MENA Power Investment Outlook 2020-2024

BETWEEN FIGHTING A PANDEMIC AND MANAGING RENEWABLES

January 14, 2021

ARAB PETROLEUM INVESTMENTS CORPORATION

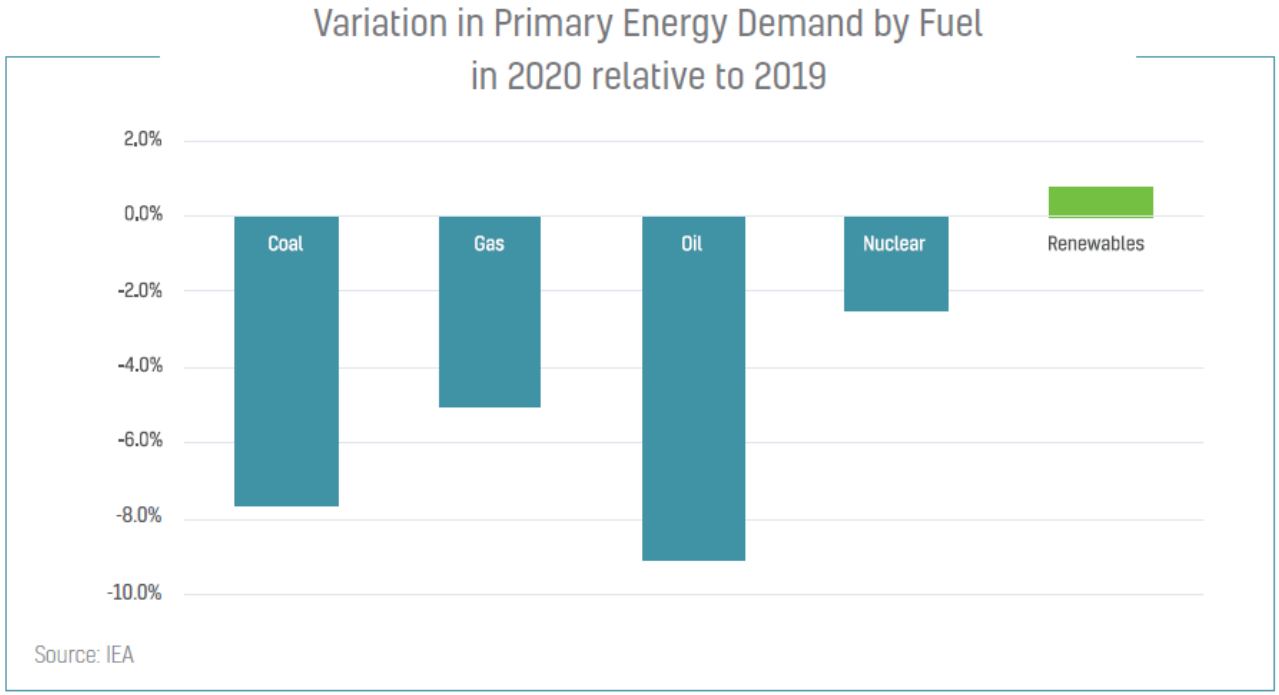
ابيكورب
APICORP

Overall reduction in electricity demand amid resilience of renewables

Impact on power demand and supply

- Reduction in global electricity demand in 2020, **5%** vs. 2019.

- Electricity demand in 2020 dropped
  - 4.8% in US,
  - 3% in China
  - 5.7% in India.
  - 8.2% in EU. (IEA)

