NAVIGATING THE ENERGY TRANSITION IN THE CARIBBEAN

Regional Outlook

This document was prepared under the guidance
of the Latin American Energy Organization (OLADE)

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FOREWORD

The rising frequency and intensity of extreme weather events—such as droughts, hurricanes, and coastal flooding—continue to underscore the growing vulnerability of the Caribbean to the impacts of global warming. This reality reinforces the urgent need to accelerate climate change mitigation through significant reductions in greenhouse gas emissions. The international community has reaffirmed its commitment to scale up climate finance and technical support to assist developing countries in advancing their energy transitions.

For Caribbean nations, this global momentum presents a crucial opportunity to pursue more ambitious decarbonization pathways. It also emphasizes the importance of strengthening resilience to climate change, improving access to sustainable energy sources, and reducing dependence on fossil fuels—key factors for ensuring a more secure and sustainable energy future in the region.

Governments in the region have taken proactive steps to define national energy policies, targets, and transition strategies focused on emissions reduction, while upholding energy security and reliability.

To ensure informed decision-making, the availability of timely and reliable energy data is essential. This data enables national authorities to monitor energy trends and assess alignment with their climate and development goals. To support this, OLADE continues to update the Energy Information System for Latin America and the Caribbean (sieLAC), drawing on data submitted by its Member States.

The Caribbean Energy Outlook 2025 presents the most relevant energy indicators and trends for Caribbean countries, offering a focused view of the region’s energy landscape and its evolving role in the global climate agenda.

The challenges ahead are significant, but with continued commitment and support, Caribbean nations can navigate the energy transition and work toward a more resilient, secure and sustainable future.

EXECUTIVE SUMMARY

The *Caribbean Energy Outlook 2025* presents a comprehensive assessment of the current state and future trajectories of the energy sector across OLADE member states in the Caribbean. At a time when energy systems face mounting pressures from climate change, external fuel dependencies, and social inequities, this Outlook provides an evidence-based roadmap for advancing energy resilience, sustainability, and inclusiveness in the region.

Drawing on official energy statistics, regional scenario modeling, and direct consultations with national stakeholders and strategic partners, the report highlights both structural challenges and emerging opportunities in energy access, renewable integration, infrastructure modernization, and climate adaptation.

Key Findings

- The region remains heavily dependent on imported fossil fuels, with petroleum products accounting for more than 70% of primary energy supply.
- While electricity access exceeds 95% in most countries, underserved communities in remote and coastal zones continue to face service gaps.
- Renewable energy deployment has been moderate; the renewable share in final energy consumption rose only from 13% in 2018 to 16% in 2022.
- Under a NET0 scenario, final energy demand in 2050 could be reduced by 20% relative to Business-as-Usual (BAU), with electricity accounting for 22% of final consumption.
- Vulnerability to climate impacts—including hurricanes, floods, and sea-level rise—poses systemic risks to centralized energy infrastructure.
- Institutional, regulatory, and financing constraints continue to limit the pace and depth of the energy transition.

Outlook and Strategic Priorities

Scenario analysis to 2050 underscores the importance of timely and coordinated action:

- Accelerated deployment of solar and energy storage could increase the share of these technologies in installed capacity from 8% to 58% by 2050.
- Improving energy efficiency, modernizing infrastructure, and supporting electrification are essential to achieve NET0 emissions targets.
- Stronger regional cooperation and investment coordination: Integrated grouped scaled up auctions for renewables energy contracts and regional energy corridors for transition fuels will be key to overcoming scale and resource limitations in small island states.

Policy Recommendations

1. Expand renewable energy investment with robust policy frameworks and regional financing mechanisms.
2. Improve infrastructure efficiency and grid reliability through modernization and digitalization.

3. Foster inclusive energy access and integrate gender and social equity into transition strategies.
4. Institutionalize just transition planning and climate adaptation across energy policy.
5. Build regional capacity for monitoring and evaluating energy transition outcomes.

