El Salvador

Latin America & Caribbean

Electricity Consumption in BU (2017)

6.2

Share of Population with Access to Electricity (2018)


World Bank's Ease of Doing Business Score (2020)

65.30

Installed Solar Capacity in MW (2019)

391.4

Installed Off-Grid Solar Capacity in MW (2019)

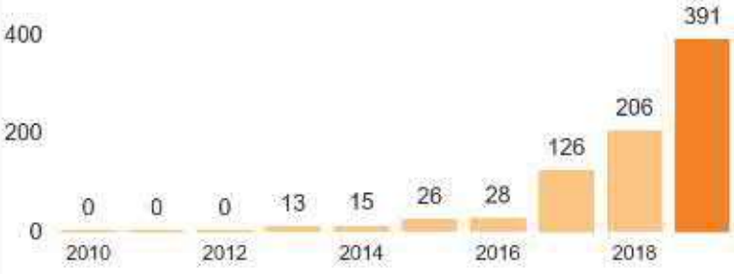
4.0

Solar installed capacity Growth rate (CAGR) for 2015-19

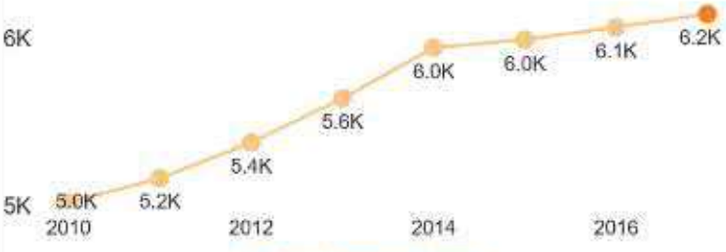
97%

## Power Trends

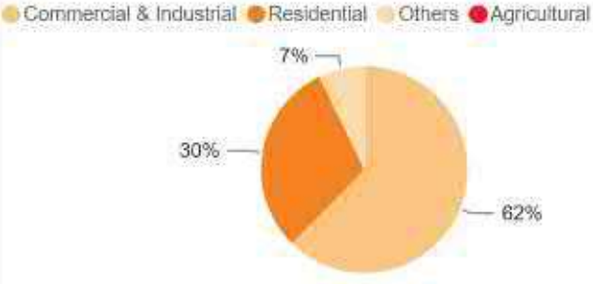
### Cumulative Solar installed Capacity (MW)



