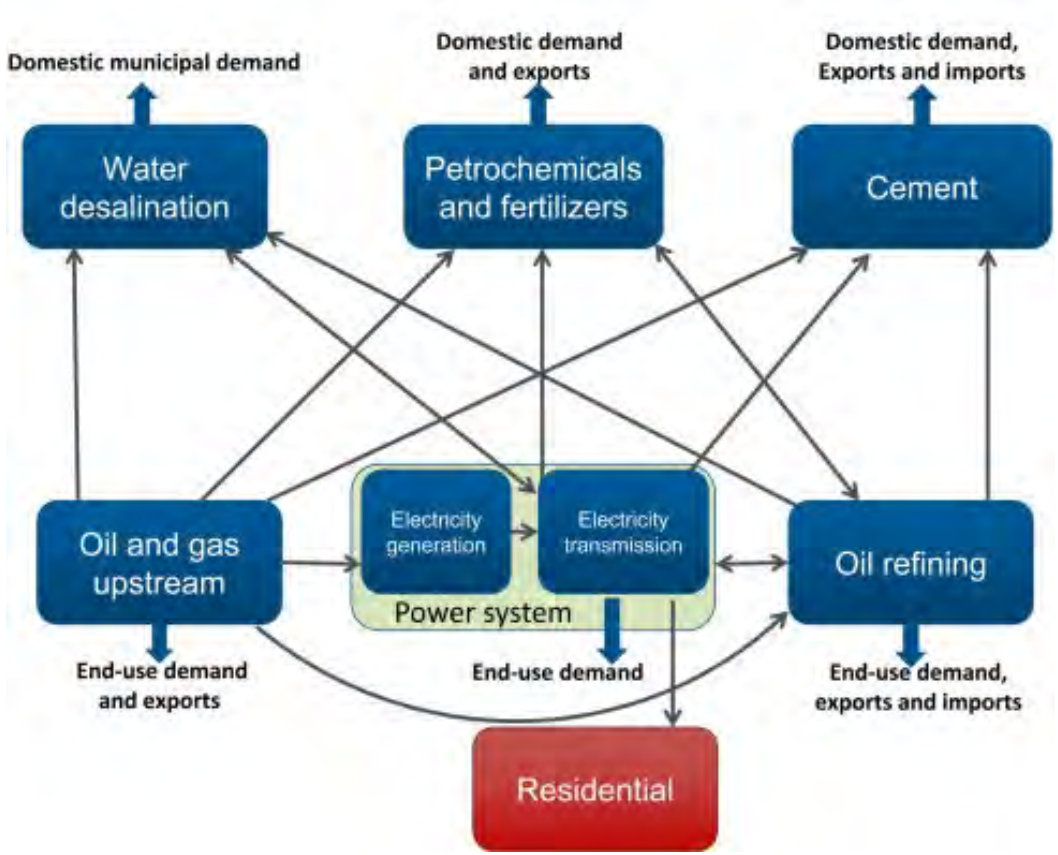
Saudi Arabia's Renewable Plans by 2030: (1) 35+ parks; **(2)** regional inclusiveness to promote kingdom-wide development; **(3)** gradual deployment to mitigate technology risk





KAPSARC models supporting power sector policymaking

KAPSARC Energy Model (KEM)



Saudi Power Model (SPM)