With bold leadership, strategic alignment, and sustained collaboration, the Caribbean can build a future energy system that is clean, inclusive, and resilient—positioning the region as a model for island and coastal nations worldwide.

1. INTRODUCTION

The Caribbean region includes diverse energy systems shaped by geography, development status, natural resources, and exposure to climate risks. Countries such as Barbados and Jamaica have taken early steps in renewables adoption, while others like Haiti and Suriname face challenges in access, capacity, and institutional development.

This report aims to: - Assess the current status and challenges of energy systems in the Caribbean; - Highlight regional and national strategies for renewable energy integration; - Provide policy and investment recommendations to accelerate decarbonization; - Offer a platform for knowledge-sharing across countries and institutions.

The Caribbean region stands at a crucial juncture in its energy transition. As island and coastal nations face growing pressures from energy security, climate change, and economic resilience, energy systems across the region must evolve to meet these interconnected challenges. The region's energy landscape is shaped by high fossil fuel dependency, geographical isolation, vulnerability to climate-related disasters, and unequal access to reliable energy services—particularly in rural and coastal areas.

This *Caribbean Energy Outlook 2025* provides a comprehensive and evidence-based assessment of energy systems and transition pathways across the Caribbean member states of the Latin American Energy Organization (OLADE). It offers a multi-dimensional analysis of energy access, generation structures, policy frameworks, infrastructure readiness, and transition potential.

The report integrates a mixed-methods approach that includes: quantitative analysis using OLADE's Energy Information System (SIE), national energy statistics and projections; qualitative interviews with national energy officials and practitioners; and a review of relevant policy frameworks, investment plans, and international cooperation strategies. Scenario modeling is used to assess medium- and long-term trajectories under Business-as-Usual (BAU) and NET0 (decarbonization-aligned) conditions.

This regional outlook aims to:

- Provide policy-relevant diagnostics of the structural challenges and opportunities in the Caribbean's energy transition;
- Support informed decision-making through forward-looking projections to 2050;
- Encourage regional integration and cooperation as levers to strengthen energy resilience and sustainability.

By aligning with international best practices and drawing on national stakeholder perspectives, the report offers a strategic, actionable roadmap for policymakers, regulators, investors, and regional institutions.

2. METHODOLOGY

This report adopts a mixed-methods research design that integrates quantitative analysis, policy review, and qualitative stakeholder insights to provide a comprehensive, multi-scalar assessment of the Caribbean's energy transition. The focus is on Caribbean countries that are official member states of the Latin American Energy Organization (OLADE), including: Barbados, Belize, Cuba, the Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Suriname, and Trinidad and Tobago.

2.1 Quantitative Data Analysis

The core quantitative dataset was sourced from OLADE's Energy Information System (SIE), which provides harmonized and comparable energy indicators across Latin America and the Caribbean. Key metrics analyzed include electricity generation mix, access rates, fossil fuel dependency, installed renewable capacity, and CO_2 emissions. These were complemented by long-term scenario modeling using OLADE's NET0 and Business-as-Usual (BAU) trajectories to project renewable integration, emissions trends, and energy supply evolution through 2050.

Additional datasets and financial indicators were gathered from regional and multilateral institutions such as the Inter-American Development Bank (IDB), Caribbean Development Bank (CDB), and the World Bank, along with official statistics published by national energy authorities. This provided a regional and national policy and investment context.

This report is complemented by the technical document *Regional Energy Outlook for Caribbean Countries* and the Panorama Energético which presents country-level visualizations and allows for deeper exploration of the energy indicators discussed herein[1].

2.2 Desk Research and Policy Review

A comprehensive review of national energy policies, legal frameworks, climate strategies, and development plans was conducted for each OLADE Caribbean member country. This included national energy roadmaps, Integrated Resource Plans (IRPs), and recent legislative updates published between 2020 and 2025. Comparative policy analysis focused on identifying enabling conditions and structural barriers to energy transition across these jurisdictions.

The desk review also incorporated recent academic and grey literature from technical cooperation platforms and regional think tanks to complement national perspectives with cross-country thematic insights.

