Paraguay

Electricity Consumption in kWh/capita (2020) 6917.6
Getting Electricity Score (2020) 70.4

Average PVout in kWh/kwp/day (2020) 4.3
NDC Target by 2030 in % 20.0

Cumulative Solar Capacity in MW (2021) 0.1
Human Development Index (2021) 0.7

Renewable Energy Generation by Source

CO₂ Emissions vs Electricity share from Renewables

Installed Capacity by Source (2019)

Fiscal Incentives & Public Financing for Renewables (2020)

Support for Renewables (2020)
### Peak Demand/Load in GW (2021)
- 3.7

### Electricity Consumption CAGR in % (2022 - 2026)
- 31.0

### Diesel based Electricity Generation in GWh (2021)
- 2.0

### Electricity Consumption in GWh (2021)

<table>
<thead>
<tr>
<th>Sectors</th>
<th>GWh</th>
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<tbody>
<tr>
<td>Commercial &amp; Industrial</td>
<td>4,796.1</td>
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<tr>
<td>Residential/ Domestic</td>
<td>6,175.0</td>
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### Average T&D Loss Levels in % (2021)
- Distribution Loss: 21.5%
- Transmission Loss: 4.7%

### Accessibility to Payment Mechanisms for purchase of Solar Products (2021)
- Mobile application based online transactions: Yes
- Digital E-wallets: Yes
- Cash-on-delivery: Yes

### Financial Support Mechanisms (2021)
- Tax waivers for manufacturers of raw materials (modules, off grid appliances, etc.): No
- Viability Gap Funding (VGF) i.e. Grant to support RE projects that are economically justified but fall short of financial viability: No
- Credit facilitation for solar energy from financial institutions (FIs): No

### Policies/Schemes for Solar Segments (2021)

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### 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): No
- Emerging technologies - the next generation technologies (Example: Artificial Intelligence, Machine learning, Internet of Things, etc.): No
- E-mobility/Electric vehicles: Yes
Country’s regional performance and characteristics

Access to Electricity (2020)
- 100.0%
- 98.1%
- 100.0%

Share of Solar in Generation Mix (2019)
- 0.0%
- 2.2%
- 8.3%

Solar Capacity CAGR (2017-2021)
- 0.0%
- 44.0%
- 232.1%

Areas of Strength
- Infrastructure
- Market Maturity

Areas of Improvement
- Energy Imperatives
- Policy Enablers

Key Insights

Drivers | Insights
--- | ---
**Macroeconomy**
- Paraguay is an upper middle-income country with a GDP per capita (PPP) of USD 15,037 in 2021.1,2
- Due to COVID-19 Pandemic, the GDP (Real) has contracted by 0.8% in 2020. However, in 2021, the GDP has bounced back with an annual growth rate of 4.2%.1
- The inflation rate (CPI) of the country has increased to 4.8% in 2021 from 1.8% levels in 2020.1
- The general government gross debt to GDP has reached 37.0% in 2021 from 36.9% levels in 2020.1

**Policy enablers**
- By 2030, the country aims to have a 5% share of solar energy in the generation mix.4
- The Vice Ministry of Mines and Energy (VMME) has released a conceptual framework in 2021 outlining guidelines for encouraging green hydrogen development for the country's long-term socio-economic growth.9
- Duty waivers for solar developers importing/purchasing material are available in the country to support the growth of solar projects.6

**Technological Feasibility**
- Paraguay receives high levels of solar irradiation (GHI) of 5.1 kWh/m²/day and specific yield 4.3 kWh/kWp/day indicating a strong technical feasibility for solar in the country.3
- In 2021, 100% of the country’s power demand was met through RE sources.4

**Market Maturity**
- 100% of the population in Paraguay is having access to electricity since 2019.4
- The energy mix of the Republic of Paraguay is dominated by clean energy sources, where hydropower accounts for the largest share of the country’s power generation representing ~99.5% of the installed power capacity.7
- The power sector is vertically integrated but lacks an independent regulator. The nation’s street lighting and electricity generation, transmission, and distribution are all under the jurisdiction of National Electricity Administration (ANDE).7

**Infrastructure**
- Between 2022 and 2026, Paraguay plans to invest USD 2,940.63 Mn in the transmission and distribution sector for its upgradation to meet future demand and enhance quality of electricity supply.6
- The nation has reported distribution losses of 21.48% and it intends to boost the distribution infrastructure by constructing additional feeders and increasing sub-station capacity to 1,752 MVA by 2025.6,9
- The country’s transmission network operates at voltage level of 66 kV and higher with installed line lengths totalling 6,901 ckm operating at loss levels of 4.72%.6,7

**Financing**
- The IDB approved a USD 260 Mn loan in March 2022 supporting Paraguay’s National Development Plan 2030 by expanding the electrical transmission infrastructure thus enhancing the reliability and quality of electricity supply.8
- Since 2017, the nation has received more than USD 1.12 Bn in grants and loans from numerous international lending institutions including JICA, IDB, CAF, UNDP, and GCF.7

**Energy Imperatives**
- In 2020, the per capita electricity consumption stood at 6.92 MWh, which is significantly higher in comparison to the global average of 3.31 MWh.4
- The demand for electricity in the country has increased to 49.34 TWh in 2021 from 17.59 TWh levels in 2020.4
- In 2021, the total installed capacity in the country stood at 8.86 GW with a significant share coming from hydro (99.4%) followed by fossil fuels (0.3%) and bioenergy (0.2%).4