Saudi Arabia

Asia & Pacific

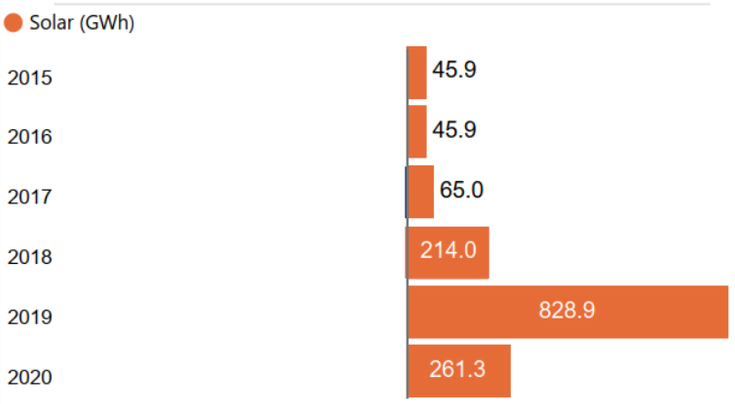
Ease of doing Solar classification

Achiever

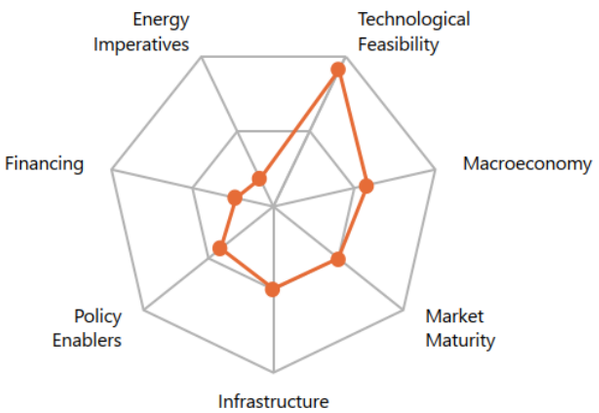
Electricity Consumption in kWh/capita (2020)	Average PVout in kWh/kWp/day (2020)	Cumulative Solar Capacity in MW (2021)
9709.7	**5.2**	**389.4**

Getting Electricity Score (2020)	NDC Target by 2030 in $MtCO_2e$ (base year 2019)	Human Development Index (2021)
91.8	**278.0**	**0.9**

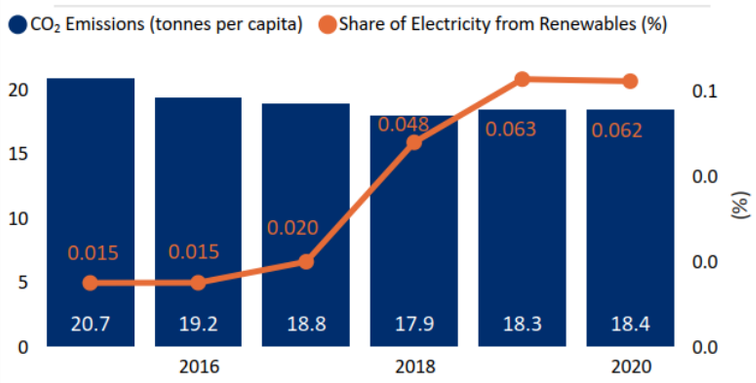
Renewable Energy Generation by Source



Performance against 7 Drivers



CO_2 Emissions vs Electricity share from Renewables



Fiscal Incentives & Public Financing for Renewables (2020)

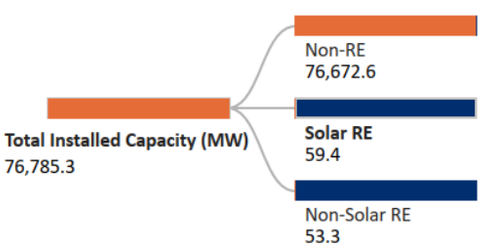
Investment or production tax credits?

No

Public investment, loans, grants, capital subsidies or rebates?

No

Installed Capacity by Source (2019)



Non-Solar RE: Wind, Hydro, Biomass, Geothermal & Marine;
Non-RE: Coal, Natural Gas, Nuclear, Oil, etc.;
Other Solar: Utility Scale Solar, Rooftop etc.;
Data not available for other Solar RE segments;

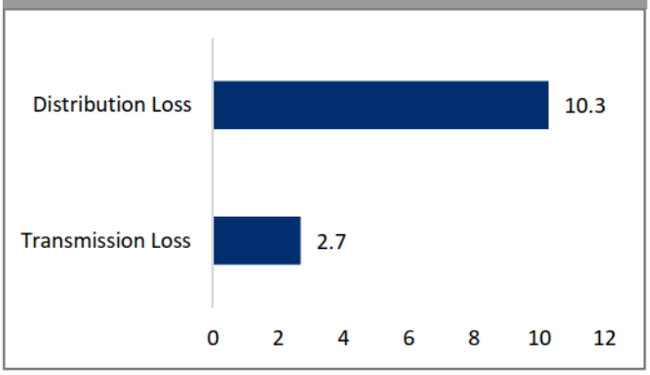
Support for Renewables (2020)