[1] Siroit, G. & Proietti, C. (2025). *Regional Energy Outlook for Caribbean Countries*. Latin American Energy Organization (OLADE).
Panorama Energético (2024) - https://www.olade.org/wp-content/uploads/2025/06/LAC-outlook-summary-2024-OLADE-ENG.pdf

2.3 Qualitative Stakeholder Interviews

To complement statistical and documentary analysis, semi-structured interviews were conducted with technical focal points from most of OLADE Caribbean member states in early 2025: Barbados, Belize, Cuba, the Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Suriname, and Trinidad and Tobago.

The interview protocol, designed by OLADE, focused on six core dimensions:

- Energy access and inclusion
- Renewable energy integration
- Institutional and regulatory barriers
- Financial and investment readiness
- Digitalization and innovation
- Climate resilience and just transition

All interviews were transcribed, coded thematically, and triangulated with national data and policy documents to validate key findings and uncover emerging issues.

2.4 Integration and Validation

A triangulation strategy was applied throughout the research process to strengthen analytical robustness. This included cross-verifying interview insights with statistical data (SIE), legal texts, and scenario modeling. In addition, the draft report was circulated to national focal points and delegates from OLADE member states to gather feedback, promote ownership, and ensure the findings reflect both regional priorities and national realities.

This methodology ensures that the report reflects both quantitative trends and the lived experiences of energy practitioners in the Caribbean, offering a grounded and actionable roadmap for policy, investment, and innovation.

3. REGIONAL ENERGY LANDSCAPE

This chapter provides an updated overview of the Caribbean energy landscape based on the 2024 *Panorama Energético de América Latina y el Caribe* (OLADE, 2024). It synthesizes key energy indicators, regional patterns, and structural vulnerabilities affecting the energy transition of Caribbean OLADE member states.

To complement this regional analysis, individual country profiles have been compiled in the annex section of this report. These summaries offer a snapshot of national-level energy systems as of 2023, including metrics on energy supply, consumption, renewable share, emissions, and electricity access. They are intended to facilitate cross-country comparison and provide context for national policy discussions.

3.1 Access and Demand Trends

Most Caribbean countries report electricity coverage rates above 95%, yet significant disparities remain in rural, coastal, and island communities. In countries like Guyana, Suriname, and Belize, geographic barriers hinder access to reliable electricity for thousands living in hinterland and riverine areas.

Final energy consumption in the Caribbean remains modest compared to larger Latin American economies. However, between 2020 and 2022, the region experienced an average annual energy demand growth of 3.4% (OLADE, 2024), driven by urbanization and increased electrification.

Energy intensity (total energy consumption per unit of GDP) has slightly declined, reflecting modest gains in energy efficiency, but the potential for deeper improvement remains high, particularly in sectors like transport and construction.

3.2 Energy Matrix Composition

The Caribbean energy matrix remains heavily fossil-based. In 2022, fossil fuels accounted for over 70% of the primary energy supply in the region, with petroleum derivatives making up the majority share (OLADE, 2024). Dependence on imported oil, diesel, and fuel oil continues to expose countries to global price volatility and balance of payment risks.

Hydropower plays a secondary role in countries with river basins, such as Belize and Guyana. Renewable energy sources like solar, wind, and biomass are gradually increasing their share, though they still represented less than 10% of electricity generation regionally in 2022.

3.3 Renewable Energy and Clean Growth

Non-conventional renewables (solar, wind, small hydro, biomass) have seen modest growth. According to OLADE (2024), the share of renewable energy in final energy consumption in the Caribbean rose from 13% in 2018 to 16% in 2022. However, this is still below the region's technical and economic potential.

Countries like Jamaica and the Dominican Republic have deployed utility-scale solar and wind farms, while Guyana[2], Suriname, and Belize are exploring decentralized solar mini-grids and micro-hydro for rural electrification. In Cuba, over 280 MW of solar PV capacity has already been connected to the grid, with an additional 2,000 MW under development.

