Senegal

Africa

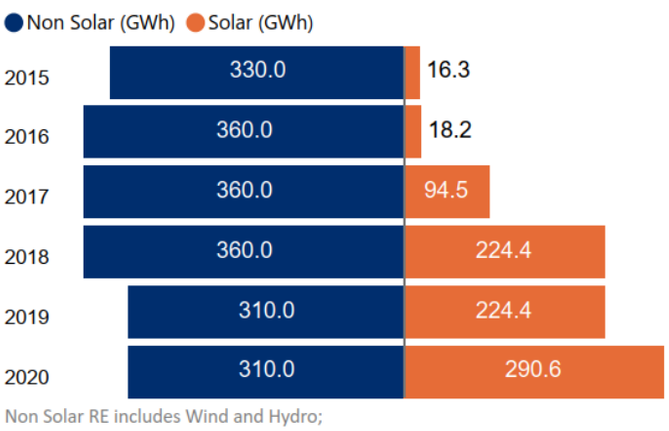
Ease of doing Solar classification

Influencer

Electricity Consumption in kWh/capita (2020)	Average PVout in kWh/ kWp/day (2020)	Cumulative Solar Capacity in MW (2021)
296.2	**4.6**	**237.5**

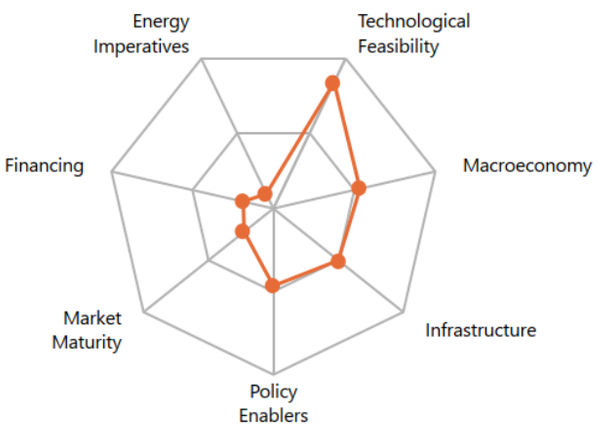
Getting Electricity Score (2020)	NDC Target by 2030 in %	Human Development Index (2021)
65.2	**7.0**	**0.5**

Renewable Energy Generation by Source

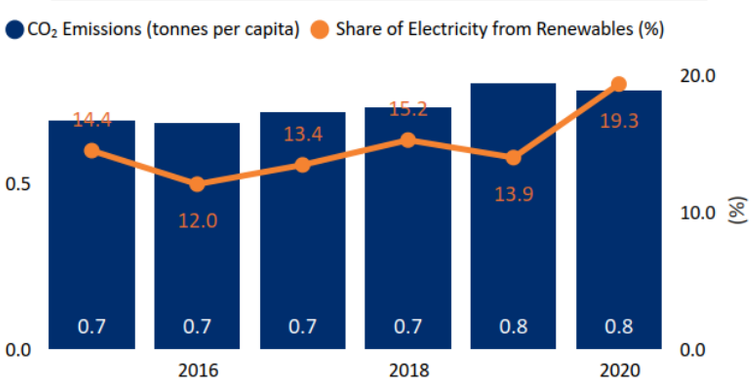


Non Solar RE includes Wind and Hydro;