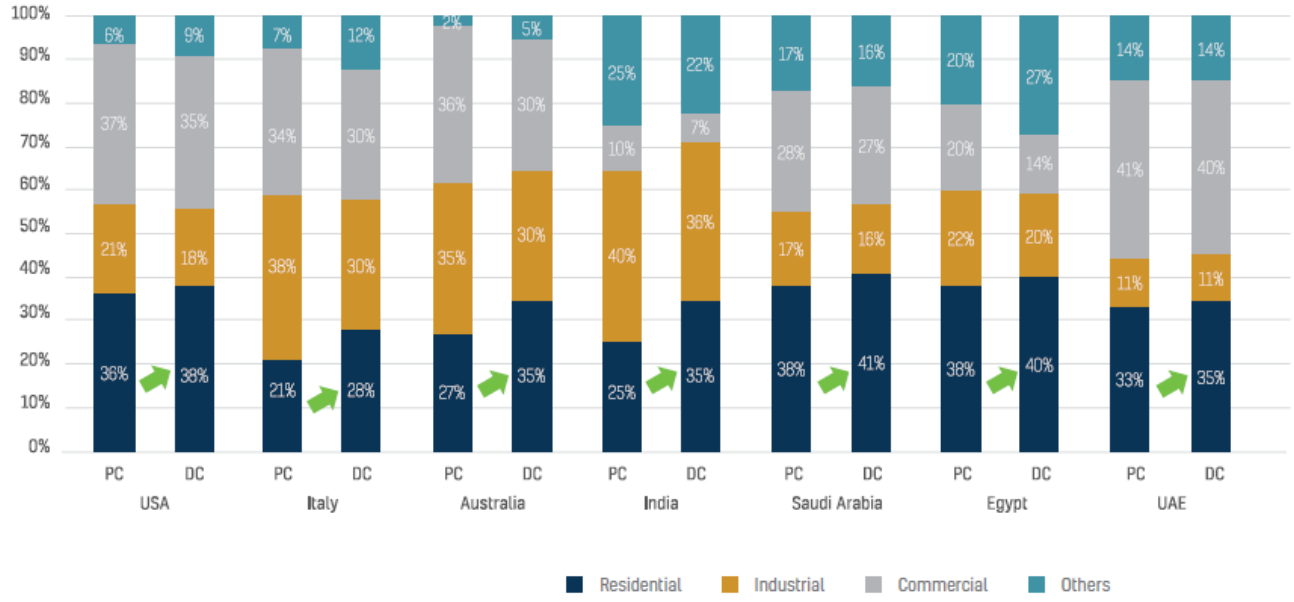


The increase in residential power demand mitigated the overall drop in total power demand in MENA

Impact on power demand and supply

- Increase in the share of the residential sector's electricity consumption.
- MENA region:
  - Residential sector (41%),
  - Industrial sector (21%),
  - Commercial sector (20%),
  - Agriculture and transport, as well as network losses (18%).

Increase in residential power demand at expense of commercial and industrial power demand during Covid (DC-2020) vs. pre-Covid (PC-2020) for selected countries