3.4 Structural Vulnerabilities

Caribbean energy systems face multiple structural constraints:

- Fossil fuel import dependency remains high, making energy systems vulnerable to price shocks and supply chain disruptions.
- Aging infrastructure contributes to technical and non-technical losses of 15–30% in several countries, undermining financial sustainability and service reliability.
- High climate vulnerability: Hurricanes, flooding, and sea-level rise pose recurrent risks to centralized energy infrastructure, as seen in repeated outages in Cuba, Jamaica, and the Dominican Republic.
- Barbados, despite its ambitious decarbonization trajectory, remains highly vulnerable to climate-related shocks and fossil fuel import risks. Achieving its 2035 net-zero target will require not only rapid renewable deployment but also significant investment in grid modernization, storage, and resilience against extreme weather events.
- Belize's energy sector remains highly vulnerable to climate-related shocks, with recent droughts, heat waves, and wildfires underscoring the need for greater resilience. The 2019 drought reduced hydropower and biomass output, while the May 2024 heat wave triggered record electricity demand that strained Belize's grid and interconnected supply from Mexico. More recently, widespread wildfires in rural areas threatened critical energy infrastructure. Although micro-hydro systems were considered in rural electrification planning, solar PV has been the preferred option for micro-grids to date. Addressing these challenges will require accelerating renewable deployment alongside investments in grid stability, storage, and climate adaptation measures.
- Haiti exemplifies the most fragile energy system in the region: national supply often fluctuates around 60 MW against a demand of nearly 789 MW, forcing widespread

[2] According to Guyana's government information, while not yet deployed, 33MW of utility scale solar are under construction.

reliance on individual diesel generators and biomass. Limited fuel storage capacity—barely one month of autonomy—further exacerbates exposure during political crises or disruptions in fuel imports

3.5 Regional Cooperation and Integration

Despite the proximity and shared challenges, regional electrical interconnection is limited. Projects like the proposed Haiti–Dominican Republic intertie and participation in broader integration schemes (e.g., SIEPAC) remain in nascent stages.

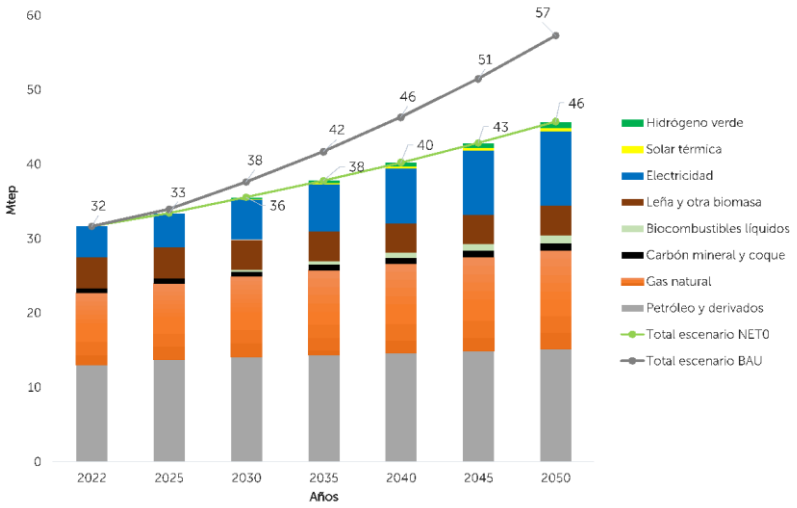
Regional organizations — such as OLADE, CARICOM Energy, CCREEE, and CDB — play an increasingly important role in coordinating technical assistance, supporting policy harmonization, and mobilizing financing for resilient energy infrastructure.

3.6 Long-Term Projections and Transition Scenarios

According to OLADE's 2025 regional energy outlook, two forward-looking scenarios were modeled for the Caribbean: a Business-as-Usual (BAU) scenario and a NET0 scenario, which reflects enhanced policy efforts for decarbonization, energy efficiency, and renewable energy deployment.

