

Country Profile

GHANA



34.4million

population

(2024)



5.6%

GDP growth rate

(2024)



5.3GW

total installed capacity

(Nov 2024)



188MW

installed solar capacity

(2024)



Aims to mitigate an absolute

64MtCO₂eq

by 2030

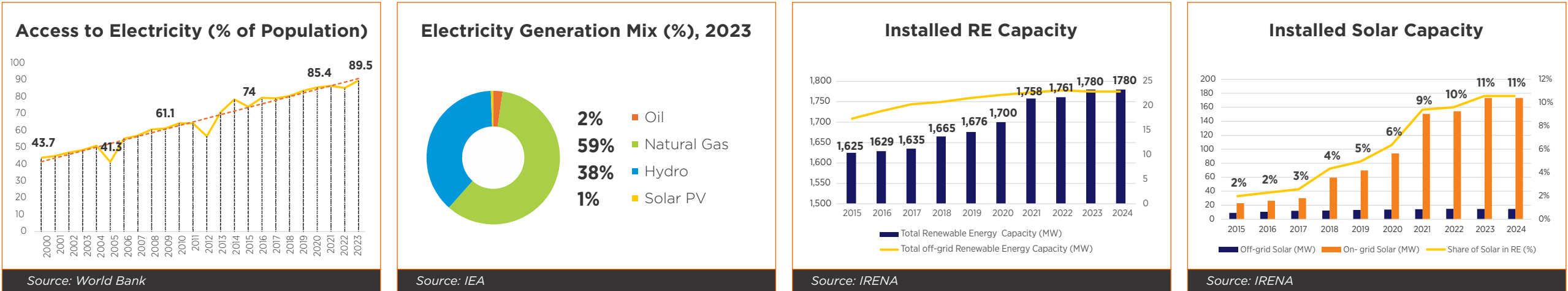


Targets

21GW

RE in energy mix by 2070





KEY CHALLENGES

- **Power system dominated by gas and oil-fired plants**, creating fuel price and forex risks and limiting fiscal space for renewables
- Financial stress from legacy capacity charges, high fuel costs, technical losses, and tariff under-recovery undermines off-taker creditworthiness
- **T&D networks need reinforcement**, especially in solar-rich northern regions with weak grid infrastructure

POTENTIAL OPPORTUNITIES

- Ghana enjoys **strong solar irradiance** across much of the country, especially in its northern belt, making photovoltaic power a highly attractive option for diversifying the national generation mix
- Existing utility-scale solar plants—such as the Bui Solar Farm and several IPP-led projects—demonstrate viable models that can be replicated and scaled under improved procurement and financing conditions
- The government’s renewable energy targets, including the aim to achieve **at least 10% RE in the power mix** (excluding large hydro) and long-term plans for high-RE scenarios, create clear demand signals for new solar capacity
- **Rooftop and behind-the-meter solar in commercial and industrial facilities offer significant opportunities to reduce electricity costs**, hedge against tariff increases and alleviate pressure on the grid

ENERGY STORAGE AND GRID INTEGRATION

- As solar penetration increases, Ghana will need to deploy battery energy storage systems to manage short-term variability, provide frequency regulation and reduce reliance on expensive thermal peaking units
- Hybrid solutions that combine solar, hydropower and storage are particularly promising, as Ghana’s substantial hydro assets can provide flexible backup to smooth fluctuations in solar output
- **Transmission upgrades**, particularly reinforcing north-south corridors, are essential to enable large-scale solar development in high-resource northern regions and ensure reliable delivery to major load centres in the south
- Improvements in SCADA systems, grid automation and real-time monitoring will allow system operators to better handle variable renewable energy and reduce curtailment risks



Key Policies and Framework

- **Ghana’s Renewable Energy Act** and subsequent policy measures provide a formal foundation for promoting renewables, including provisions **for feed-in mechanisms, licensing and a Renewable Energy Fund**.
- **The Renewable Energy Master Plan lays out indicative capacity targets and technology pathways, highlighting solar as one of the key pillars** for meeting future electricity demand in a sustainable manner.
- Net-metering regulations exist to support rooftop solar adoption, although practical implementation challenges have slowed widespread uptake among residential and commercial customers.
- Ongoing power sector reforms aim to improve cost recovery, strengthen utility governance and create a more conducive environment for independent power producers in both thermal and renewable segments.
- As Ghana refines its Energy Transition Framework, the regulatory environment is expected to increasingly favour large-scale solar, storage and hybrid solutions to meet long-term decarbonization goals



Climate & Sustainability Commitments

- Ghana’s updated NDC **aims to mitigate an absolute 64 MtCO₂eq by 2030**, with a combination of unconditional and conditional mitigation measures that prominently feature renewable energy expansion and energy efficiency
- The energy sector is recognized as a major source of emissions, and **solar deployment is explicitly positioned as a key tool for reducing the carbon intensity** of electricity generation
- Climate strategies emphasize co-benefits such as improved air quality, reduced dependence on imported fuels and enhanced energy security as solar and other renewables grow in the power mix
- Renewable energy expansion supports broader sustainable development objectives, including increased electrification of underserved communities, support for green jobs and promotion of climate-resilient economic growth



Investment & Financing Landscape

- Ghana’s RE sector benefits from strong involvement by development finance institutions such as the **World Bank, African Development Bank, IFC, KfW**, and other bilateral partners (**USAID/Power Africa, EU, Germany (GIZ), UK**) that fund solar plants, mini-grids and enabling infrastructure
- **PEG Africa provides and finances solar products for SMEs and rural/peri-urban households**
- A growing number of **international and regional IPPs, EPC contractors and C&I developers are active in Ghana’s solar market**, drawn by the country’s clear policy direction and relatively sophisticated power sector.
- Local financial institutions are gradually increasing their exposure to RE, although risk appetite remains cautious and often depends on co-financing or risk-sharing with DFIs

Sources:

- Population: Population, total | Data
 - GDP: GDP growth (annual %) | Data
 - Installed Capacity: 2025 Energy Outlook Ghana
- Solar Capacity: Renewable Energy Statistics 2025
 - Carbon Target: Ghana to reduce emissions to 64 million tonnes by 2030 - EPA | Ghana News Agency
 - RE Target: Ghana targets net-zero by 2070 with ambitious renewable energy push