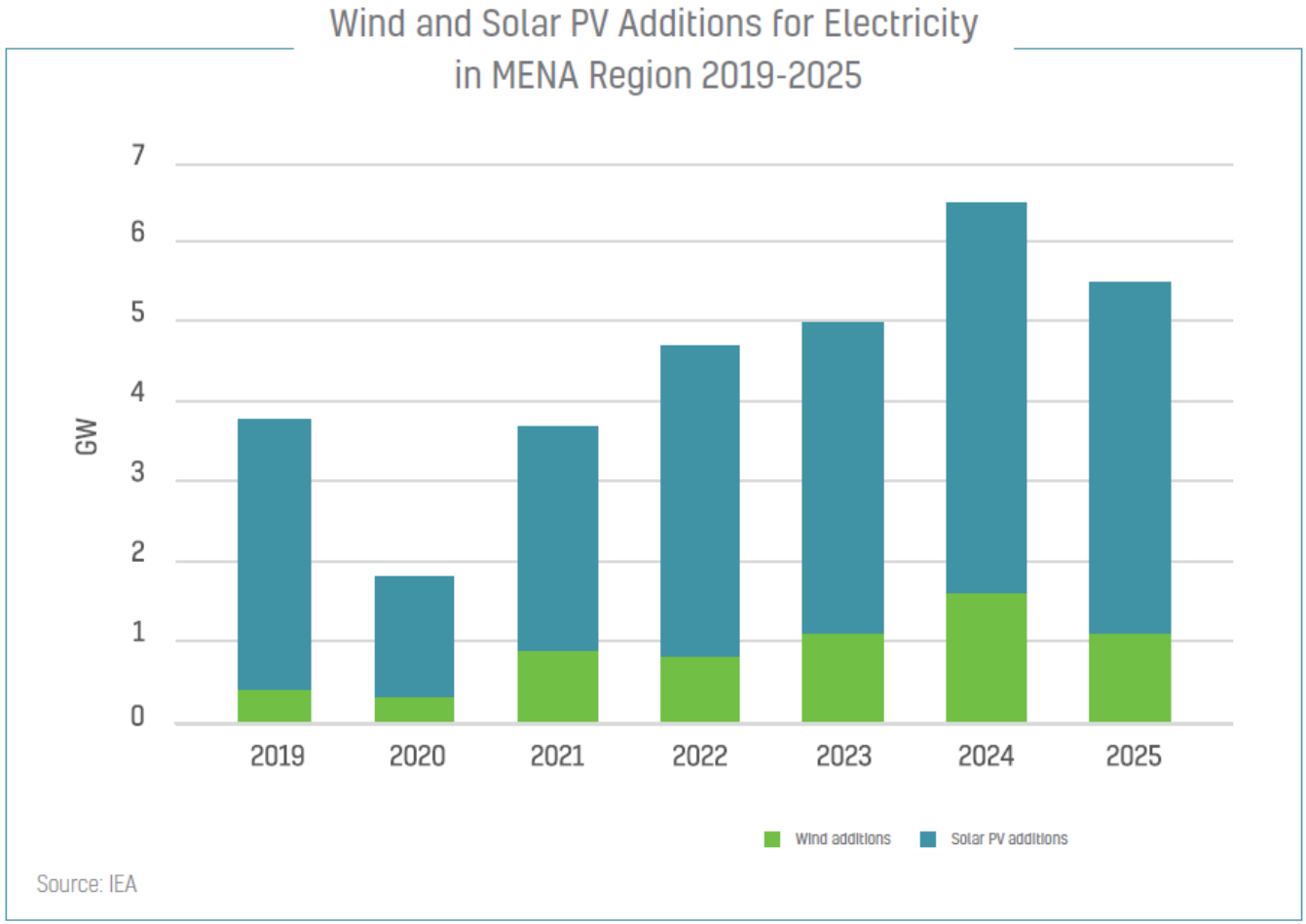


Source: APICORP

Robust solar PV and wind additions in MENA over the next 5 years

Shift in the power supply mix

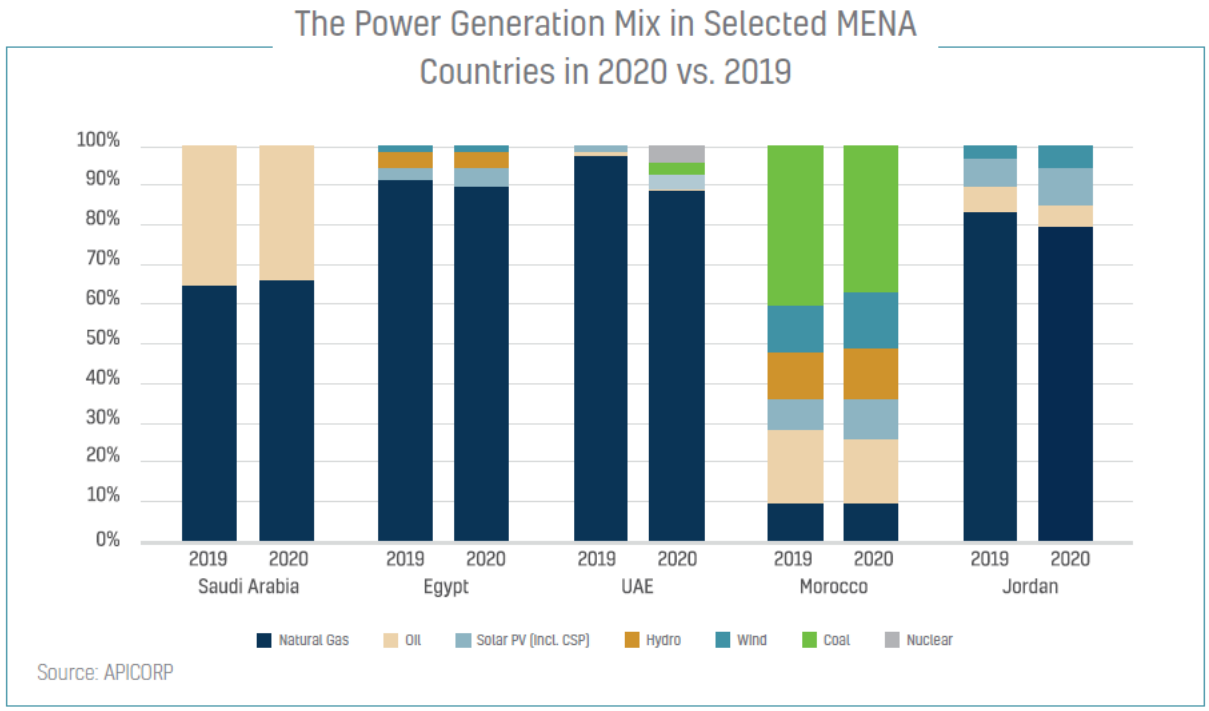
- Renewables-based generation increased:
  - **30%** in 2020, up 3% from 2019.
- MENA region will add:
  - 1.5 GW in 2020,
  - 3 GW in 2021,
  - 20 GW over the next five years.