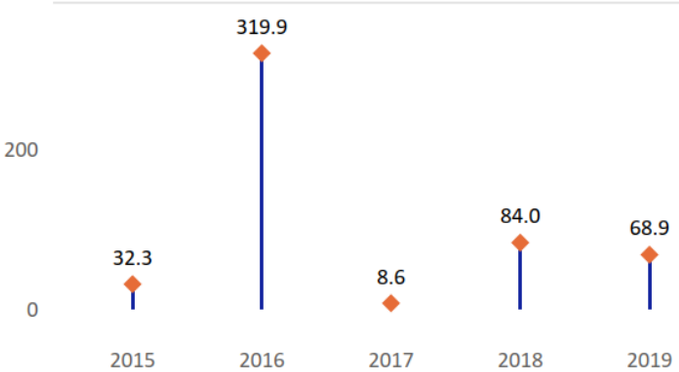
Performance against 7 Drivers



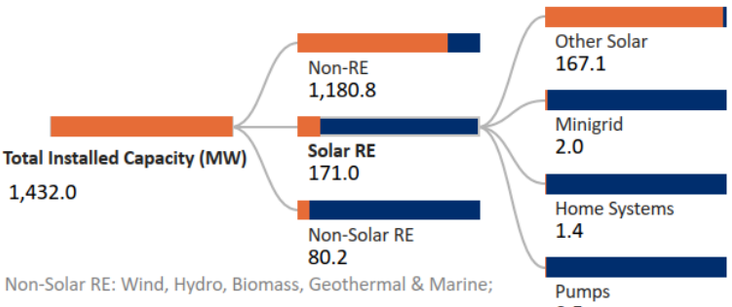
CO_2 Emissions vs Electricity share from Renewables



International Finance received for Clean Energy (Million US Dollars)



Installed Capacity by Source (2019)



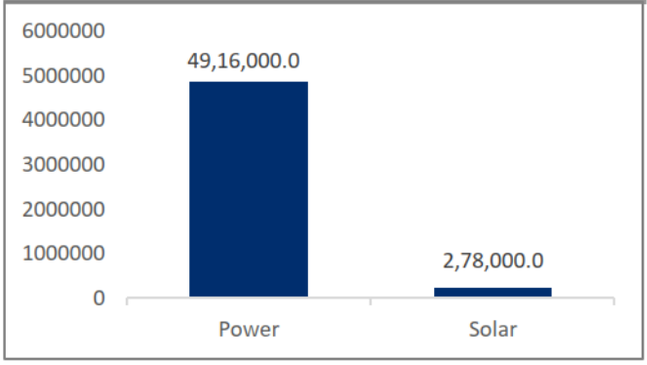
Non-Solar RE: Wind, Hydro, Biomass, Geothermal & Marine;
Non-RE: Coal, Natural Gas, Nuclear, Oil, etc.;
Other Solar: Utility Scale Solar, Rooftop etc.;
Data not available for other Solar RE segments;

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?**
No	**Yes**

Peak Demand/Load in MW (2021)	Electricity Consumption CAGR in % (2022 - 2026)	Average term of Solar PPAs in years (2021)
805.0	8.2	25.0

Electricity Generation in GWh (2021)



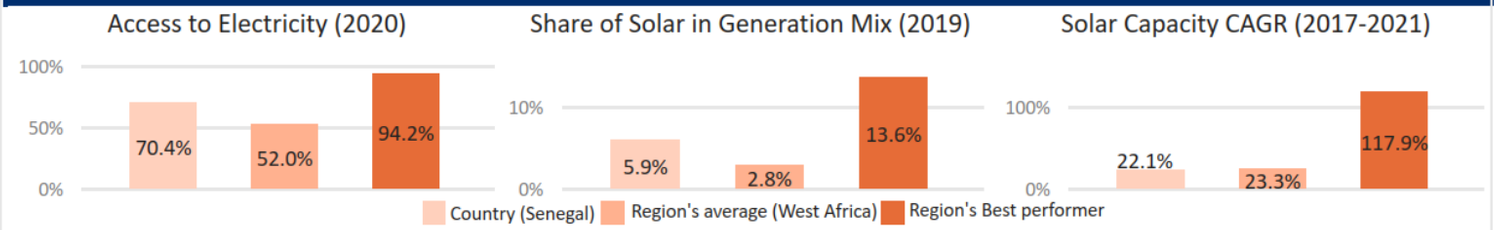
Accessibility to Payment Mechanisms for purchase of Solar Products (2021)	
Mobile application based online transactions	Yes
Digital E-wallets	No
Cash-on-delivery	Yes

Financial Support Mechanisms (2021)	
Duty waivers to solar developers for importing/procuring material from foreign land	Yes
Tax waivers for manufacturers of raw materials (modules, off grid appliances, etc.)	Yes
Credit facilitation for solar energy from financial institutions (FIs)	Yes
Viability Gap Funding (VGF) i.e. Grant to support RE projects that are economically justified but fall short of financial viability	Yes
Accelerated Depreciation benefit for Industrial/commercial users of Solar Power	No