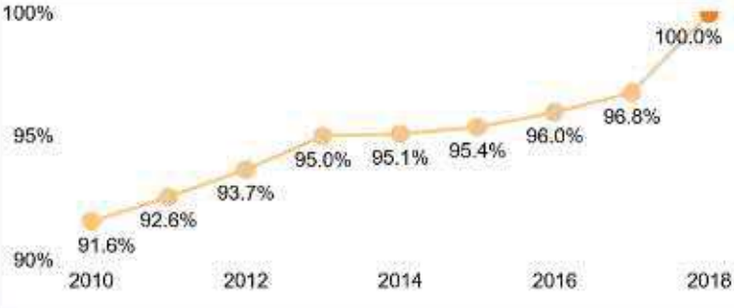

### Overall Electricity Consumption (MU)



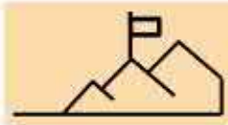

### Consumer Mix




### Access to Electricity



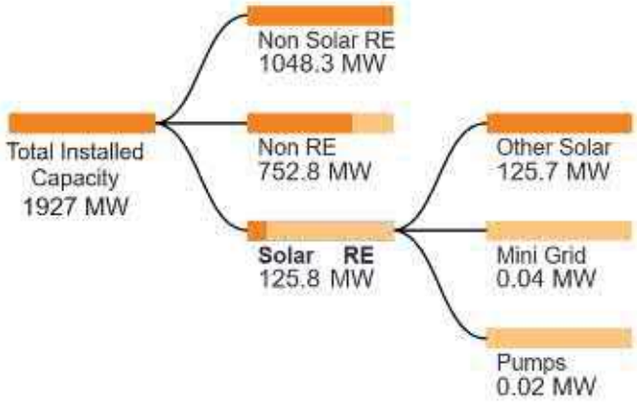

## Ease of Doing Solar Classification



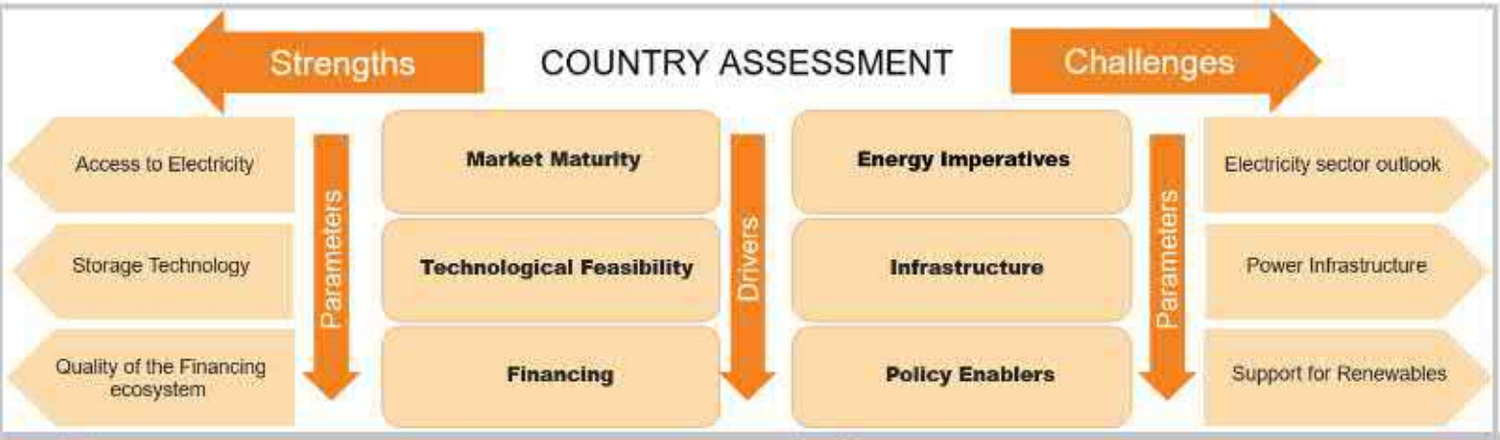
Influencer

### Performance against 7 Drivers

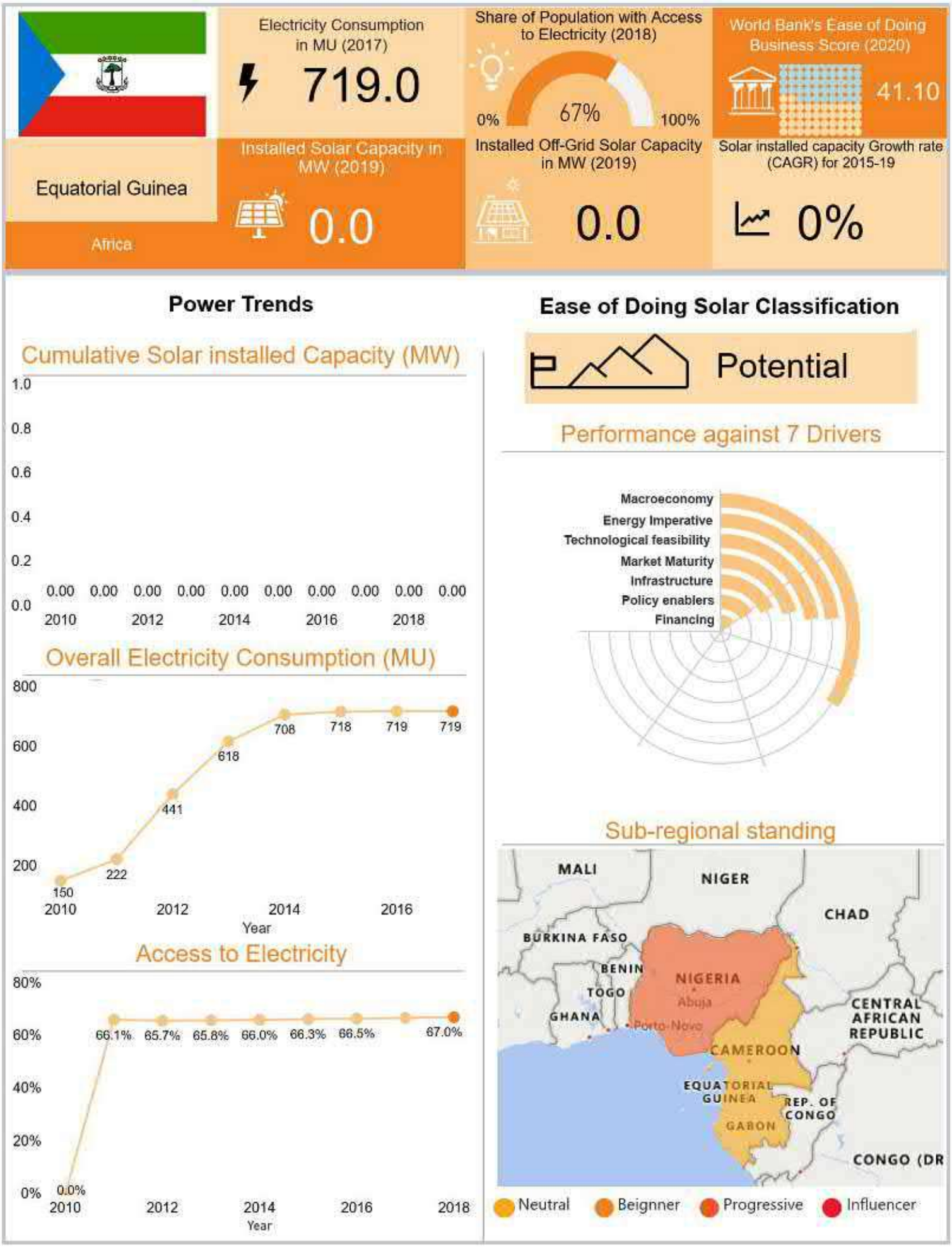

### Installed Generation Capacity by Source

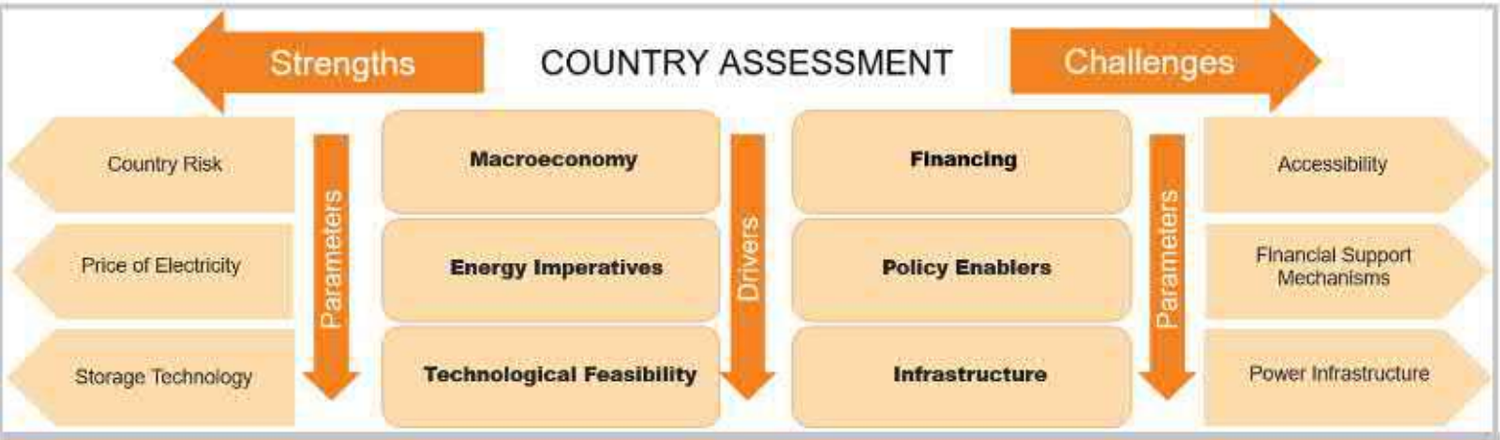



Non-Solar RE includes Wind, Hydro, Biomass, Geothermal & Marine;
Non-RE includes Coal, Natural Gas, Nuclear, Oil, etc.;
Other Solar includes Utility Scale Solar, Rooftop etc.;
Year: 2017.




| Drivers | Insights |
|---|---|
| Macro-economy | • GDP (Real) has grown at an annual rate of 2.4% in 2019.[9]<br>• El Salvador is a lower-middle-income developed country with a GDP per capita of USD 4,187 in 2019.[3,10]<br>• Ongoing smooth political transition, strengthened policy frameworks and structural reforms have led to sustained economic growth in the recent years.[17]<br>• The GDP (current) is recorded at USD 27.02 billion in 2019.[11] |
| Policy enablers | • As per Decree No. 80, from 2012, mandatory dispatch is considered for all grid connected renewable energy generators.[12]<br>• In 2015, Decree No. 462 was amended which offers income tax benefits for all sources of renewable energy. Also, it offers income tax benefits for the sale of Certified Emission Reductions under the Clean Development Mechanism.[13]<br>• El Salvador has launched renewable energy tenders for renewable energy projects in 2013. Renewable energy projects, with total capacity of 313 MW, have been tendered till now.[14,15]<br>• The Master Plan for Renewable Energy Development 2012-2026 aims to add an ambitious 660 MW of renewable energy between 2012 and 2026.[16] |
| Technological Feasibility | • Owing to relatively high levels of average solar irradiation (GHI) of 5.92 kWh/m$^2$/day and specific yield of 4.80 kWh/kWp, strong technical feasibility is envisaged for solar projects in El Salvador.[2] |
| Market Maturity | • 100% of the population has access to electricity in 2018.[3]<br>• Despite having significant potential, solar contributed to 7% in the total generation of 5,883 MUs in 2019.[4]<br>• The price of solar power has fallen from USD 181.79 per MWh in the first auction held in 2014 to USD 8.45 per MWh in the auction held in 2019.[15,18]<br>• El Salvador imports 25% of its total electricity from its neighbouring countries making it the biggest electricity importer in Central America.[20] |
| Infrastructure | • As of 2014, Transmission and distribution losses stood at 11.3% of output indicating a considerably efficient network.[21]<br>• Challenging topography, such as mountainous regions, could be a deterrent for the installation of large utility scale solar projects.[1]<br>• To meet the increasing demand, total installed capacity is expected to grow from 2,124 MW in 2019 to 3,258 MW in 2030 at a CAGR of 4.0%. Solar PV is expected to have the largest consumption over the years with capacity reaching to 751 MW by 2030.[19] |
| Financing | • El Salvador has a credit rating of B3 with a stable outlook in 2020.[7]<br>• According to UNCTAD's World Investment Report 2020, El Salvador has recorded FDI inflows of USD 662 million in 2019.[1]<br>• El Salvador has recorded a total public debt of 70% of GDP, fiscal surplus of 1% and 1.1% inflation in 2018.[17]<br>• The banking sector remains strong and well capitalized as of 2018. The credit to private sector has increased from 51.5% in 2017 to 52.4% of GDP in 2018.[17] |
| Energy Imperatives | • Per capita consumption of 1,100 kWh is relatively low in comparison to the global average.[5]<br>• The generation mix is diversified with oil having largest share of 28% and with hydro and geothermal contributing 25.9% and 25% respectively.[4]<br>• Country's total installed capacity was 2,231 MW in 2019 with a 66% (1,474 MW) share of renewables.[22]<br>• Out of total installed renewable energy capacity of 1,474 MW, solar installed capacity is 391 MW.[22]<br>• With economic and population growth, the annual electricity consumption is expected to reach 6,589 BUs by 2023 from 6,099 BUs in 2019, growing at a CAGR of 2%.[6] |


Equatorial Guinea
Africa
Electricity Consumption in MU (2017)
719.0
Share of Population with Access to Electricity (2018)
0%
67%
100%
World Bank's Ease of Doing Business Score (2020)
41.10
Installed Solar Capacity in MW (2019)
0.0
Installed Off-Grid Solar Capacity in MW (2019)
0.0
Solar installed capacity Growth rate (CAGR) for 2015-19
0%
Power Trends
Cumulative Solar installed Capacity (MW)
1.0
0.8
0.6
0.4
0.2
0.0
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
2010 2012 2014 2016 2018
Overall Electricity Consumption (MU)
800
600
400
200
150
222
441
618
708
718
719
719
2010 2012 2014 2016
Year
Access to Electricity
80%
60%
40%
20%
0%
0.0%
66.1%
65.7%
65.8%
66.0%
66.3%
66.5%
67.0%
2010 2012 2014 2016 2018
Year
Ease of Doing Solar Classification
Potential
Performance against 7 Drivers
Macroeconomy
Energy Imperative
Technological feasibility
Market Maturity
Infrastructure
Policy enablers
Financing
Sub-regional standing
MALI
NIGER
CHAD
BURKINA FASO
BENIN
TOGO
GHANA
NIGERIA
Abuja
Porto-Novo
CAMEROON
CENTRAL AFRICAN REPUBLIC
EQUATORIAL GUINEA
REP. OF CONGO
GABON
CONGO (DR
Neutral
Beignner
Progressive
Influencer




| Drivers | Insights |
|---|---|
| Macro-economy | • Equatorial Guinea is an Upper-middle-income economy. The economy depends heavily on mining industries.[1,8]<br>• GDP (Real) has contracted at an annual rate of 6.1% between 2018 and 2019.[2]<br>• FDI inflows increased from USD 396 million to USD 452 million between 2018 and 2019.[1]<br>• After the discovery of large oil reserves in the 1990s, Equatorial Guinea became the third-largest producer of oil in Sub-Saharan Africa, after Nigeria and Angola. More recently, substantial gas reserves have also been discovered.[3] |
| Policy enablers | • The Action Plan for 2020 commits to providing the country and its population with basic needs for development. The country's "Electricity for All" initiative aims to establish an efficient and reliable electricity system.[4] |
| Technological Feasibility | • Owing to relatively moderate levels of solar irradiation levels of 4.6 kWh/m$^2$/day and specific yield of 3.66 kWh/kWp, a moderate technical feasibility is envisaged for solar projects in Equatorial Guinea.[5] |
| Market Maturity | • 67% population had access to electricity as of 2018.[11]<br>• Although electricity demand is growing in Equatorial Guinea, access to electricity and reliability of supply are low as a result of the country's inadequate infrastructure and management of the national grid.[7]<br>• The Ministry of Mines, Industry and Energy oversees the energy sector whereas the Electricity Energy Regulatory Agency regulates the power market.<br>• The Electricity sector is managed by Sociedad de Electricidad de Guinea Ecuatorial (SEGESA) through its subsidiaries- SEGESA Generation, SEGESA Transmission and SEGESA Commercial (Distribution).[12] |
| Infrastructure | • Under the national Economic Development Plan Horizon 2020 of the Government of Equatorial Guinea, a 5 MW microgrid was developed in the Annobon Island. |
| Financing | • Despite liberalization of the banking system, corporate financing is limited. Fund grants to small and medium-sized enterprises are also limited, although, this is a common funding instrument that is available to countries in the region.[9] |
| Energy Imperatives | • Per capita electricity consumption in 2019 was 1,293 kWh, which is relatively lower in comparison to the global average.[6]<br>• Total installed capacity in the country was 401 MW in 2019 which includes 127 MW of hydro.[10]<br>• Country is yet to develop a Solar PV capacity as of 2019.[10] |