2020 experienced a drop in natural gas in favor of mostly renewables in the power generation mix in MENA

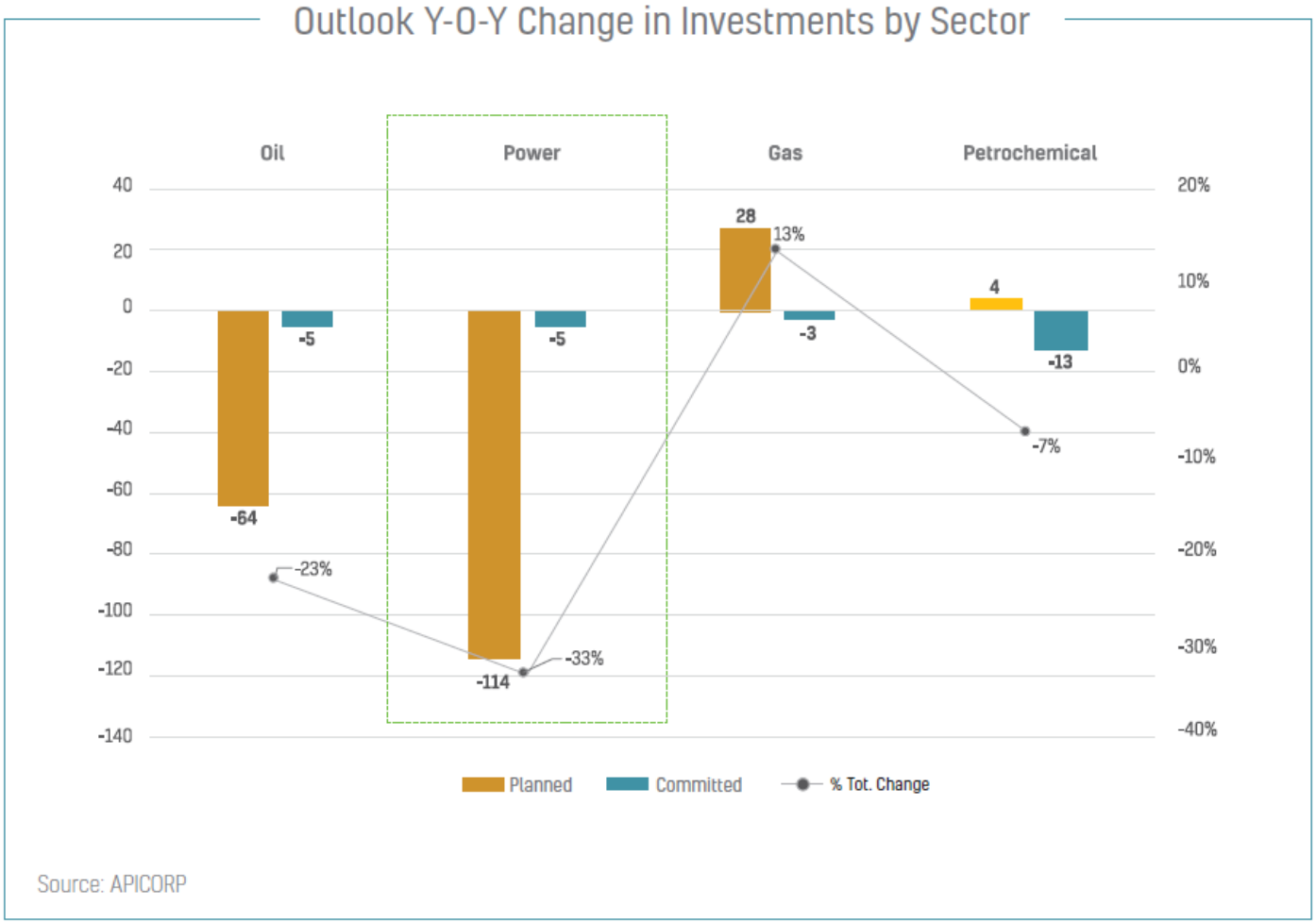
Shift in the power supply mix

- Fossil fuels, coal and nuclear will remain indispensable in the power supply mix.
- Natural gas makes up **90%** of the power generation mix in Egypt, UAE and Algeria.
- The share of natural gas in the power generation mix in 2020 fell :
    - 2% in Egypt,
    - 9% in the UAE,
    - 5% in Jordan.



