India

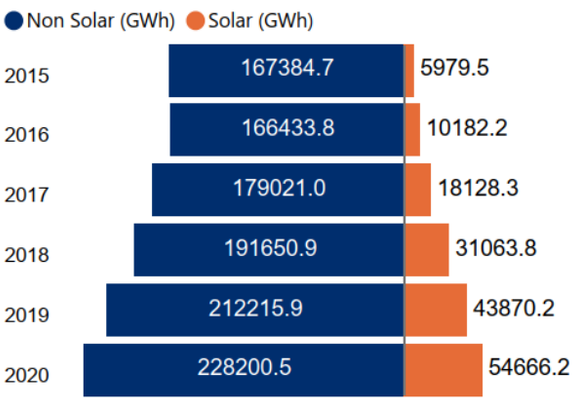
Asia & Pacific

Ease of doing Solar classification

Achiever

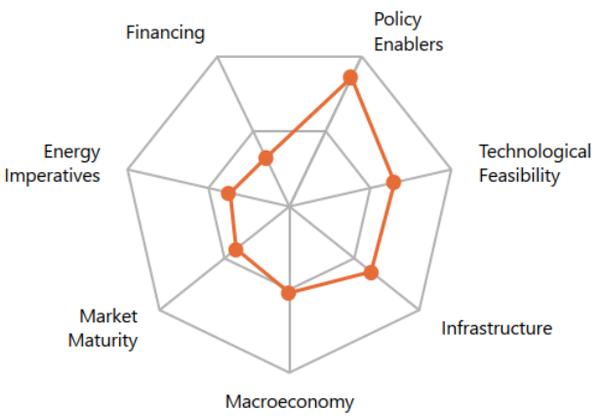
Electricity Consumption in kWh/capita (2020)	Average PVout in kWh/ kWp/day (2020)	Cumulative Solar Capacity in MW (2021)
1132.4	**4.3**	**49341.5**
Getting Electricity Score (2020)	**NDC Target by 2030 in % (base year 2005)**	**Human Development Index (2021)**
89.4	**45.0**	**0.6**

Renewable Energy Generation by Source

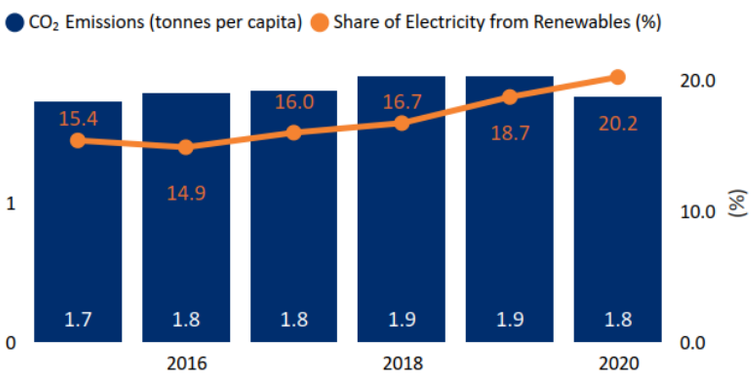


Non Solar RE includes Wind and Hydro;

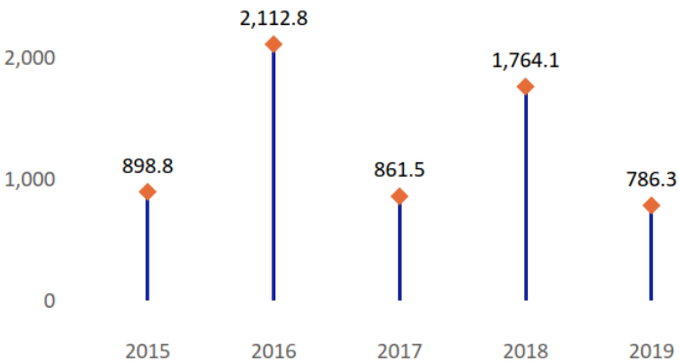
Performance against 7 Drivers



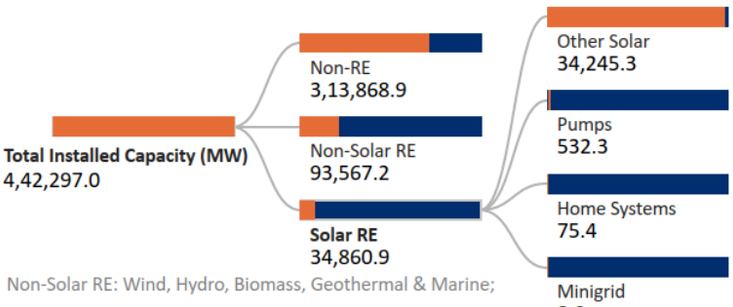
CO_2 Emissions vs Electricity share from Renewables



International Finance received for Clean Energy (Million US Dollars)



Installed Capacity by Source (2019)