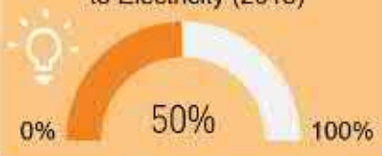
Eritrea

Africa

Electricity Consumption in MU (2017)

327.0

Share of Population with Access to Electricity (2018)




World Bank's Ease of Doing Business Score (2020)

21.60

Installed Solar Capacity in MW (2019)

12.5

Installed Off-Grid Solar Capacity in MW (2019)

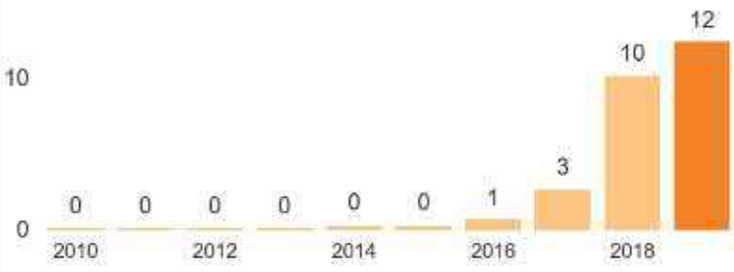
12.5

Solar installed capacity Growth rate (CAGR) for 2015-19

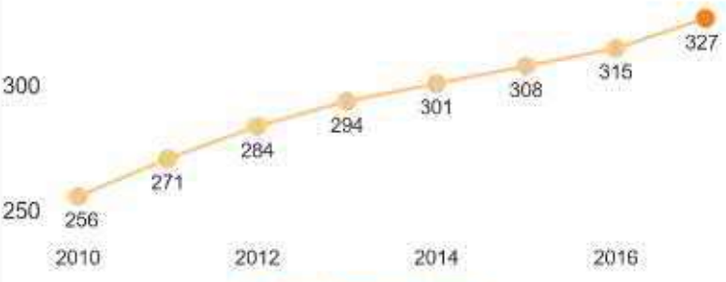
151%

## Power Trends

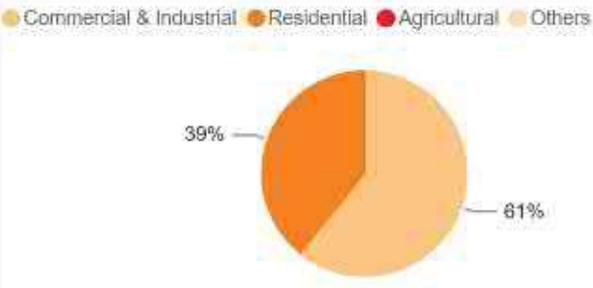
### Cumulative Solar installed Capacity (MW)



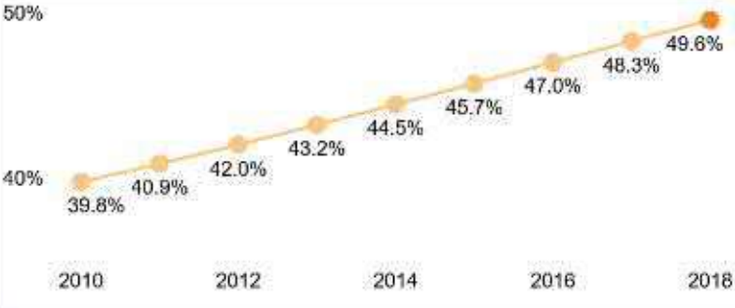

### Overall Electricity Consumption (MU)



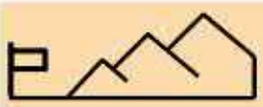

### Consumer Mix




### Access to Electricity



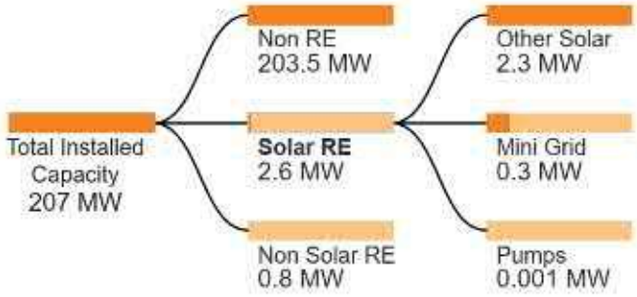

## Ease of Doing Solar Classification



Potential

### Performance against 7 Drivers


### Installed Generation Capacity by Source

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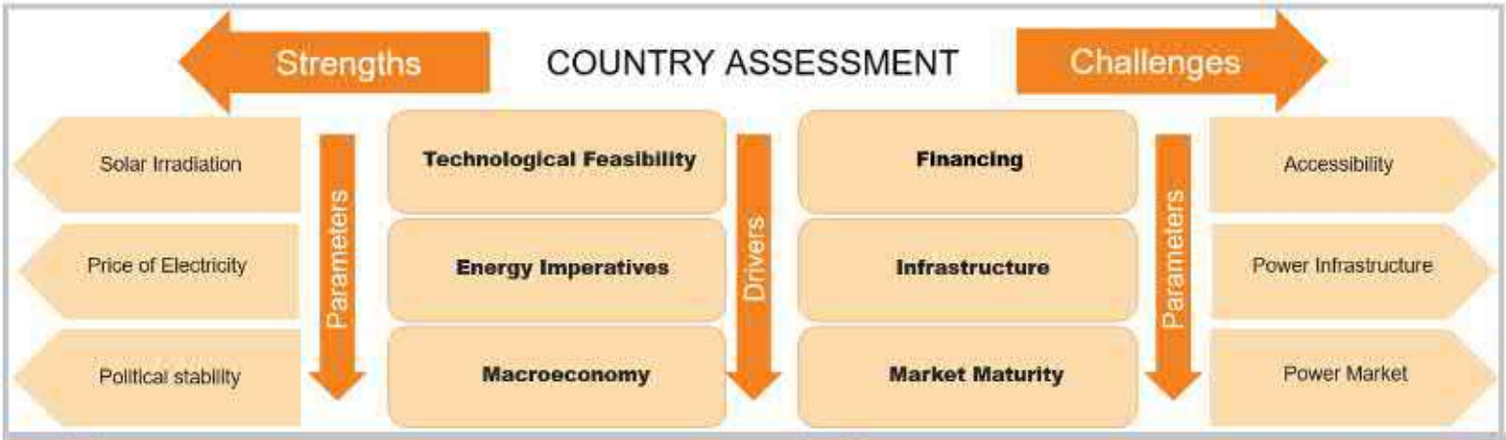
Year: 2017.




| Drivers | Insights |
|---|---|
| Macro-economy | • GDP (Real) has grown at an annual rate of 3.8% in 2019.[1]<br>• Eritrea is a low-income developing country with a GDP of USD 6.5 billion as of 2019.[3,4]<br>• Mining, Tourism and Agriculture are the major contributors to the economy.[2]<br>• Owing to recent improvements in geopolitical stability in the region, the economy is expected to grow and attract private sector investments in the coming years.[2]<br>• Eritrea's economy is vulnerable to externalities and climate changes owing to significant dependence on exports of gold, zinc and agricultural raw materials.[2] |
| Policy enablers | • The "Enhancing Energy Access and Energy Security in Eritrea 2014" aims to achieve 100% access to electricity by 2030.[13]<br>• Under the "Renewable energy Policy and Development Framework 2010", the government has set a target to increase the share of renewable energy to 50% in the generation mix by 2030.[13]<br>• The government of Eritrea is targeting to achieve the technical and non-technical losses under 10% by the end of 2020.[13] |
| Technological Feasibility | • Owing to relatively high levels of average solar irradiation (GHI) of 6.07 kWh/m$^2$/day and specific yield of approximately 4.88 kWh/kWp, a strong technical feasibility is envisaged for solar projects in Eriteria.[5] |
| Market Maturity | • As of 2018, 50% of the population has access to electricity in Eritrea.[4]<br>• Despite having a significant potential, solar contributed to 8.69% in the total generation of 496 MUs in 2018.[6]<br>• The power sector in Eritrea is regulated by the Department of Energy. The generation, transmission and distribution sectors are unbundled but managed by a sole holding company, Eritrean Electricity Corporation (EEC).[15]<br>• Eritrea is expected to join the Eastern African Power Pool in the coming years. This will enable the country to import renewable energy power from the neighbouring countries.[7] |
| Infrastructure | • Through the funding received from the government, a solar company installed solar-diesel hybrid power system of net capacity 2.25 MW. This project will provide 24/7 clean electricity to 40,000 people in rural areas.<br>• As of 2014, Electricity system losses stand at 12.8% of output, indicating a considerably better power network.[14]<br>• In 2016, Eritrea signed a national energy plan with the European Development fund and received a funding of USD 200 million for strengthening the national grid and build solar PV and wind power supply systems in rural areas.<br>• Under the Development Cooperation Strategy for 2019-20, the European Commission will invest EURO 125 million for the development of the infrastructure and energy sector.[19] |
| Financing | • According to UNCTAD's World Investment Report 2020, FDI inflows has increased from USD 61 million in 2018 to USD 67 million in 2019.[9]<br>• Eritrea has an Ease of Doing score of 21.6 (out of 100) and ranks at 189$^{th}$ position among 190 countries in 2020. A few areas where businesses need support are getting credit, construction permits, enforcing contracts, access to electricity, paying taxes and trading across borders.[12] |
| Energy Imperatives | • Per capita consumption of 100 kWh is relatively low in comparison to the global average.[6,10]<br>• Oil-based thermal power production contributes approximately 91% of the generation mix in 2018.[6]<br>• Approximately 59% of the population resides in the rural areas of which 65% of the population doesn't have access to electricity. Off-grid solar systems can be a viable solution.[4,8]<br>• As of 2018, the residential sector constitutes 39% of the total electricity demand.[6] |