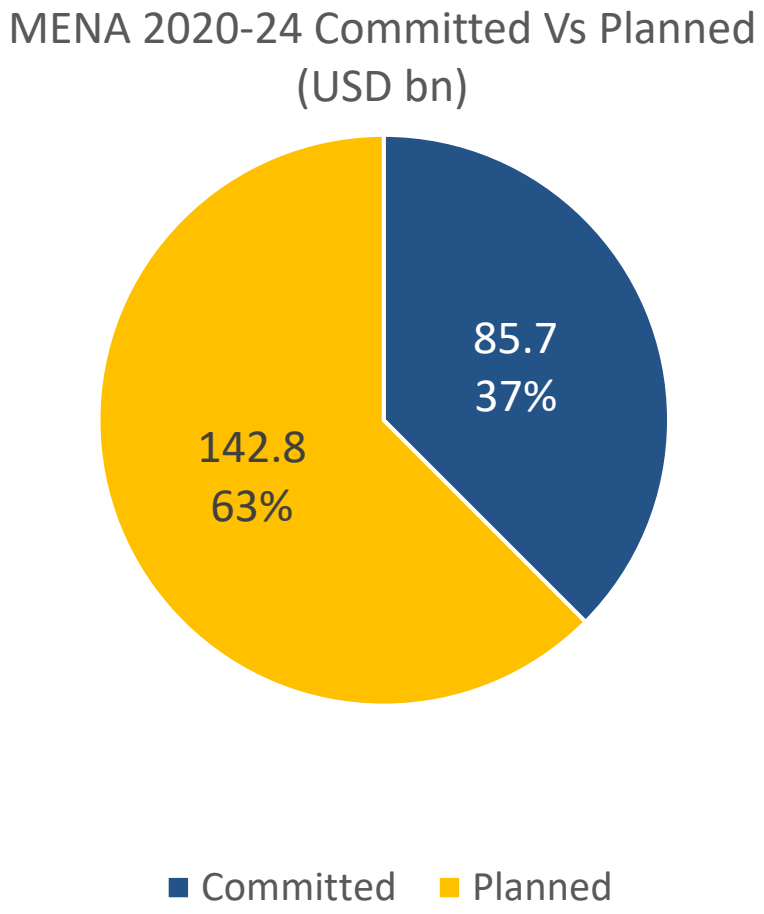
The power sector experienced the largest drop in planned investments compared to other sectors

Impact on power projects:



Planned projects represent almost two-thirds of the total value of the 2020-2024 MENA project pipeline

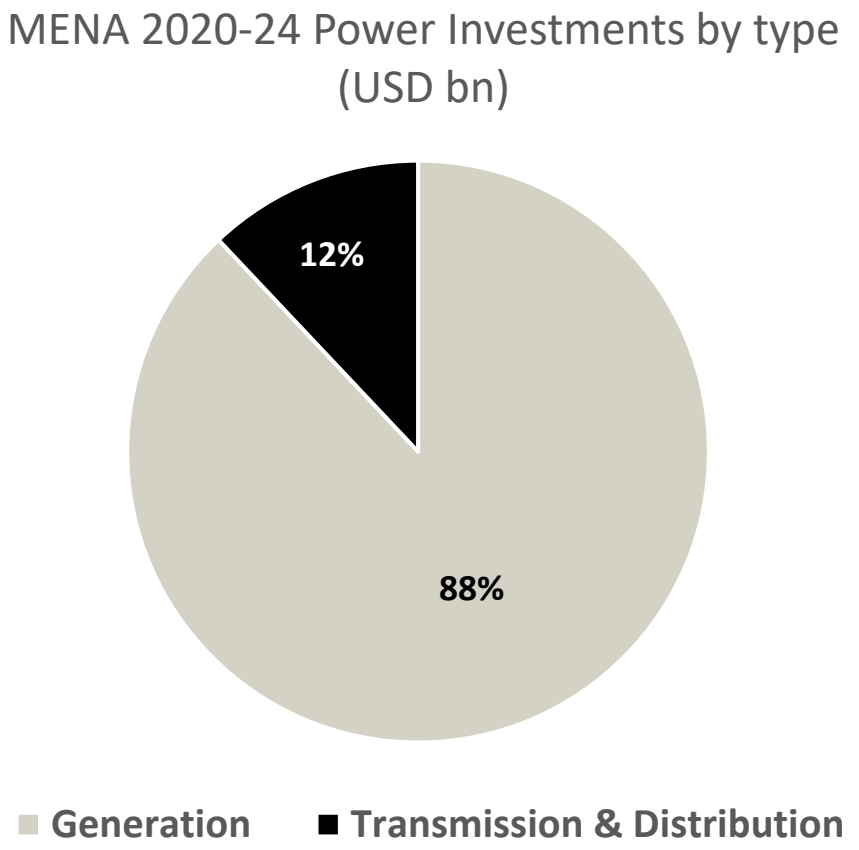
- Committed Investments are projects currently in execution phase while Planned investments are all pre-execution.
- Committed investments to total investments are a measure of the rate of execution of projects in a country or region.
- UAE, Egypt, Iran, Iraq and KSA rank highest in Committed Projects value.
- KSA, Egypt, UAE, Algeria and Kuwait rank highest in Planned Projects value.