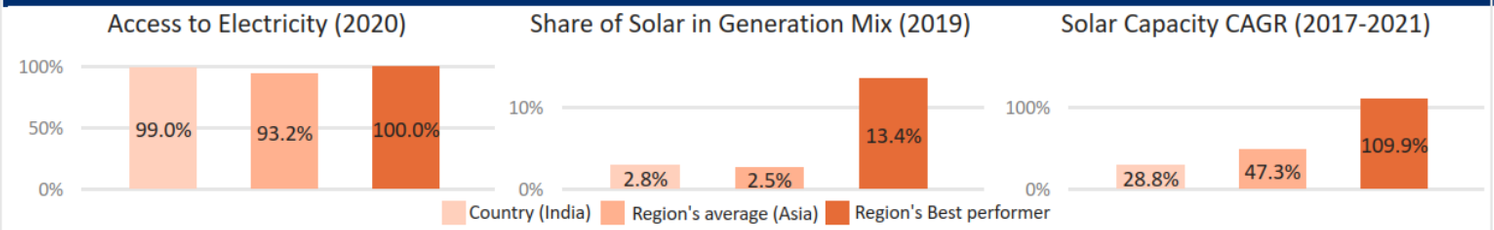


Non-Solar RE: Wind, Hydro, Biomass, Geothermal & Marine;
Non-RE: Coal, Natural Gas, Nuclear, Oil, etc.;
Other Solar: Utility Scale Solar, Rooftop etc.;
Data not available for other Solar RE segments;

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?**
Yes	**Yes**

Country's regional performance and characteristics



Areas of Strength → Policy Enablers; Technological Feasibility

Areas of Improvement → Energy Imperatives; Financing

Key Insights

Drivers	Insights
Macro-economy	• India is a lower middle-income country having GDP per capita (PPP) USD 7,242 as of 2021[2] . Services, Agriculture and Industry sectors accounted for 47.69%, 16.77% and 25.87% of GDP respec vely. [1] • GDP (Real) grew at an annual rate of 8.9% in 2021, further it is expected to grow by 8.2% in 2022.[3] • Inflation rate in the country decreased to 5.5% in 2021 from earlier levels of 6.2% in 2020, while the total public debt was at 86.76% of GDP as of 2021.[4, 5]
Policy enablers	• MNRE is the nodal agency that is responsible for developing policy and regulations for all RE related aspects.[6] • India aims to attain 500 GW of generation capacity through RE resources by 2030 and to reach net zero by 2070. [7] • FDI up to 100% is permitted in the renewable energy sector with no prior Government approval required. [8] • National Hydrogen Mission was launched in 2022 to meet climate targets and make India a green hydrogen hub. [9] • GoI approved Rs 19,500 Cr PLI scheme for manufacturing of high efficiency solar PV modules in 2022.[10]
Technological Feasibility	• The country receives high levels of solar irradiation (GHI) of 5.1 kWh/m^2/day and specific yield 4.3 kWh/kWp/day indicating a moderate technical feasibility for solar in the country.[11] • Solar Energy Corporation of India (SECI) is a nodal body which implements the National RE related schemes and has issued tenders for 10,100 MW of hybrid/RTC/Peak power capacity of which 5,350 MW has already been awarded.[12] • World's largest FSPV of 600 MW capacity is to be constructed at Omkareshwar dam in Khandwa district of MP. [13] • MoP has come up with a scheme where existing Thermal/Hydro power stations will be bundled with RE and storage power.[14]
Market Maturity	• 99% of the population in the country is having access to electricity as of 2020. [15] • The power sector is vertically unbundled and there are separate (public and private) entities for Generation, Transmission and Distribution.[16] • CERC is the regulatory commission responsible for regulating the grid tariff, interstate electricity transmission and electricity grid code.[17] • Power trading company such as India Energy Exchange (IEX), Power Exchange India Ltd (PXIL) offer open platforms for selling and purchasing of electricity in the country. [18]
Infrastructure	• Central Electricity Authority (CEA) mainly prepares the transmission network expansion plan.[19] • India has Cross Border Electricity Trade (CBET) with Nepal, Bangladesh, and Bhutan.[21] • MNRE partnered with the United States to create the Solar Energy Training Network (SETNET) of India to establish greater consistency and collaboration among India's solar energy training programs.[22] • The manufacturing capacity for solar PV cells and modules are around 3 GW/year and 10 GW/year.[23]
Financing	• The Asian Development Bank (ADB) has signed an agreement to invest USD 15 Mn in Avaada Energy Private Limited (AEPL) to help the company to scale up PV solar energy generation capacity in India.[24] • The World Bank Board approved USD 165 Mn in additional financing to support India's residential sector to adopt rooftop solar systems and make solar energy more affordable in 2022.[25] • IREDA has achieved the highest-ever loan sanction of Rs. 23,921.06 Cr in FY 2021-2026 and foreign investments in India stood at USD 1.6 Bn in the RE sector.[27]
Energy Imperatives	• As of 2021, coal dominates the total installed capacity of with a share of 56%, followed by solar and hydropower having 10.33% and 10.06% share respectively.[28] • The total installed capacity in the country stood at 466 GW as of 2021.[28] • The peak demand for electricity in the country reached 1.37 TWh in 2021.[29]