Ethiopia

Africa

Electricity Consumption in BU (2017)

9.5

Installed Solar Capacity in MW (2019)

11.0

Share of Population with Access to Electricity (2018)


Installed Off-Grid Solar Capacity in MW (2019)

11.0

World Bank's Ease of Doing Business Score (2020)

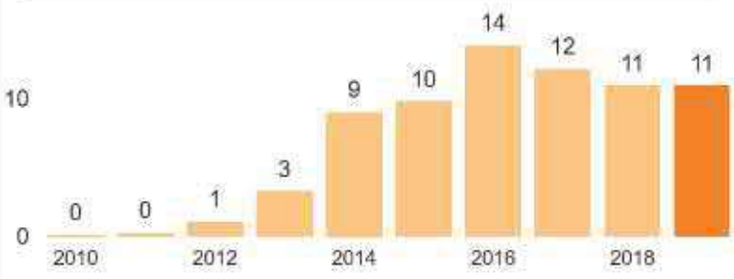
48.00

Solar installed capacity Growth rate (CAGR) for 2015-19

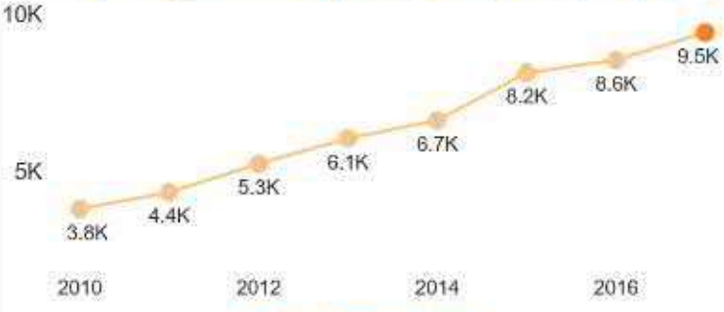
3%

## Power Trends

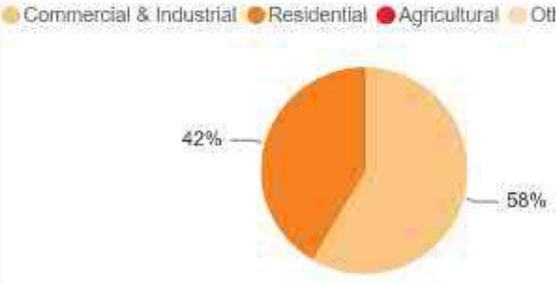
### Cumulative Solar installed Capacity (MW)



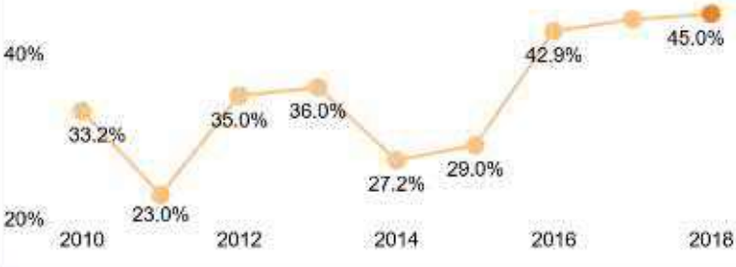

### Overall Electricity Consumption (MU)




### Consumer Mix



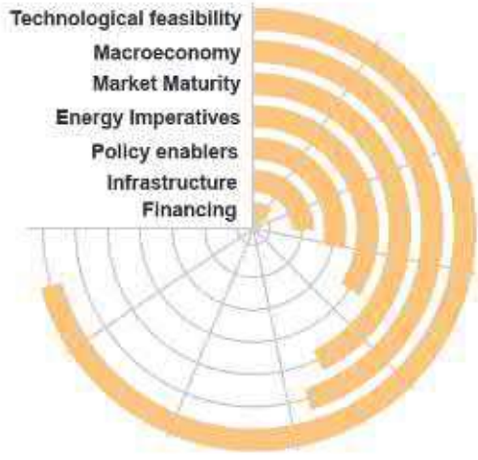

### Access to Electricity



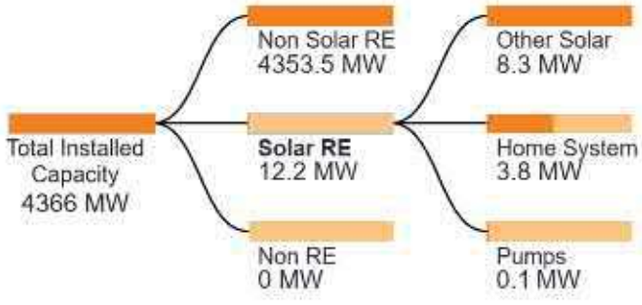

## Ease of Doing Solar Classification

Progressive

### Performance against 7 Drivers




### Installed Generation Capacity by Source

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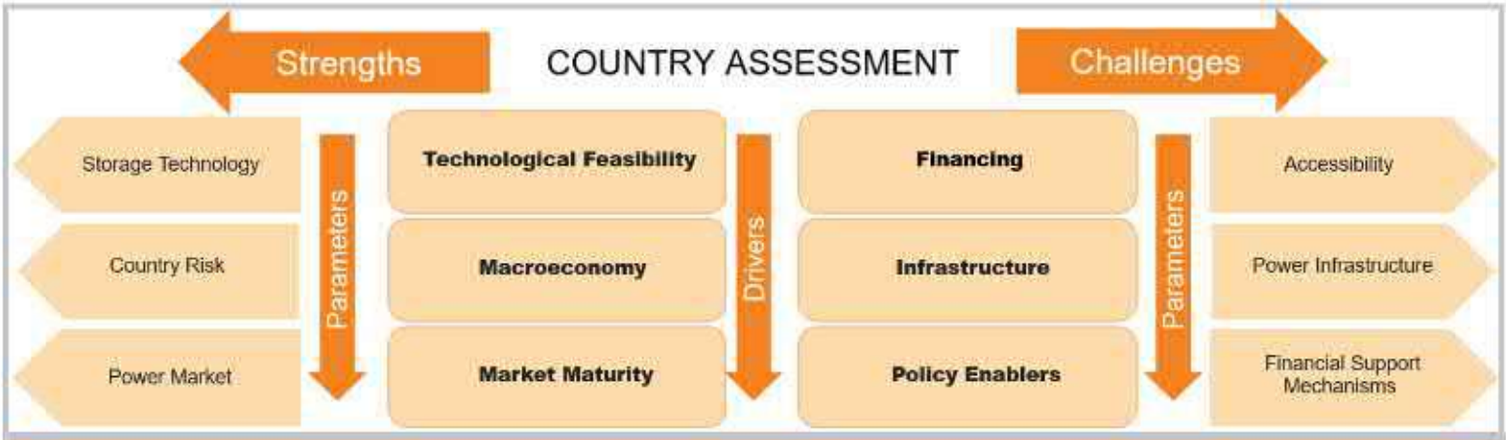
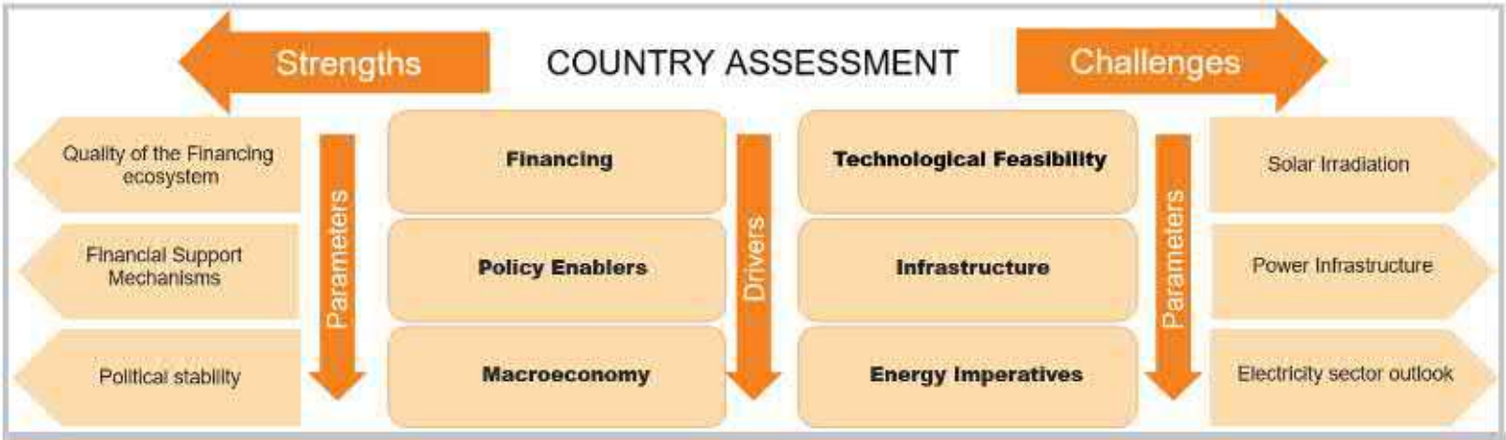
Other Solar includes Utility Scale Solar, Rooftop etc.;
Year: 2017.