Investments in T&D are lagging in comparison to investments in power generation

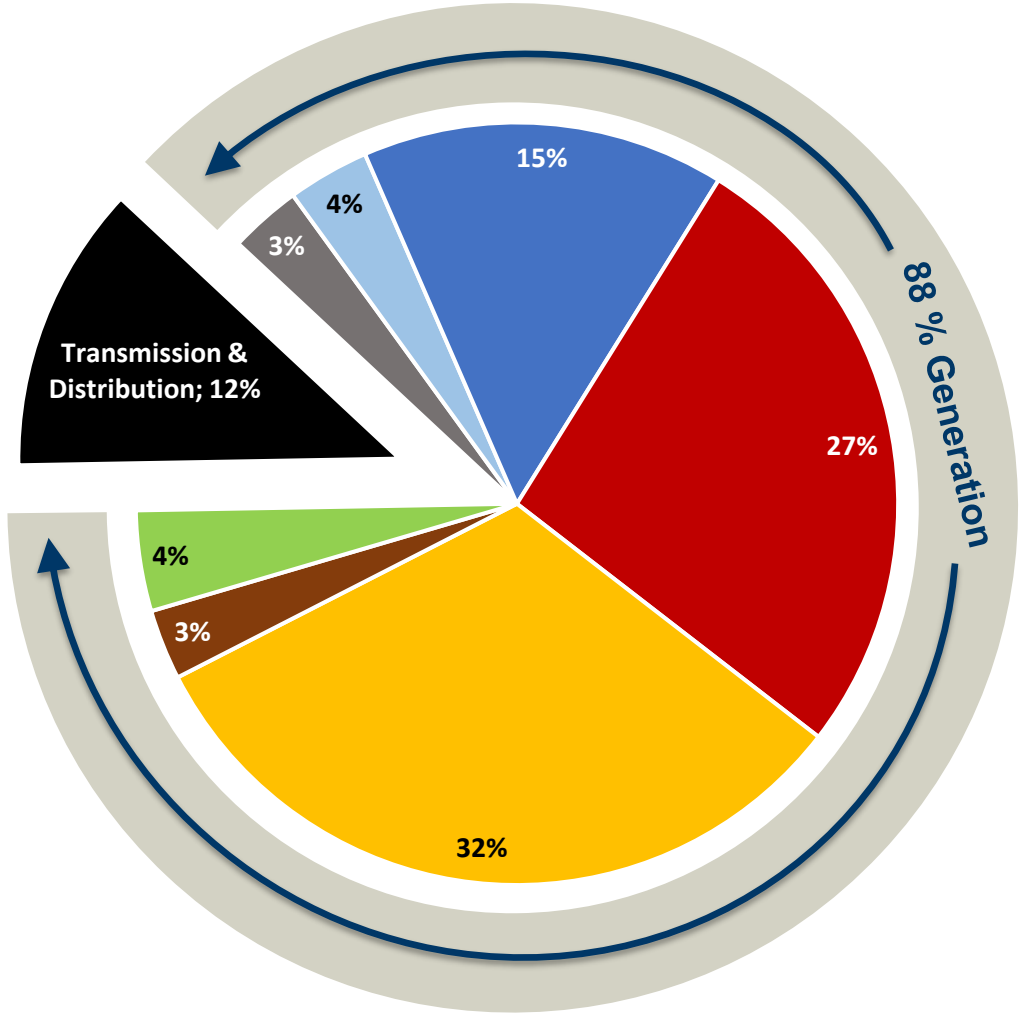
MENA T&D investments is below the international average of 20% of total power investments

- Countries vary in Generation vs T&D spend due to different priorities in each.
- High Renewables targets will have to ramp up investments in T&D, required to connect distributed grids, implement smart metering and storage solutions...etc.
- While investments in Transmission are usually footed by the government, Distribution has been slowly opening for private sector participation (Morocco, Lebanon, Oman, UAE, KSA, and recently Egypt).