The Caribbean subregion maintains its predominant dependence on petroleum derivatives and natural gas throughout the projection period; however, the greater penetration of electricity, liquid biofuels, solar thermal energy and green hydrogen is evident in the NET0 scenario, which dampens the growth in hydrocarbon consumption. Due to the improvement in energy efficiency, a reduction in energy consumption is achieved in the NET0 scenario, compared to the BAU scenario, with the total final energy consumption in the year 2050 in the NET0 scenario being 20% lower than the projected value in the BAU scenario for that year. See Figure 1.

Figure No. 1 Projection of final energy consumption, NET0 scenario, Caribbean



Source: OLADE, 2025

- Final energy consumption in the NET0 scenario is projected to be 20% lower than the BAU scenario by 2050, due to higher efficiency and electrification.
- The renewability index of final energy consumption improves from 16% (base year) to 29% in 2050 under the NET0 scenario, compared to only 21% in the BAU.
- Electricity's share in final consumption rises from 13% to 22% by 2050, while hydrocarbons fall from 72% to 62%.

In terms of electricity generation:

- The installed capacity in the NET0 scenario increases by 27% over the BAU by 2050.
- Wind and solar will comprise 58% of installed capacity by 2050 (up from 8% in the base year).
- The renewability index of electricity generation reaches 52% by 2050 in the NET0 scenario, compared to 41% in BAU.

Total energy supply sees:

- A 7% reduction in 2050 under NET0 versus BAU.
- Renewability index improves from 14% to 27%.
- Natural gas and renewables grow in share, while oil derivatives decrease.

Finally, CO_2 emissions from the energy sector are projected to be 18% lower in 2050 under the NET0 scenario compared to BAU. These projections highlight the critical role of efficiency, electrification, and renewable energy in transforming the Caribbean energy system. The scale of transformation needed also underscores the importance of enabling policies, resilient infrastructure, and international support.

4. CARIBBEAN ENERGY TRANSITION

Thematic Regional Analysis

This thematic chapter is based on a mixed-methods approach combining secondary data, regional policy documents, and qualitative interviews conducted with energy stakeholders in Guyana, Belize, Jamaica, Suriname, Cuba, the Dominican Republic, and Trinidad and Tobago. These interviews were designed and implemented by OLADE in early 2025 to capture grounded perspectives on regulatory gaps, infrastructure barriers, and renewable energy opportunities. The findings presented herein synthesize both quantitative insights from the Energy Information System (SIE) and lived experiences reported by national energy focal points. This chapter contributes to a more grounded understanding of the Caribbean's energy transition, incorporating local knowledge into a regional policy analysis. This section is summarized in Table 1.

4.1 Energy Access and Equity

Achieving universal, reliable, and equitable energy access remains one of the Caribbean's most complex and pressing challenges. While national-level electrification rates are often high, stark disparities persist between urban centers and rural or remote communities — particularly among Indigenous populations and hinterland settlements. These inequities pose social, economic, and environmental challenges that constrain national development goals and the regional energy transition agenda.

Guyana illustrates the depth of geographic inequity in energy access. Approximately 242 hinterland and riverine communities, home to over 137,000 people, continue to face unreliable or non-existent electricity services. These areas are largely disconnected from the national grid, and their remoteness, and sparsity in population, often with no road access, severely limits the feasibility of traditional grid extension. Similarly, Suriname faces challenges in delivering reliable electricity to its interior regions. Although coastal areas are relatively well electrified, rural villages in the forested interior remain underserved due to logistical difficulties and high infrastructure costs.

Belize also demonstrates persistent access gaps, especially in rural and Indigenous zones. Despite a moderately developed national grid, many isolated communities still lack stable electricity, undermining broader goals of inclusive development. The small market size and financial constraints further complicate grid expansion or decentralized alternatives.

The Dominican Republic, although more advanced in terms of national electrification, still contends with rural access disparities. Some remote areas remain disconnected or suffer from unreliable service, while urban regions are comparatively well-served.