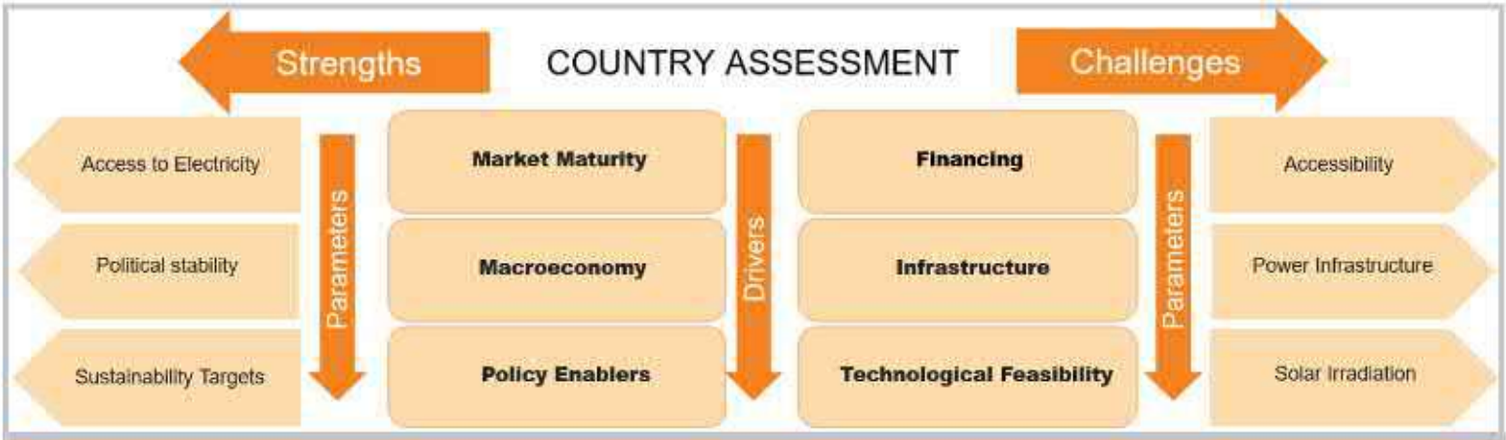

| Drivers | Insights |
|---|---|
| Macro-economy | • GDP (at current prices) is estimated at USD 96.1 billion in 2019 with annual growth rate of 9%.[3,4]<br>• In 2019, industry and services continued to lead the economic growth on supply side.[7]<br>• Private consumption and domestic investment were primary growth drivers on demand side but domestic investment slowed reflecting fiscal consolidation to stabilize the public debt.[7] |
| Policy enablers | • Ethiopia is a member of the Common Market of Eastern and Southern Africa (COMESA) which adopted competition law regime and a joint competition commission to promote economic integration.[8]<br>• Ethiopia offers tax free import privileges for the equipment related to off-grid solar technologies.[10]<br>• Ethiopia aims to achieve carbon neutral middle-income status by 2025 through the Climate Resilience and Green Economy strategy (CRGE) and Growth and Transformation Plan (GTP).[13] |
| Technological Feasibility | • Owing to relatively high levels of average solar irradiation (GHI) of 5.85 kWh/m$^2$/day and specific yield of 4.68 kWh/kWp, strong technical feasibility is envisaged for solar projects in Ethiopia.[1]<br>• The Ethiopian Rural Energy Development and Promotion Centre (EREDPC), an executive arm of Rural Electrification Fund (REF), is to carry out the technology research and development which includes solar and wind as potential sources for rural electrification.[13] |
| Market Maturity | • 45% of population has access to electricity as of 2018.[5]<br>• The National Electrification Program launched in 2017 aims to achieve 100% electrification by 2025 (35% through off-grid and 65% through grid) and to reach 96% grid by 2030.[12]<br>• Solar contributes 18 MUs of electricity generation in 2018.[11] |
| Infrastructure | • Ethiopia's public–private partnership framework is expected to diversify the country's development of finance sources, improve debt sustainability and sustain growth-generating infrastructure investments and enhance domestic resource mobilization.[7]<br>• Scaling-up Renewable Energy Program for Ethiopia was launched in 2012 in coordination with African Development Bank and The World Bank to maximize renewable energy installations.[13] |
| Financing | • International financial flow, in 2017, was USD 392.5 million (in PPP terms) to support clean and renewable energy.[5]<br>• The private sector is expected to be a key contributor to Ethiopia's future development. World Bank's Country Partnership Framework envisages prominent roles for the International Finance Corporation (IFC) and Multilateral Investment Guarantee Agency (MIGA).[6]<br>• A solar PV project of USD 120 million, expected to be operational by 2021 will sell power to Ethiopian Electric Power (EEP) under a 20-year Power purchasing agreement (PPA).[14] |
| Energy Imperatives | • Per capita electricity consumption of 133 kWh is significantly low in comparison to the global average.[2]<br>• 33% of rural population has access to electricity as of 2018.[9]<br>• Renewable electricity capacity is 98% as of 2019 of which 84% is Hydro.[11]<br>• Currently Ethiopia is significantly reliant on hydropower and expected to increase solar PV, geothermal to almost 45% of power mix by 2040, estimates Ethiopia Energy Outlook by IEA.[12] |


Fiji
Asia & Pacific
Electricity Consumption in MU (2017)
902.4
Share of Population with Access to Electricity (2018)
0%
100%
100%
World Bank's Ease of Doing Business Score (2020)
61.50
Installed Solar Capacity in MW (2019)
9.5
Installed Off-Grid Solar Capacity in MW (2019)
4.4
Solar installed capacity Growth rate (CAGR) for 2015-19
30%
Power Trends
Cumulative Solar installed Capacity (MW)
10
8
6
4
2
0
0.3
0.3
0.9
1.4
1.9
3.3
5.3
7.1
9.5
9.5
2010
2012
2014
2016
2018
Overall Electricity Consumption (MU)
950
900
850
800
750
700
764
767
732
780
783
826
842
902
2010
2012
2014
2016
Access to Electricity
100%
95%
90%
89.0%
90.2%
91.1%
91.8%
93.7%
95.1%
96.6%
96.0%
99.6%
2010
2012
2014
2016
2018
Ease of Doing Solar Classification
Influencer
Performance against 7 Drivers
Financing
Policy enablers
Macroeconomy
Market Maturity
Energy Imperatives
Infrastructure
Technological feasibility
Installed Generation Capacity by Source
Total Installed Capacity 334 MW
Non Solar RE 202.2 MW
Non RE 124.6 MW
Solar RE 7.1 MW
Other Solar 5.6 MW
Home System 0.9 MW
Mini Grid 0.5 MW
Non-Solar RE includes Wind, Hydro, Biomass, Geothermal & Marine;
Non-RE includes Coal, Natural Gas, Nuclear, Oil, etc.;
Other Solar includes Utility Scale Solar, Rooftop etc.;
Year: 2017.