Feed-in-Tariffs for renewable energy supply to the grid?	Net metering/Gross metering policies and regulations?
Yes	**Yes**

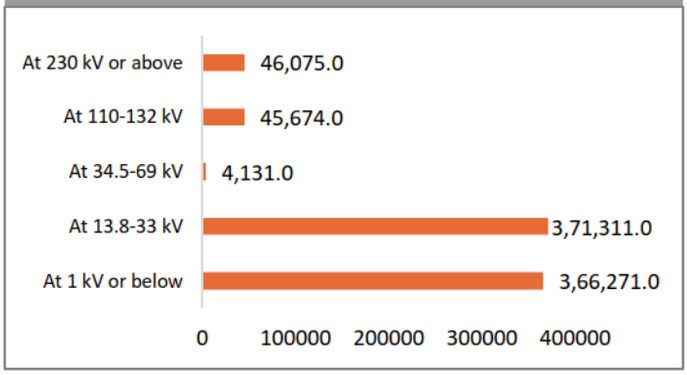
Renewable Energy Certificates?	Renewable Purchase Obligation?
No	**No**

Threshold for licensing Solar Power in MW (2021)	Average term of Solar PPAs in years (2021)	Solar Investment in Mn US Dollars (2021)
> 2.0	20.0 to 30.0	> 3,457.0

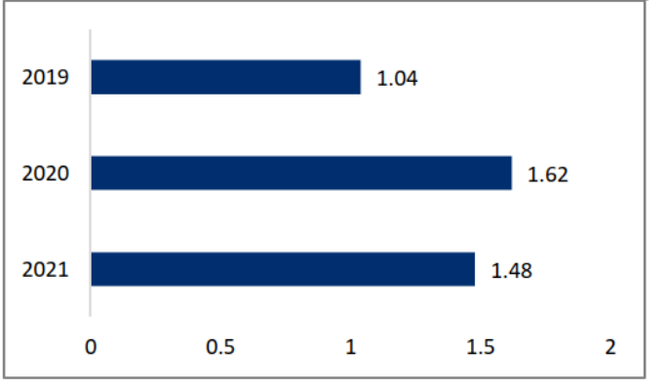
Average T&D Loss Levels in % (2020)



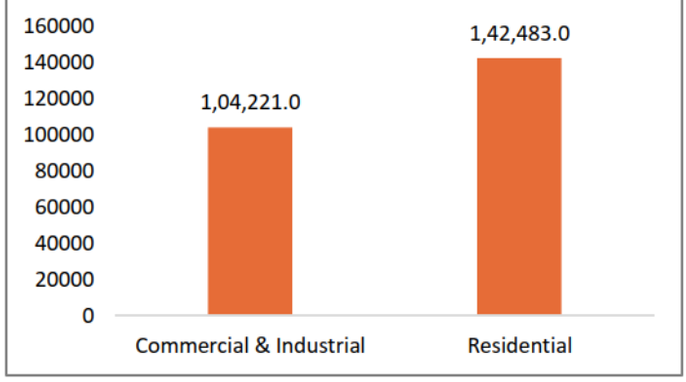
Transmission lines in ckm (2021)



Average Solar Tariffs in USD/kWh



Electricity Consumption in GWh (2021)



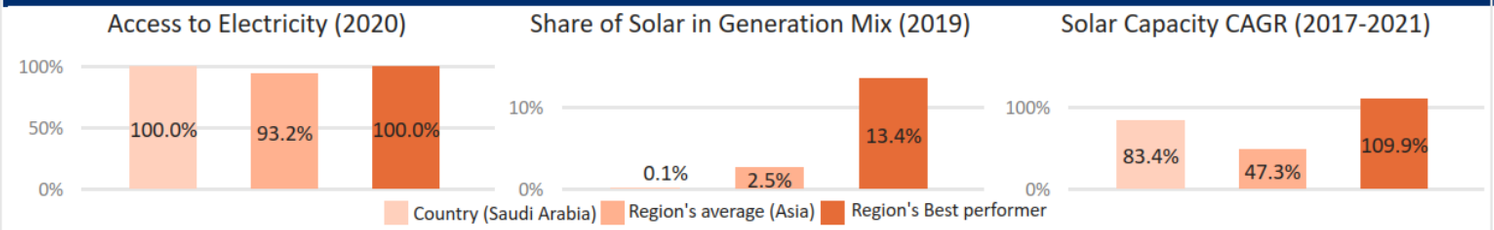
Policies/Schemes for Solar Segments (2021)