Approx. 43% of investments in Generation are Renewables

MENA 2020-24 Generation projects value breakdown by type

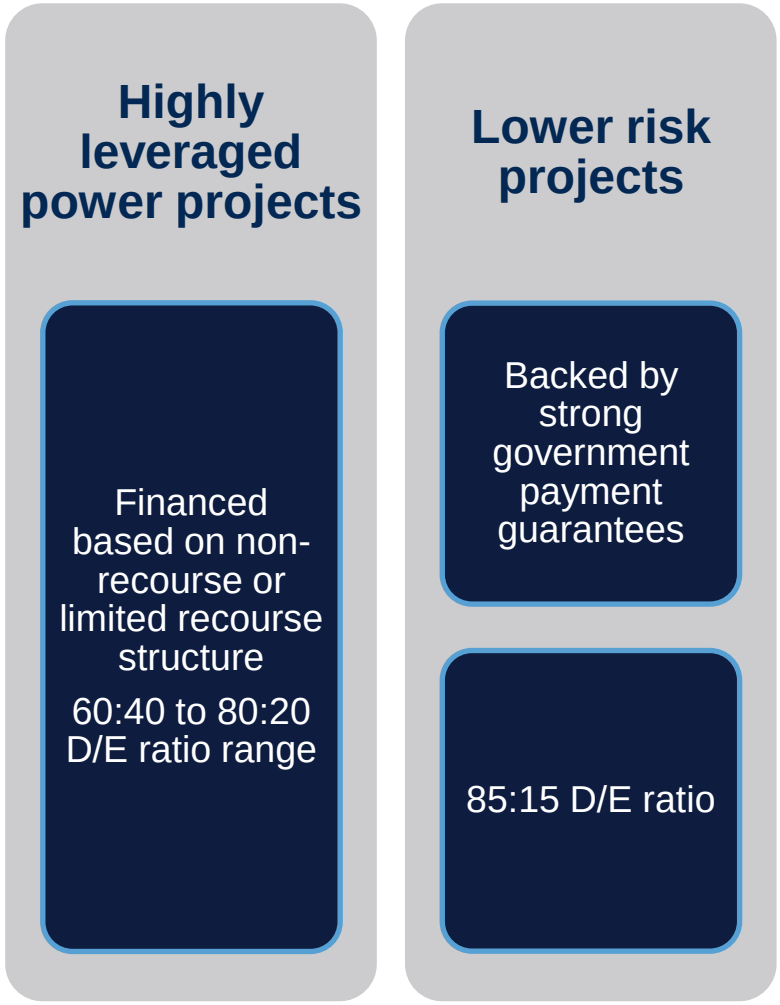


- Transmission & Distribution
- Coal Power Plant
- Hydro Power Plant
- Nuclear Power Plant
- Oil/Gas Power Plant
- Solar Power Farm
- Waste to Energy Power Plant
- Wind Power Farm

Low risk projects were backed by strong government payment guarantees

Power market highlights

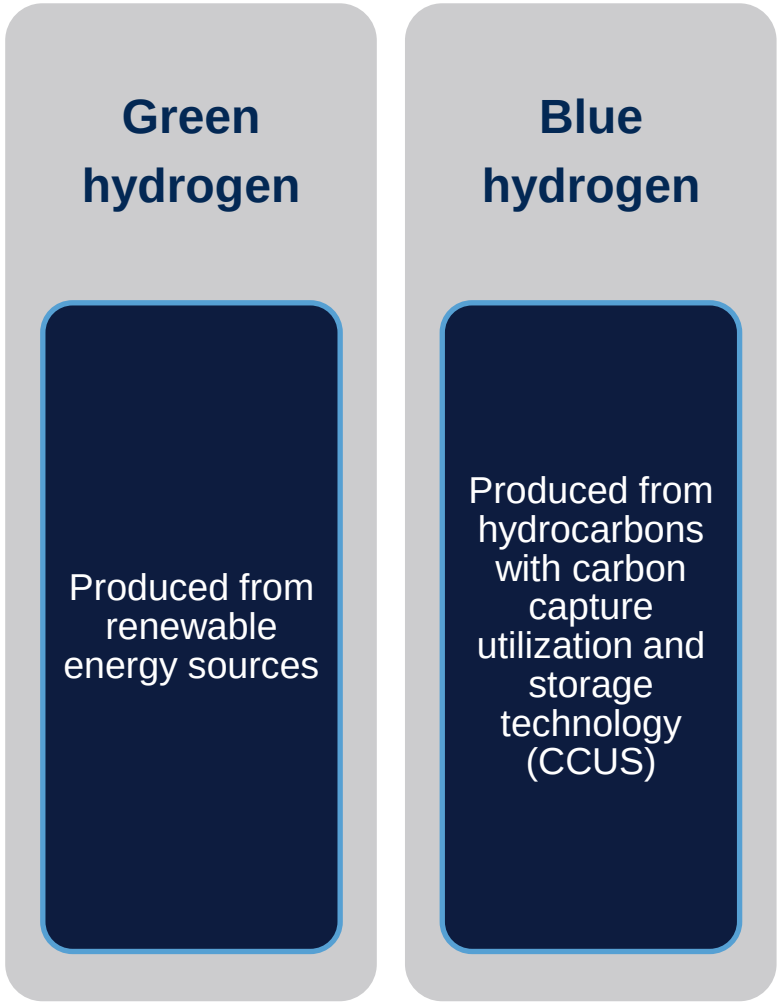
- Egypt accelerated progress on the USD 29.5 billion El Dabaa Nuclear Power Plant (4.8 GW) for which groundworks and site preparation commenced in October 2020.
- Saudi Arabia prioritized the financial restructuring of SEC:
    - Reclassification of USD 44.77 bn worth of liabilities
    - Cancellation of government fees
    - Adoption of RAB model