| Drivers | Insights |
|---|---|
| Macro-economy | • GDP (at current prices) is poised at USD 5.53 billion with an annual growth rate of 0.5% in 2019.[4]<br>• Fiji has one of the most developed economies in the Pacific region with tourism and foreign direct investment as its main driver of economic activity.[1]<br>• The agricultural sector accounts for 10.7% of GDP while industry & services represent 15.6% and 68.9%.[2]<br>• The country has also seen a shift in exports from agricultural commodities to manufactured goods.[1]<br>• The average current account deficit, during 2008-17, was 5.3% of GDP and was fully financed by average FDI inflows of 7.8% of GDP.[9] |
| Policy enablers | • The intended Nationally determined contributions (NDC) to UNFCCC includes the target to achieve a renewable energy share in electricity to be around 99% by 2030.[6]<br>• The National Energy Policy states that Fiji could achieve 100% renewable electricity by 2030 which would require investments in new energy technologies.[8]<br>• Delays in project approvals remains a concern with foreign investors facing costly bureaucratic delays.[3]<br>• To reduce the financial risks for IPPs tariff policy, payment conditions and collection efficiency need to be improved by the Utilities.[6] |
| Technological Feasibility | • Owing to relatively moderate levels of average solar irradiation level (GHI) of 4.32 kWh/m$^2$/day and specific yield 3.56 kWh/ kWp, a moderate technical feasibility is envisaged for solar projects in Fiji.[5]<br>• Because of radiation reflection by surrounding ocean, the satellite data yields higher values of insulation.[10]<br>• The theoretical potential of solar PV power generation was found to be around 170 MUs per year which would result in around 150,000 metric tonnes of carbon dioxide avoided emissions.[7] |
| Market Maturity | • Foreign investors are increasingly participating in public-private sector partnership arrangements in the energy, health and maritime port sectors.[3]<br>• The government is actively seeking partners in the energy sector which will help increase renewable energy capacity as well as development in the state's Transmission & Distribution (T&D) infrastructure.[8]<br>• Fiji Electricity Authority (FEA) currently uses the tariffs published by the Fiji Commerce Commission (FCC) as the basis of negotiation for the power purchase agreements.[6]<br>• Even in areas with grid connection, high costs and inequalities within communities, prevent some parts from achieving reliable access to electricity.[8]<br>• The limited capacity of skilled local manpower for technology operation, within the communities adds further to the challenges.[6] |
| Infrastructure | • The land ownership rules are complex. The Land Sales Act restricts ownership of freehold land inside city or town council boundaries to Fijian citizens.[3]<br>• For the private sector stakeholders, a major challenge is the scarcity of licensed technicians.[6]<br>• There are no fully private Independent Power Producers in Fiji that currently supply power to the grid.[6] |
| Financing | • The government is encouraging the banks, to utilize 3% of their lending on renewable generation.[6]<br>• However, access to financing for grid connected RE power generation projects continues to be a major barrier. Domestic banks have little or no capacity for the financing of RE power generation projects.[6]<br>• Pockets of vulnerability lie in Non-Bank Financial Institutions (NBFIs); Credit unions and financial cooperatives are not suitably regulated.[9] |
| Energy Imperatives | • In 2014, 55% of Fiji's electricity was generated using renewable energy resources, making it the Pacific island state with the lowest oil dependency.[8]<br>• Most operating RE projects are mainly off-grid projects located at remote project sites in multiple islands.6<br>• Solar PV and battery storage hybrid systems could be used to improve the stability of the many existing mini grids in the country.[8]<br>• On the smaller islands Solar Home Systems (SHS) are used to provide access to electricity for the inhabitants.[8] |


Gabon
Africa
Electricity Consumption in BU (2017)
2.1
Installed Solar Capacity in MW (2019)
1.4
Share of Population with Access to Electricity (2018)
0%
93%
100%
Installed Off-Grid Solar Capacity in MW (2019)
1.4
World Bank's Ease of Doing Business Score (2020)
45.00
Solar installed capacity Growth rate (CAGR) for 2015-19
0%
Power Trends
Cumulative Solar installed Capacity (MW)
1.5
1.0
0.5
0.0
1.40 1.40 1.40 1.40 1.40 1.40 1.40 1.40 1.40 1.40
2010
2012
2014
2016
2018
Overall Electricity Consumption (MU)
2,000
1,800
1,600
1,400
1454
1537
1628
1719
1795
1852
2016
2026
2010
2012
2014
2016
Year
Access to Electricity
94%
92%
90%
88%
86%
92.2%
90.5%
89.3%
86.4%
88.5%
89.6%
90.8%
91.9%
93.0%
2010
2012
2014
2016
2018
Year
Ease of Doing Solar Classification
Potential
Performance against 7 Drivers
Market Maturity
Macroeconomy
Policy enablers
Energy Imperatives
Technological feasibility
Infrastructure
Financing
Sub-regional standing
MALI
NIGER
CHAD
BURKINA FASO
BENIN
TOGO
GHANA
NIGERIA
Abuja
Porto-Novo
CAMEROON
CENTRAL AFRICAN REPUBLIC
EQUATORIAL GUINEA
REP. OF CONGO
GABON
CONGO (DRC)
Neutral
Beignner
Progressive
Influencer




| Drivers | Insights |
|---|---|
| Macro-economy | • Gabon is an upper-middle-income country as per World Bank's classification.<br>• It is the fifth largest oil producer in Africa. Its strong economic growth over the past decade was driven by its production of oil and manganese. The oil sector has accounted for 80% of exports, 45% of GDP and 60% of fiscal revenue on average over the past five years.[12]<br>• GDP (at current prices) is USD 16.658 billion in 2019 that grew at an annual rate of 3.4%.[4,5]<br>• Real GDP growth in Gabon is expected to rise to 3.9% in 2021 due to a brighter outlook for the oil sector.[7]<br>• Gabon has also launched a broad public investment programme (PSGE) in order to become one of the fastest-growing economies by 2025.[8] |
| Policy enablers | • Gabon established Law on environmental protection in 2014 to minimize Greenhouse Gas emissions, promote sustainable use of natural resources and follow the climate action plan.[9]<br>• In 2019, a law was enforced to regulate the sector of hydrocarbons in Gabon that talks about the activities to be carried out with the principles and rules relating to sustainable development and environment.[11] |
| Technological Feasibility | • Owing to relatively high levels of average solar irradiation (GHI) of 4.54 kWh/m$^2$/day and specific yield of 3.6 kWh/kWp, strong technical feasibility is envisaged for solar projects in Gabon.[1]<br>• Gabon is sparsely populated and has 22 million hectares of forest, one million hectares of arable agricultural land and over 800 km of coastline limiting the land availability for utility scale solar projects (mostly covered with forests).[8] |
| Market Maturity | • Renewable capacity is 53% of total installed capacity in 2019.[10]<br>• 93% of population had access to electricity as of 2018 with a target to achieve universal access by 2035.[3]<br>• Renewable energy share, in total energy consumption, is 81% as of 2017.[3] |
| Infrastructure | • The local infrastructure project is a USD 100 million-funded project that seeks to increase access to basic urban services.[12]<br>• Gabon signed a partnership agreement with French entity Engie's subsidiary Ausar Energy for development of eight solar power plants of capacity 2.8 MW in 2019.[14] |
| Financing | • International financial flow in 2017 was USD 0.1 million (in PPP terms) to support clean and renewable energy.[5]<br>• The country has a sovereign rating of Caa1 with positive financial outlook.[6]<br>• The World Bank is financing eight development projects in Gabon representing a net commitment of USD 626.70 million in 2019.[12] |
| Energy Imperatives | • Gabon's Per capita electricity consumption of 1,031 kWh, as of 2019, is relatively low in comparison to the global average.[2]<br>• Total installed capacity in the country was 629 MW in 2019. Renewable capacity comprised of 53% of the total capacity at 333 MW (330 MW hydro and 1 MW solar).[10]<br>• 63% of rural population had access to electricity in 2018 and targeted to achieve 85% of rural population by 2025.[3]<br>• As of 2018, 54% of total electricity generation is by renewables.[10] |

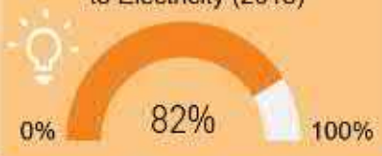
Ghana

Africa

Electricity Consumption in BU (2017)

12.2

Share of Population with Access to Electricity (2018)




World Bank's Ease of Doing Business Score (2020)

60.00

Installed Solar Capacity in MW (2019)

63.3

Installed Off-Grid Solar Capacity in MW (2019)

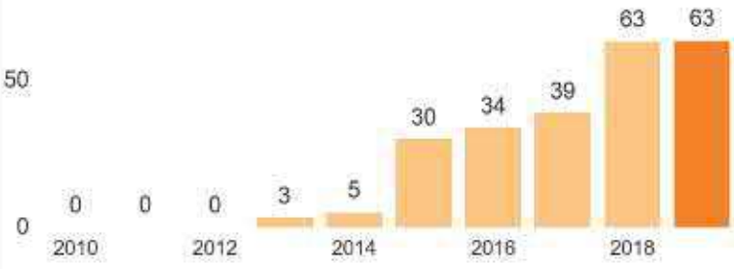
8.0

Solar installed capacity Growth rate (CAGR) for 2015-19

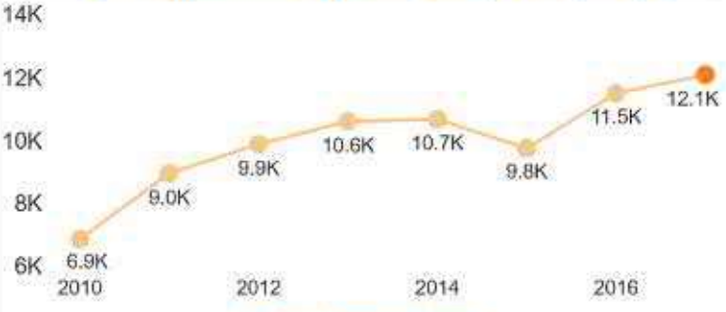
21%

## Power Trends

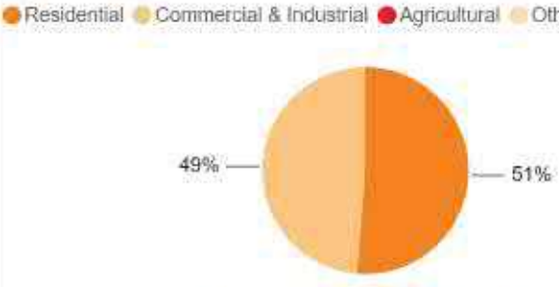
### Cumulative Solar installed Capacity (MW)