Solar Mini Grids	Standalone solar systems	Utility scale solar	Solar Parks	Floating Solar	Solar heating and cooling system	Battery waste management	Green Hydrogen
Yes	Yes	Yes	Yes	No	No	No	No

Emerging Technologies/Innovative Models (2021)

Hybrid technologies - combination of two or more technologies to achieve efficient systems (Example: wind + solar PV hybrid systems, solar + storage systems)	Yes
Emerging technologies - the next generation technologies (Example: Artificial Intelligence, Machine learning, Internet of Things, etc.)	Yes
E-mobility/Electric vehicles	Yes

Country's regional performance and characteristics



Areas of Strength
- Macroeconomy
- Technological Feasibility

Areas of Improvement
- Energy Imperatives
- Financing

Key Insights

Drivers	Insights
Macro-economy	• Saudi Arabia is a high-income country[1] with a GDP per capita (PPP) of USD 48,711 in 2021.[1] • Due to COVID-19 Pandemic, the GDP (Real) has declined by 4.1% in 2020. However, in 2021, the GDP has bounced back with an annual growth rate of 3.2% which is one of the fastest recoveries among similar sized economies.[2] • The inflation rate (CPI) of Saudi Arabia has declined to 3.1% in 2021 from 3.4% levels in 2020.[3] • The general government gross debt to GDP has declined to 30% in 2021 from 32.4% levels in 2020.[4]
Policy enablers	•The Saudi Government launched the Renewable Energy Program under the framework of the Custodian of the Two Holy Mosques Renewable Energy Initiative to deliver the country target of around 50% of electricity achieving energy mix balance with the compliance to the Kingdom's emissions commitments in line with the Kingdom's Vision 2030.[24] • In 2021, the country announced its goal to reach net zero by 2060.[6] • Saudi Arabia has planned a total of 15 GW to be tendered in 2022 and 2023,of which 5.36 GW were tendered in 2022. • In October 2021, during the Saudi Green Initiative (SGI), Saudi Arabia announced a net zero target to be achieved by 2060. It also upgraded its NDC under the Paris Agreement.[24]
Technological Feasibility	• Saudi Arabia receives very high levels of solar irradiation (GHI) of 6.2 kWh/m^2/day and specific yield 5.2 kWh/kWp/day indicating a strong technical feasibility for solar in the country.[11] • The government of Saudi Arabia will be installing 1300 MWh BESS in Neom.[25] • The Ministry of Energy, through its NREP, has pre-developed and tendered 2,170 MW of RE capacity in the Kingdom. It has commissioned 700 MW of wind and solar out which 300 MW is solar PV.[24] •Saudi Arabia is currently developing the Helios green hydrogen project in Neom, with a production capacity of 600 tonnes/day of clean hydrogen with power capacity of 4 GW utilizing the combined capacity from onshore solar (2.5 GW), wind and storage.[24]
Market Maturity	• SEC is the holding company which maintains a monopoly over transmission and distribution across the Kingdom and owns and operate majority of generation units.[14] •The Water and Electricity Regulatory Authority (WERA) is co-operating with of SEC and Saudi Principle buyer to ensure agile and transparent regulatory framework of the power sector.[24]
Infrastructure	• Saudi Arabia has four interconnections with the neighbouring countries of Kuwait, Bahrain, Qatar, and UAE through the Gulf Cooperation Council (GCC) interconnection project.[15] • In 2020, Saudi Arabia's transmission network comprised of about 89,100 ckm of line length and 1,150 substations at voltage levels varying from 110 kV to 380 kV.[15] • In 2021, the existing network was expanded by 2,372 ckm and 40 new transmission substations.[16] • Saudi Arabia investment plans in power, water, infrastructure, tourism estimated to be USD 21 Bn for the coming years.[17]
Financing	• Saudi Arabia Government through Renewable Energy Program aims to attract 100 Bn USD for renewable investment by 2030.[24] • Saudi Arabia is planning to generate 50% of electricity from renewables by 2030 in which kingdom's Public Investment Fund (PIF) would contribute 70% of the total investment to develop GW scale projects.[19]
Energy Imperatives	• In 2020, the per capita electricity consumption stood at 9.7 MWh, which is significantly higher in comparison to global average of 3.31 MWh.[20] • The peak demand for electricity in the country has increased to 356.62 TWh in 2021 from 338.03 TWh levels in 2020.[22] • In 2021, the total installed capacity in the country reached 105.21 GW with a significant share coming from gas (52.4%) and other fossil fuels (47.3%).[23] • Saudi Arabia has achieved the lowest LCOE globally for 600 MW utility scale project solar PV at 1.04 cent/kwh in 2019.[24]