Emerging Solutions: Decentralized and Community-Led Systems

To address these disparities, several countries are turning toward decentralized, renewable energy-based solutions. Guyana, for instance, has deployed 37,000+ small rooftop solar home systems to provide basic lighting, a fan and mobile charging along with community solar and hybrid mini-grids across hinterland villages, supported by national policy under the Low Carbon Development Strategy (LCDS) 2030. Suriname is following a similar path, these

projects are financed from the government budget, with loans from the Inter-American Development Bank (IDB) and the CARICOM Development Fund (CDF), to electrify over 60 remote villages through solar-based mini-grids and digital monitoring platforms. In Belize, mini-grid and micro-hydro solutions are being explored as cost-effective approaches for reaching rural households.

These efforts reflect a broader regional trend toward energy inclusion as a core component of climate-resilient development. Yet, significant barriers remain, including upfront capital costs, gaps in technical capacity, and weak local institutions for system operation and maintenance. In addition, integrating gender and intersectional approaches in rural electrification policies remains underdeveloped across most countries.

Regional cooperation, particularly through CARICOM and OLADE, could play a critical role in facilitating knowledge sharing, pooled financing instruments, and technical support. Benchmarking regional access indicators and promoting peer learning could accelerate the pace of inclusion. Investment in gender-sensitive data systems and participatory planning will be key to building equitable energy futures.

Key Takeaways:

- Energy access gaps are primarily geographic: countries like Guyana, Suriname, and Belize face the challenge of serving dispersed and hard-to-reach communities.
- Equity in access is tied to infrastructure and institutional capacity: areas with weak public services or low investment readiness tend to lag in electrification.
- Decentralized renewable energy is a promising solution: mini-grids and solar PV systems are increasingly seen as viable, but require tailored financing and technical support.
- International cooperation plays a vital role: multilateral agencies and regional platforms can help bridge financing and knowledge gaps.
- Access strategies must evolve to include gender, youth, and Indigenous perspectives for inclusive and equitable energy planning.

4.2 Dependence on Fossil Fuels and Import Vulnerability

The Caribbean's energy systems remain deeply tied to fossil fuels, both through local production and fuel imports. This dependence exposes countries to global market volatility, foreign exchange pressures, and climate-related risks — all of which can destabilize national energy security and undermine long-term sustainability goals. Even as the region pursues cleaner energy futures, fossil fuel reliance remains a structural vulnerability across diverse national contexts.

Structural Dependence and Exposure to Price Volatility

Trinidad and Tobago represents the most direct form of fossil dependence. As a hydrocarbon-rich nation, it produces and consumes vast quantities of natural gas — which accounts for 100% of its electricity generation. While this has ensured supply security and relatively low prices domestically, it also anchors the country's energy matrix in high-carbon intensity, complicating its climate commitments and diversification efforts.

Other countries such as Cuba, Jamaica, Belize, and the Dominican Republic import large volumes of fossil fuels, particularly diesel, heavy fuel oil, and natural gas, to meet electricity needs. This reliance on external sources makes their energy systems vulnerable to international price swings, geopolitical tensions, and logistics disruptions.

In Cuba, fossil fuels account for 95% of electricity generation, but supply is erratic due to sanctions, limited foreign reserves, and aging infrastructure. The result is widespread blackouts and electricity shortages.

Jamaica faces some of the highest electricity costs in the region, largely driven by fossil fuel import costs and global price volatility.

Belize is significantly dependent on imported electricity from Mexico, raising national concerns about sovereignty and energy reliability.

The Dominican Republic, despite an increasingly diversified generation mix, continues to rely heavily on imported oil and natural gas, maintaining exposure to fluctuating prices.

The contrast between Barbados and Haiti underscores the diversity of fossil dependence across the Caribbean. Haiti, entirely reliant on imported petroleum products and lacking refining or domestic production capacity, faces systemic insecurity whenever global supply chains are disrupted. Meanwhile, Barbados, where 94% of primary energy supply still comes from hydrocarbons, is actively redirecting investment to renewables and electric mobility to reduce its heavy import bill and strengthen energy independence.

