

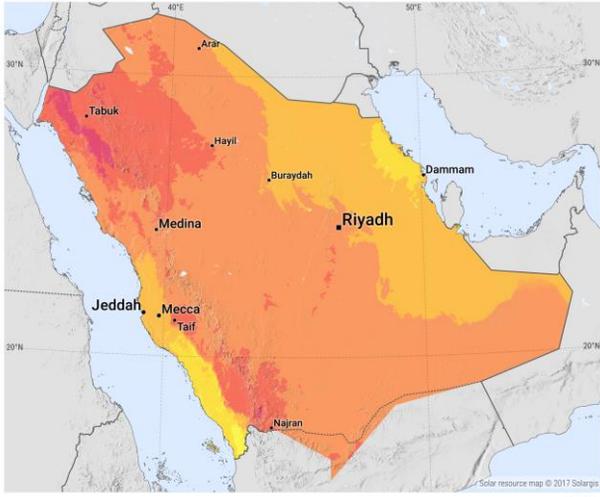
Solar Market Brief: Saudi Arabia



PHOTOVOLTAIC POWER POTENTIAL

SAUDI ARABIA

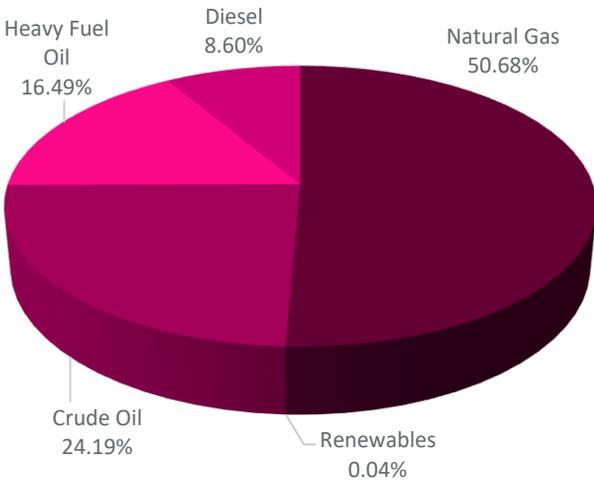
SOLARGIS



Average annual sum of PVOUT, period 1999-2016
Source: Solar resource map © 2019 Solargis

| | |
|-----------------------------|------------------|
| Population | 33.7 million |
| GDP per capita | US\$ 23,219 |
| GDP Growth (2018) | 2.2% |
| Inflation Rate (2018) | 2.5% |
| Sovereign Rating | A1 |
| FDI | US\$ 3.2 billion |
| Ease of Doing Business | 92 of 190 |
| Corruption Perception Index | 58 of 180 |

Power Generation by Source (2016)



Source: Center for Energy Studies, Rice University (2019)

Country facts framework

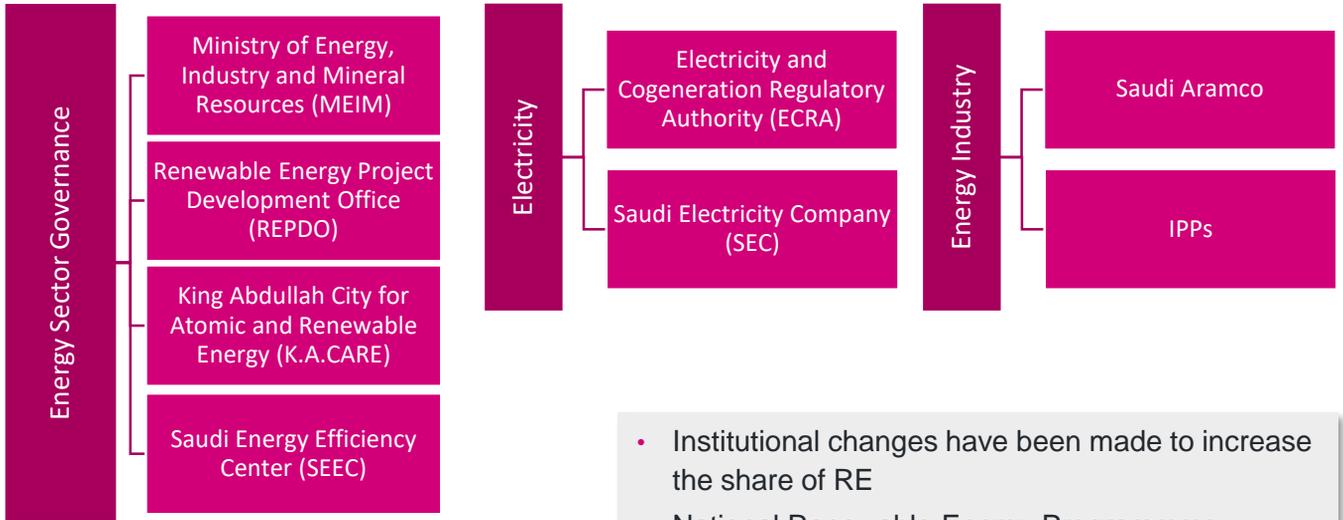
- High-income economy country
- Rapid industrialisation and economic growth contribute to the increasing electricity demand
- Electricity access rate is 100%
- Largest energy market in the Gulf Cooperation Council (GCC) region
- Second largest oil producer in the world

