



Bahrain

Asia & Pacific

Ease of doing Solar classification



Achiever

Electricity Consumption in kWh/capita (2020)

17548.4

Average PVout in kWh/kWp/day (2020)

4.9

Cumulative Solar Capacity in MW (2021)

11.3

Getting Electricity Score (2020)

79.7

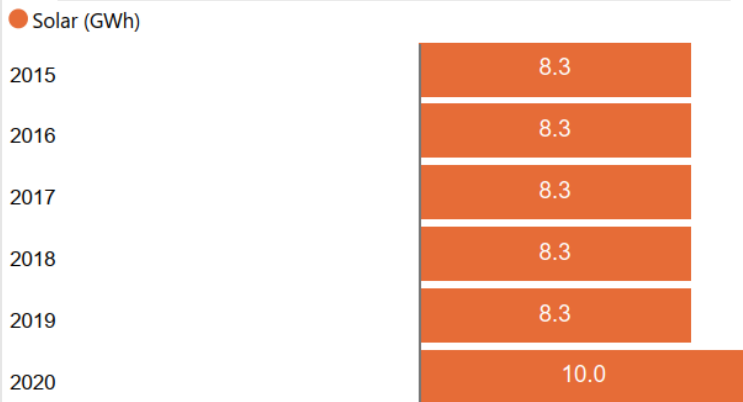
NDC Target by 2030 in % (base year 2005)

Not available

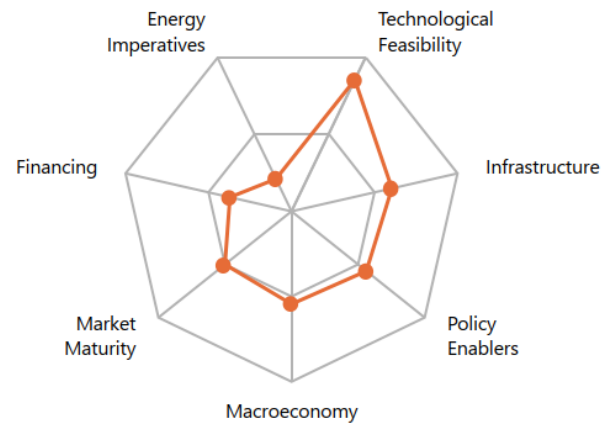
Human Development Index (2021)

0.9

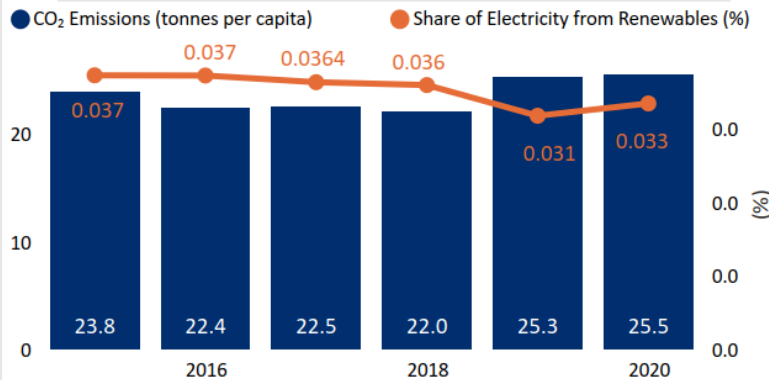
Renewable Energy Generation by Source



Performance against 7 Drivers



CO₂ Emissions vs Electricity share from Renewables

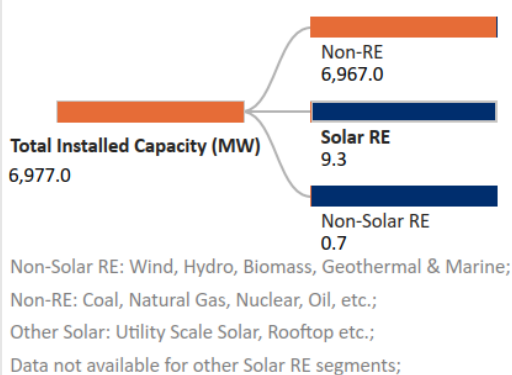


Fiscal Incentives & Public Financing for Renewables (2020)