Policies/Schemes for Solar Segments (2021)								
Rooftop Solar	Solar Mini Grids	Standalone solar systems	Utility scale solar	Solar Parks	Floating Solar	Solar heating and cooling system	Battery waste manage ment	Green Hydrogen
Yes	Yes	Yes	Yes	Yes	No	No	Yes	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.)	No
E-mobility/Electric vehicles	No

Country's regional performance and characteristics



Areas of Strength → Macroeconomy; Technological Feasibility

Areas of Improvement → Energy Imperatives; Financing

Key Insights

Drivers	Insights
Macro-economy	•Senegal is a lower middle-income country[1] with a GDP per capita (PPP) of USD 3,840 in 2021.[2] •GDP (Real) grew at an annual rate of 6.1% in 2021, and it is estimated to grow by 5% in 2022.[3] •The fiscal deficit in the country narrowed down to 17.6% of GDP in 2021 from 16.7% levels in 2020.[4] •Total public debt in the country increased to 73% of GDP in 2021 from 68.8% levels in 2020.[4]
Policy enablers	•The Ministry of Energy and Renewable Energy Development is responsible for preparing and implementing the policy in the production and distribution of energy and promoting RE in Senegal.[5] •The National Agency for Renewable Energies (ANER) is responsible for the promotion and development of solar energy, wind energy, biomass, tidal power, and small hydraulics.[6] •Senegal targets to increase the share of solar to 11.59% of the energy mix by 2023.[7] •The tariff for solar power under the Feed-in-Tariff mechanism is 0.076 USD/kWh.[7]
Technological Feasibility	•Senegal receives very high levels of solar irradiation of 5.8 kWh/m^2/day and a specific yield of 4.6 kWh/kWp/day indicating a very strong technical feasibility for solar in the country.[8] •The country typically receives 8 hours of sunlight per day. [7] •The UN Environment program is currently active in Senegal and is working on the introduction of zero/low-emissions buses.[9] •The average cost of electricity storage in Senegal is 0.052 USD/ kWh.[7]
Market Maturity	•70.4% population in Senegal had access to electricity as of 2020.[10] •The Electricity Sector Regulatory Commission (CRSE) is an independent authority responsible for regulating the production, transmission, distribution, and sale of electrical energy in Senegal.[11] •The National Electricity Company of Senegal (SENELEC) is responsible for the production, transport, distribution, purchase, wholesale/retail sale, and import/export of energy.[11]
Infrastructure	•There are two grid systems: the 90 kV national grid and the 225 kV supranational grid comprising of 13,000 km which are managed by SENELEC.[12] •In Senegal, reserve capacity is insufficient resulting in frequent (scheduled or unscheduled) outages while transmission losses, old thermal power plants, and increasing oil prices result in high average production costs.[12] •The seasonal/yearly peak demand or load that has been met during 2021 is 805 MW.[7] •The expected investment in the T&D Infrastructure over the next 5 years (2022-2026) in Senegal is USD 799.05 Mn.[7]
Financing	•The Export-Import Bank of the United States (EXIM) board approved USD 91.5 Mn in loan guarantee financing that supports U.S. exports of design engineering and construction services to the Republic of Senegal.[13] •The International Finance Corporation (IFC) approved €38 Mn financing for two solar plants that will provide 60 MW AC low-cost power.[14] •In 2021, the Multilateral Investment Guarantee Agency (MIGA) issued €6.9 Mn in guarantee to support two solar PV plants, providing protection against non-commercial risks for a duration of up to 15 years.[15]
Energy Imperatives	•In 2020, Senegal's per capita electricity consumption stood at 0.29 MWh, which is significantly lower in comparison to the global average of 3.31 MWh.[17] •The total installed capacity in the country stood at 4,916 BUs in 2021.[7] •The total installed capacity of solar PV witnessed a CAGR of 22.1% between 2017-2021 reaching 237.5 MW in 2021 from 107 MW levels in 2017.[16] •The installed capacity of rooftop solar is 2.09 MW in 2021.[7] •The average solar tariff in Senegal is 0.049 USD/kWh in 2019.[7]