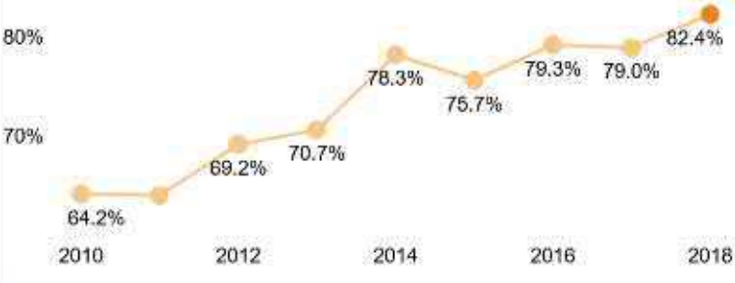

### Overall Electricity Consumption (MU)




### Consumer Mix




### Access to Electricity

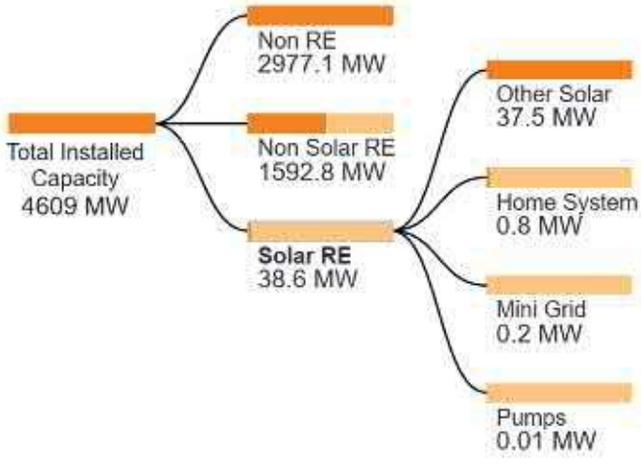



## Ease of Doing Solar Classification

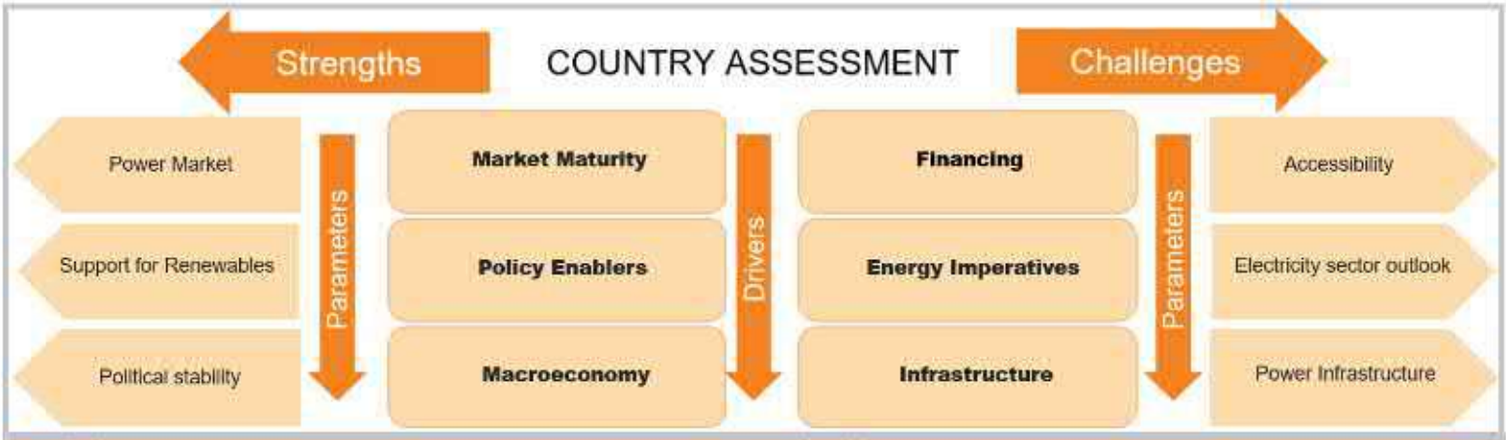
Influencer

### Performance against 7 Drivers

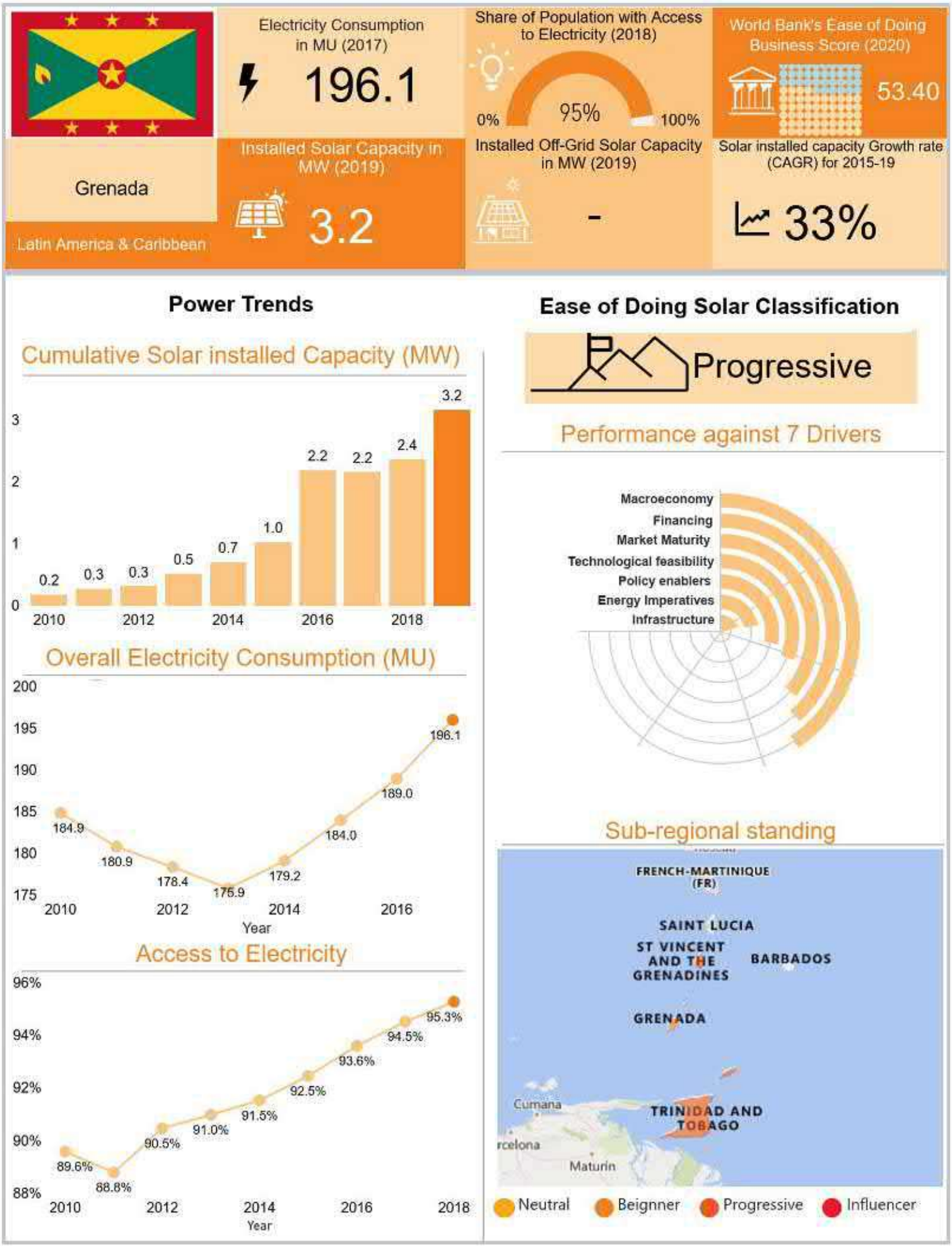

### Installed Generation Capacity by Source

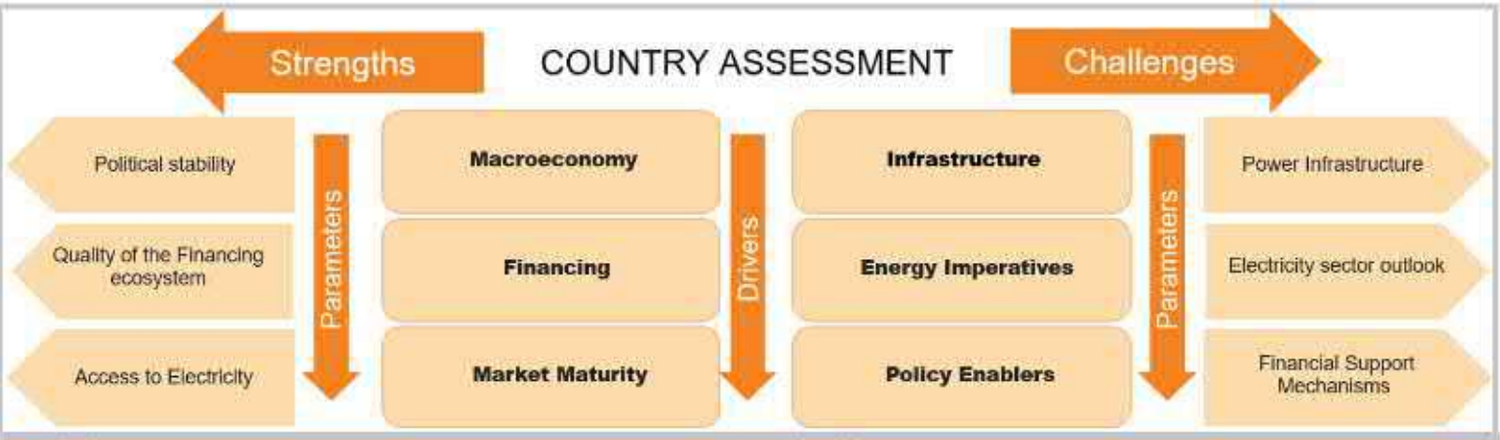



Non-Solar RE includes Wind, Hydro, Biomass, Geothermal & Marine;
Non-RE includes Coal, Natural Gas, Nuclear, Oil, etc.;
Other Solar includes Utility Scale Solar, Rooftop etc.;
Year: 2017.