Key Electricity Market Facts

- The energy sector in Saudi Arabia is dependent on petroleum to supply most of the country's electricity.
- Connected to GCC interconnection grid for electricity exchange between member states when necessary.
- The Saudi government launched a strategy called "Vision 2030" in 2016 aimed at reducing the country's dependence on oil.
- Project pipeline includes 700 MW of wind and solar projects to be developed by 2019 / 2020.

| | |
|---------------------------|---------|
| Generation (2018) | 384 TWh |
| Consumption (2018) | 290 TWh |
| Installed Capacity (2017) | 76 GW |
| PV capacity (2018) | 0.09 GW |

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- Institutional changes have been made to increase the share of RE
- National Renewable Energy Programme launched in 2016, part of Vision 2030 plan
- Final goal is to have 30% of SA power supply from RE by 2030

Source: International Renewable Energy Agency, 2019.

Regulatory framework

- Fully integrated, state-owned utility Saudi Electricity Company (SEC) dominates power generation, transmission and distribution
- Ministry for Energy, Industry and Mineral Resources (MEIM) created in 2016, responsible for RE targets
- Solar tenders from Renewable Energy Project Development Office (REPDO)
- Individual PPAs can be issued by SEC for a lifetime of 20 to 25 years on a take and pay basis
- Net metering scheme approved by the Electricity and Cogeneration Regulatory Authority effective from 2017 allowing credits for residential PV solar power generation

Exemplary project financing conditions

- Public Investment Fund (PIF) programme developed to help realise projects that diversify the power sector in Saudi Arabia
- PIF and Saudi Public Pension Agency (PPA) are stakeholders in ACWA Power allowing the company to develop conventional and RE projects in the region
- Investments in RE are expected to increase as the Renewable Energy Project Development Office (REPDO) energy auctions commence
- Estimated USD 30 MM invested in small-scale solar projects in 2017
- Attractive financing conditions – low interest rates and long loan terms

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Suntrace's view on the market

With more experience, Saudi Arabia has been able to increase the sophistication of its renewable energy (RE) auctions and hence the competitiveness. Previous administrative requirements such as environmental licenses and grid permits, which resulted in additional costs for the bidders have been partially absorbed by the Saudi government as a way to increase interest in RE auctions. For example, the REPDO assumed the costs for permits, licenses, environmental tests, site preparation and solar resource assessments to reduce the costs for bidders for the 300 MW solar PV and 400 MW wind auctions. This also helped the bidders to create more uniform assumptions for project development.

Saudi Arabia is a high-income economy country with sound investment fundamentals: investment grade, decent growth rates and a growing electricity market. As the largest energy market in the GCC region, Saudi Arabia offers opportunities to develop solar solutions that can serve as a reference for other Middle Eastern markets. Regionally integrated in the GCC, the country accounts for about 50% of the region's total energy consumption.

The reducing costs of RE has made it more competitive with other sources of energy such as oil and gas. Even when oil prices are as low as 40 USD per barrel, PV and CSP technologies are still cost competitive. Auctions for large-scale PV and CSP projects in the region have resulted in the lowest prices for development of these technologies in the world. Factors such as land availability, excellent solar resources, auction designs, access to financing and improvements in the technology combine to make RE development, in particular solar, more attractive in Saudi Arabia and the MENA region. Due to the increasing competitiveness driving the development costs lower, Saudi Arabia has implemented strict financial requirements to prevent underbidding.

Construction of the 300 MW Sakaka PV plant has begun with commercial operation expected by the end of the year. The plant is being developed by Sakaka Solar Energy Company (SSEC) which is a joint venture between ACWA Power and AIGihazand. The project is financed by French investment bank Natixis. This is the first RE IPP project in the country.

Solar auctions are being used in Saudi Arabia to also create employment opportunities by setting local content criteria. The Sakaka 300 MW PV plant auction included a 30% local content requirement for services and equipment during the auction phase. This would ensure capacity building and promote the development of the local RE value chain.



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