

Country Profile

CUBA



10.9 million

population (2024)



-1.1%

GDP growth rate (2024)



7.3 GW

total installed capacity (Feb 2023)



292 MW

installed solar capacity (2024)



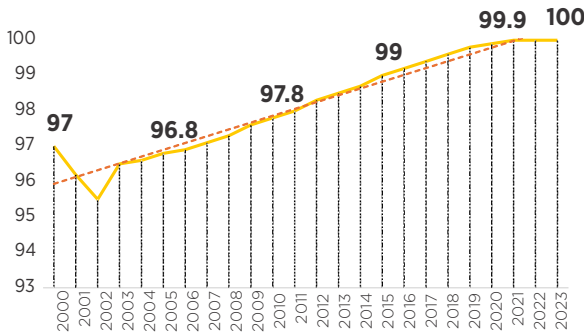
Reach

24%

electricity generation using RE sources by 2030

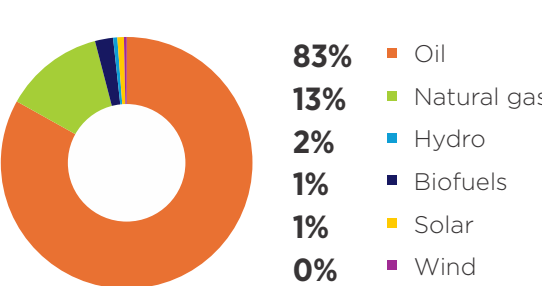


Access to Electricity (% of Population)



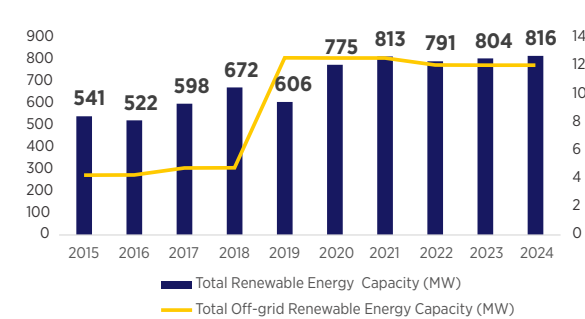
Source: World Bank

Electricity Generation Mix (%), 2023



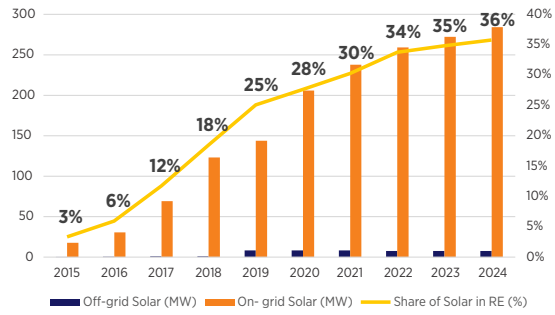
Source: IEA

Installed RE Capacity



Source: IRENA

Installed Solar Capacity



Source: IRENA

KEY CHALLENGES

- **Ageing oil and diesel plants** with poor efficiency cause **frequent breakdowns, blackouts, and load shedding**
- **Heavy reliance on imported fossil fuels** (Venezuela, Russia) exposes the sector to geopolitical risk and price volatility
- **Transmission and distribution infrastructure urgently needs modernization** to integrate new solar capacity
- **Currency duality**, macroeconomic instability, and lack of bankable off-take arrangements create uncertainty for foreign investors

POTENTIAL OPPORTUNITIES

- Excellent solar irradiation makes PV a low-cost, indigenous alternative to imported oil
- **National plan targets 1-2 GW of new solar parks by 2030**, creating a clear pipeline for utility-scale projects.
- **Strong potential for distributed solar**—rooftop PV on public buildings, hotels, industries, and homes—to ease grid stress and boost reliability
- **Solar-plus-storage can stabilize supply for critical infrastructure** (hospitals, water plants, cold-chain) in remote regions
- Tourism sector offers an early market for green energy, with hotels seeking sustainability credentials
- Gradual regulatory and financial reforms could attract specialized investors and suppliers to this high-impact market

ENERGY STORAGE AND GRID INTEGRATION

- As solar capacity grows, Cuba needs to deploy **battery energy storage systems** (BESS) to manage variability, provide frequency support and reduce the risk of grid instability during high PV output periods.
- Several new and planned solar parks are being designed with integrated storage or with the option to retrofit storage in later phases, recognizing the need to shift solar generation from midday to evening peaks.
- Grid-modernization efforts, including upgrades to substations, SCADA systems and protection schemes, are critical to allow the transmission network to handle higher levels of intermittent renewable energy without widespread outages



Key Policies and Framework

- Cuba's **energy policy aims to increase the share of electricity generated from renewable** sources—primarily solar, wind and biomass—to roughly one-quarter or more of total generation by 2030, reducing dependence on imported fossil fuels
- While the sector remains largely state-controlled, policy reforms have **gradually opened space for foreign investment in renewable projects** under joint venture or contractual models, although negotiation processes can be lengthy and opaque
- The regulatory environment still lacks many of the features common in competitive power markets, such as independent regulators, open-access rules and transparent tariff-setting mechanisms for IPPs
- Energy planning documents **emphasize diversification of the generation mix**, improvement of grid reliability and increased energy efficiency, with solar positioned as a flagship technology within this broader strategy



Climate & Sustainability Commitments

- Cuba's climate and energy strategies recognize the role of renewables in both **reducing greenhouse gas emissions and improving national energy security**, given the vulnerability of the country to fuel supply disruptions
- The government has committed to raising the share of renewable energy in electricity generation as part of its contribution to global climate efforts, with **solar and biomass identified as key mitigation options**
- Expanding solar capacity helps to cut emissions from older oil-fired plants, many of which are highly polluting and located near populated coastal areas where air quality and environmental concerns are acute
- In addition to mitigation, renewable energy projects support broader sustainability objectives by reducing oil-spill risks, limiting local pollution and enhancing resilience of essential services during hurricanes and extreme weather events



Investment & Financing Landscape

- **Cuba's energy sector relies on bilateral partnerships**, mainly with **China** and, to a lesser extent, **Russia**, due to sanctions and limited access to global capital markets
- **Chinese state-owned firms and financiers dominate large solar projects**, typically through government-to-government deals rather than competitive tenders
- **Multilateral institutions play a limited role**, restricting concessional funding and risk-mitigation options
- **Local utilities remain key off-takers**, but their financial health—linked to macroeconomic conditions and fuel imports—affects project risk and financing terms
- Development Agencies & NGOs: **UNDP, GEF, small-scale NGO-led rural electrification**

Sources:

- Population: Population, total | Data
- GDP: GDP growth (annual %) | Data
- Installed Capacity: aenert_map_Cuba_electr25.pdf

- Solar Capacity: Renewable Energy Statistics 2025
- RE Target: Goals and Indicators | Ministerio de Energía y Minas