Low-cost renewable and gas accelerate the penetration of hydrogen and other low- carbon or net-zero products

MENA region with competitive advantages

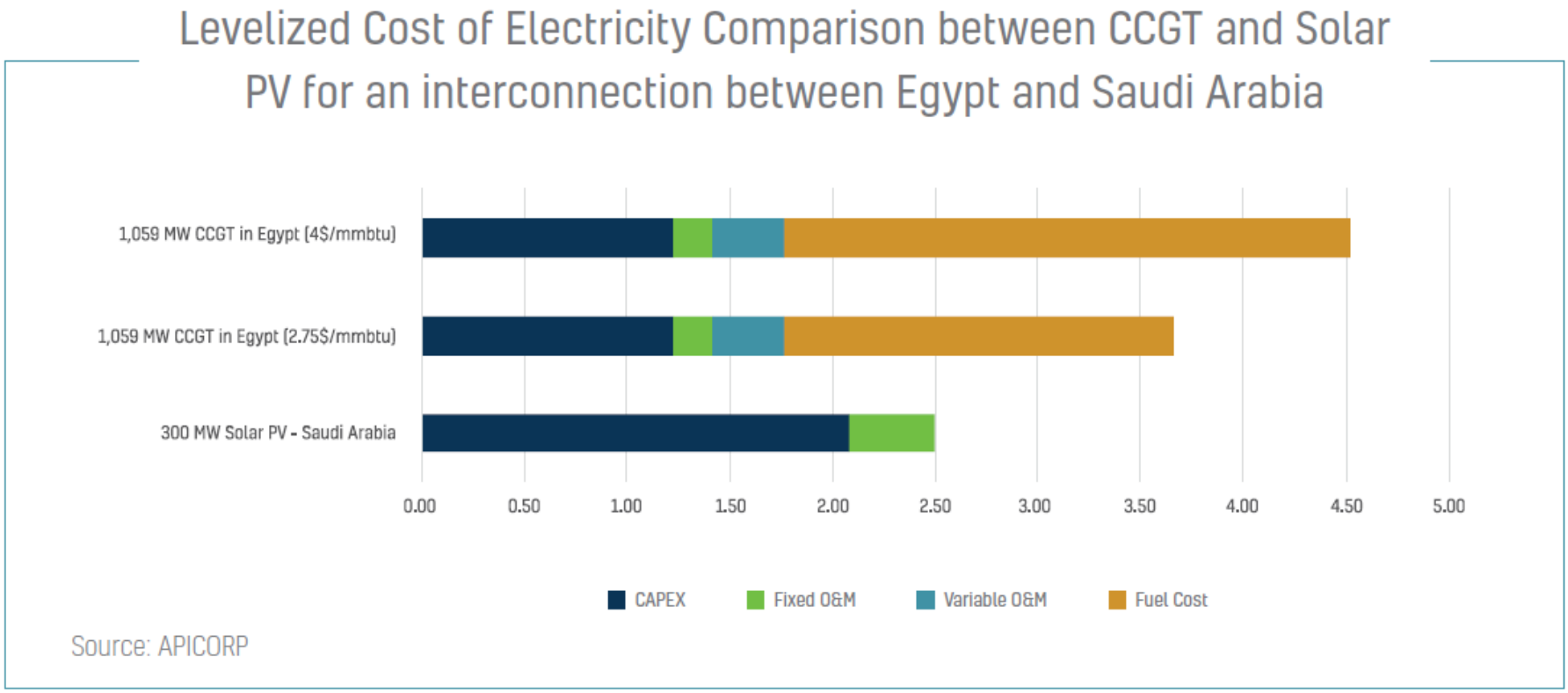
- Relatively low natural gas prices advantages blue hydrogen - key role in medium term.
- As renewables costs decline, green hydrogen competitiveness is improving.
- 2 countries, 2 strategies : Saudi Arabia and Morocco



Cross-border electricity interconnections is a viable value proposition in MENA

LCOE of solar PV projects are lower than LCOEs of CCGTs even at low gas prices

- This difference in peak load between Saudi Arabia's and Egypt's timing makes a regional interconnection between the two countries an appealing value proposition, as excess power output could be traded.



3 key takeaways from APICORP's MENA Power Investment Outlook 2020-2024

The power sector continues to play a vital role in driving economic recovery

Policy efficiency and digitalization are key factors shaping future power sectors and investments

MENA has potential for more interconnectivity and to emerge as an exporting region for net-zero products

Q&A