| Drivers | Insights |
|---|---|
| Macro-economy | • The economy continued to expand in 2019, with GDP (Real) growth estimated at 6.1%. High growth momentum since 2017 has consistently placed Ghana among Africa's 10 fastest-growing economies.[9]<br>• Macroeconomic improvements were accompanied by expansion in domestic private consumption.[1]<br>• Mounting energy sector liabilities due to excess installed capacity from take-or-pay contracts with independent power producers and the ongoing financial sector clean-up are likely to lift the debt-to-GDP ratio above the current 60.6%.[1] |
| Policy enablers | • Ghana has developed its SE4ALL Country Action Plan based on the three objectives: i) ensuring universal access to modern energy services; ii) doubling the rate of improvements in energy efficiency, and iii) doubling the share of renewable energy in the global energy mix.[10]<br>• In May 2019, an Energy Sector Recovery Program (ESRP) was approved to provide an action plan to improve the financial balance of the energy sector over the next 5 years.[3]<br>• The country offers Feed-in-Tariff scheme with 10 years guaranteed rates, mandatory connection policy to evacuate RE electricity and mandatory renewable purchase policy for distribution utilities.[10] |
| Technological Feasibility | • Owing to relatively high levels of average solar irradiation level (GHI) of 5.10 kWh/m$^2$/day and specific yield 4.02 kWh/kWp, strong technical feasibility is envisaged for solar projects in Ghana.[4]<br>• The highest irradiation levels occur in the northern half of the country where the Government is piloting few initiatives on solar energy system deployment.[10] |
| Market Maturity | • The access to electricity rate is 82%, the second-highest in Sub-Saharan Africa. The government aims to achieve universal access by the end of 2020.<br>• Low collection efficiency and oversupply has resulted in the government paying for unused power which leads to contract renegotiations and payment problems for the IPPs, undermining investor confidence.[11]<br>• According to the Renewable Energy Policy Review by the Energy Commission and UNDP, the willingness-to-pay ,for energy services from solar home systems in remote and rural areas of Ghana, is relatively high.[10]<br>• In H2 2019, out of the total sales of 17,000 off-grid appliances, 10,000 units were solar on cash whereas remaining 7,000 were sold through PayGo model.[7] |
| Infrastructure | • The T&D system (consisting of 5,900 kms of transmission lines and 64 bulk supply points) has not been significantly upgraded since construction which has caused several system collapses in recent years.[5,11]<br>• Electricity tariffs are not cost-reflective; as a result, the utilities are not able to pay transmission and generation companies and also limiting funds available for investments.[5]<br>• According to the Energy Commission, transmission loss increased from 3.8% in 2009 to 4.4% in 2018.[11] |
| Financing | • A financial sector clean-up, that started in 2017, placed a temporary drag on the growth of services.[1]<br>• Country's USD 5.6 billion Renewable Energy Master Plan involves more than 80% of investments coming from the private sector. The plan will be implemented over a 12-year time-space, from 2019 to 2030.[6]<br>• Private sector credits are supported largely by the well-capitalized banking sector.[3] |
| Energy Imperatives | • A drive to develop the electricity infrastructure has raised generation capacity to 4,780 MW as of 2019.11<br>• While current capacity is sufficient, a 2.2% population growth rate and increasing urbanisation levels mean that demand for electrification and reliable power will continue to grow.[11]<br>• The grid-connected RE capacity increased from 2.5 MW in 2013 to 42.6 MW in 2019.[8]<br>• In 2019, the residential share, of the total electricity consumed, increased to 45.6% followed by the industrial sector with a share of 30.4%.[8]<br>• The USD 220 million Ghana Energy and Development Access Project (GEDAP), providing mini-grids for isolated communities, has reached approximately 10,000 beneficiaries for the first time.[2] |


Grenada
Latin America & Caribbean
Electricity Consumption in MU (2017)
196.1
Installed Solar Capacity in MW (2019)
3.2
Share of Population with Access to Electricity (2018)
0%
95%
100%
Installed Off-Grid Solar Capacity in MW (2019)
-
World Bank's Ease of Doing Business Score (2020)
53.40
Solar installed capacity Growth rate (CAGR) for 2015-19
33%
Power Trends
Cumulative Solar installed Capacity (MW)
0.2
0.3
0.3
0.5
0.7
1.0
2.2
2.2
2.4
3.2
2010
2012
2014
2016
2018
Overall Electricity Consumption (MU)
184.9
180.9
178.4
175.9
179.2
184.0
189.0
196.1
Year
Access to Electricity
89.6%
88.6%
90.5%
91.0%
91.5%
92.5%
93.6%
94.5%
95.3%
Year
Ease of Doing Solar Classification
Progressive
Performance against 7 Drivers
Macroeconomy
Financing
Market Maturity
Technological feasibility
Policy enablers
Energy Imperatives
Infrastructure
Sub-regional standing
FRENCH-MARTINIQUE (FR)
SAINT LUCIA
ST VINCENT AND THE GRENADINES
BARBADOS
GRENADA
Cumana
TRINIDAD AND TOBAGO
Maturin
Neutral
Beignner
Progressive
Influencer




| Drivers | Insights |
|---|---|
| Macro-economy | • The Grenadian economy continues to grow robustly. GDP expanded by 3.1% in 2019, driven by strong activity in construction and tourism.[5,7]<br>• Availability of tax incentives, equitable treatment of national and international investors and political stability provides a healthy investment climate.[1]<br>• The World Bank's Doing Business overall ranking for Grenada tracked downward, slipping from 138 in 2016 to 147 in 2019.[1]<br>• Impressive economic performance, over the past five years, is marked by a cycle of high growth and falling debt.[5] |
| Policy enablers | • The country targets to increase Renewable Energy share in total consumption to 100% by 2030, from 5.38% in 2018.[3]<br>• Grenada Electricity Services' (GRENLEC) interest in utility-scale renewable power, under its exclusive license to generate electricity, is yet to progress at a pace to meet Grenada's goals.[4]<br>• Tax reduction incentive are being provided for use of solar panels, solar water heaters and installation of energy efficient light bulbs in government buildings.[6] |
| Technological Feasibility | • Owing to relatively high levels of average solar irradiation (GHI) of 5.57 kWh/m$^2$/day and specific yield 4.437 kWh/kWp, strong technical feasibility is envisaged for solar projects in Grenada.[8]<br>• According to National Renewable Energy Laboratory (NREL), Grenada has a Solar PV potential of 25-50 MW.[4] |
| Market Maturity | • In 2016, parliament repealed the 1994 Electricity Supply Act and opened the market to potential investors who will transition to alternative sources of power, decreasing costs, reducing dependence on imported fossil fuels and improve energy efficiency.[1]<br>• The 2016 Electricity Supply Act allows a new government-run regulatory body to grant multiple licenses to energy generators.[1]<br>• The Electricity Supply Act has not been updated to address self-generation and distributed renewable energy.[4] |
| Infrastructure | • Market entry of independent energy producers has been limited so far due to the existing legal structure and the lack of regulatory framework. Major reasons for this include the monopolistic structures in electricity sector.[2]<br>• Grenada has recently re-established the National Climate Change Committee which provides overall guidance and support to climate change activities.[6]<br>• Grenada has also began improving its institutional capacity by selecting climate change focal points in all line ministries and conducting trainings in climate change risk analysis.[6] |
| Financing | • Robust FDI flows, including the citizenship-by-investment (CBI) program, are financing the external deficit while supporting economic growth.[5]<br>• Low execution of grant financing and institutional bottlenecks in project execution kept capital outlays subdued at 2.75% of GDP in 2018.[5]<br>• Banks have strong capital buffers while the Non-Performing Loans ratio fell below 2.5% in 2018.[5]<br>• Grenada's INDC will cost ~USD 161.4 million to implement through 2025. Grenada anticipates meeting these costs through access to multilateral and bilateral support including Green Climate Fund and arrangements with development partners.[6] |
| Energy Imperatives | • Electricity is currently produced almost entirely from fossil fuels, primarily diesel based.[2]<br>• Electricity prices on the island state of Grenada are among the highest in the world mainly because of the island's dependence on fossil fuels and high import costs.[2]<br>• Electricity production from solar has already surpassed 2% and is increasing as more consumers are taking advantage of the incentives provided for solar technologies.[6] |