Investment or production tax credits?
No

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

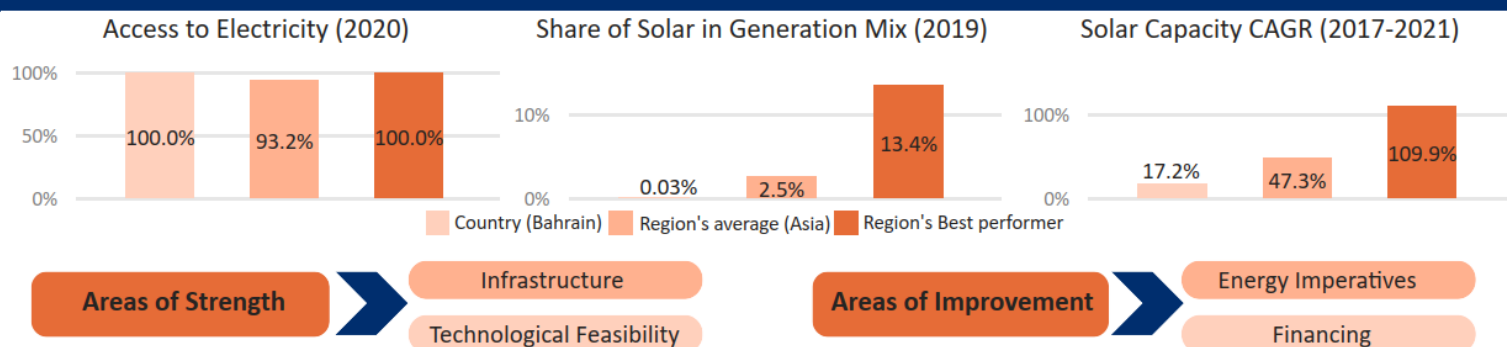
Installed Capacity by Source (2019)



Support for Renewables (2020)

Feed-in-Tariffs for renewable energy supply to the grid? Yes	Net metering/Gross metering policies and regulations? Yes
Renewable Energy Certificates? Yes	Renewable Purchase Obligation? No

Country's regional performance and characteristics



Key Insights

Drivers

Insights



Macro-economy

- Bahrain is a high-income country¹ with GDP per capita (PPP) of USD 54,256² as of 2021. 56.65% of share of the GDP is dominated by services, 40.28% by Industry, 18.13% by Manufacturing and 0.31% by Agriculture.⁴
- Due to COVID-19 Pandemic, the GDP (Real) has contracted by 4.9% in 2020. However, in 2021, the GDP bounced back with an annual growth rate of 2.2%.²
- The inflation rate (CPI) of Bahrain has increased to -0.6% in 2021 from -2.3% levels in 2020.²
- The general government gross debt to GDP has reached 128.5% in 2021 from 129.7% levels in 2020.³



Policy enablers

- The Government of Bahrain has recently come up with a National Renewable Energy Action Plan (NREAP) with a target of taking up the RE share in the generation mix to 10% by 2035.⁵
- To meet the country's renewable energy targets, Bahrain's Sustainable Energy Authority (SEA) has outlined a target of 80 MW of electricity from renewables by 2025 and 710 MW by 2035.⁶
- SEA has also come up with Green Building Labelling Programme to achieve energy efficiency goals as envisaged by National Energy Efficiency Action Plan (NEEAP).⁸
- To stimulate private sector investments policies such as net metering scheme, tender-based feed-in tariffs and renewable energy mandate for new buildings have been rolled out for private investors.⁹



Technological Feasibility

- Bahrain receives high levels of solar irradiation (GHI) of 5.8 kWh/m²/day and specific yield 4.9 kWh/kWp/day indicating a strong technical feasibility for solar in the country.¹⁰
- Bahrain's SEA has planned to develop a 4 MW Plant for the production of Green Hydrogen at an estimated cost of USD 150 Mn.¹¹



Market Maturity

- 100% of the population in Bahrain has access to electricity.¹²
- Bahrain accounted only 0.14% share of RE in generation mix in 2021.¹³
- The power sector in Bahrain is regulated by Electricity & Water Authority (EWA).¹⁴
- The generation sector has presence of EWA owned power plants and Independent Power Producers (IPPs) while transmission and distribution sectors are wholly controlled by EWA.¹⁵



Infrastructure

- The transmission system of Bahrain operates between 66 kV to 220 kV AC voltage levels.¹⁵
- Bahrain, being an energy surplus country, has exported 0.45 Bn kWh of electricity in 2019.¹⁶
- Bahrain Electricity & Water Authority has signed USD 28.7 Mn Contract with GE Digital for Grid Software Solutions in 2021.¹⁷



Financing

- The Kingdom's Economic Recovery Plan is funding over USD 30 Bn of investments in strategic projects which includes renewable projects as well.²²
- Kuwait Finance House (KFH) would be financing a solar energy farm at the Bahrain International Circuit which would support Bahrain's endeavours towards reducing carbon emission.²³



Energy Imperatives

- In 2020, the per capita electricity consumption stood at 17.5 MWh, which is significantly higher than the global average of 3.31 MWh.¹⁸
- The installed solar PV capacity witnessed a CAGR of 17.2% between 2017-21 reaching 11.3 MW in 2021 from 6.0 MW levels in 2017.¹⁹
- The peak demand for electricity in Bahrain stood at 29.83 TWh remaining same in 2021 and 2020.²⁰
- In 2021, gas based thermal power plants dominated the generation mix having 99.9% share in the mix.²¹
- In the last decade, the total power demand in the country has risen at a CAGR of 5.4% reaching 361,462 GWh in 2019 from 225,662 GWh in 2010.⁴