Opportunities for Mitigation and Transition

Each country is exploring tailored strategies to reduce this dependence:

- Trinidad and Tobago is beginning to invest in solar power and exploring participation in carbon markets as transitional mechanisms. It could also use its natural gas revenues to support a longer-term clean energy pivot and create a sovereign fund for renewable energy investment.

- Cuba is pursuing state-led solar expansion to reduce its fossil reliance, albeit within a constrained financial and geopolitical context.

- Jamaica and the Dominican Republic have articulated Integrated Resource Plans and renewable energy goals aimed at increasing clean energy's share in the national mix and lowering fuel import bills.

- Belize is looking at decentralized renewable options and regional interconnection projects to diversify away from Mexican electricity imports.

Despite these efforts, the transition remains uneven, often slowed by high capital costs, regulatory fragmentation, and limited fiscal space. Energy subsidies that distort market signals also play a role in delaying clean energy investments.

Nonetheless, the imperative to reduce fossil dependence is clearly recognized across the region as both a resilience and climate priority. Coordinated regional efforts, including energy diplomacy and pooled procurement mechanisms, could provide scale advantages and improve bargaining power in international markets.

Key Takeaways:

- Fossil fuel dependence is a systemic regional vulnerability, affecting both producers (e.g., Trinidad and Tobago) and importers (e.g., Cuba, Jamaica).
- Imported energy exposes countries to external shocks: price spikes and supply chain disruptions have significant economic and social impacts.
- Diversification requires long-term commitment and investment, particularly in infrastructure, planning, and institutional frameworks.
- Transition strategies vary, with some nations leaning on domestic renewables, others on regional cooperation, and some exploring hybrid energy and market-based mechanisms.
- Addressing energy subsidies, improving fiscal space, and leveraging sovereign wealth or climate funds are key enablers of fossil fuel phaseout.

4.3 Renewable Energy Integration and Infrastructure Development

Across the Caribbean and English-speaking Latin American countries, renewable energy is increasingly seen not only as a climate imperative but also as a strategic pathway to reduce energy import dependence, improve resilience, and modernize legacy infrastructure. While national circumstances vary, there is a shared regional ambition to scale up solar, wind, hydro, and biomass — often through a hybrid of utility-scale and decentralized systems.

Jamaica has led with one of the region’s most structured approaches, supported by its Integrated Resource Plan (IRP), which outlines capacity additions through 2037 including over 1,500 MW of renewables and storage. This long-term planning is bolstered by institutional coordination between the Ministry of Science, Energy and Technology and the Office of Utilities Regulation. Jamaica's staged investment model and emphasis on regulatory clarity offer a replicable example of how renewables can be integrated strategically.

In Guyana, renewable energy is embedded in the Low Carbon Development Strategy 2030. The country combines utility-scale hydropower and gas projects with solar mini-grids for remote Indigenous and hinterland communities. This dual system supports both grid stability and rural electrification, aligning energy goals with climate and social inclusion.

The Dominican Republic has made significant progress with solar and wind energy. Backed by public and private investment, the country has added hundreds of megawatts of renewable capacity. Yet high transmission and distribution losses persist, and there is a need to modernize infrastructure and increase grid flexibility to better integrate variable renewables. The country's regulatory reforms and upcoming energy roadmap to 2030 provide momentum, though enforcement remains uneven.

Cuba is expanding solar PV deployment under constrained conditions, with over 280 MW already integrated and an additional 2,000 MW and 200 MW of battery storage in development. Despite external restrictions, Cuba demonstrates that state-driven renewable deployment linked to energy sovereignty goals can achieve scale — albeit slowly. Universities and technical institutes play a key role in R&D.

Suriname, while a fossil producer, has begun deploying solar mini-grids in over 60 rural villages, in partnership with the IDB. The country's renewable energy target of 35% by 2030 is ambitious, but implementation is challenged by low technical capacity and weak enforcement of legal frameworks. Digital monitoring technologies, such as satellite-linked platforms, are being piloted to optimize decentralized system management. Training staff to reduce the skills gap—equipping them with the necessary technical knowledge to monitor, manage, and troubleshoot solar systems independently, especially in remote areas.

Belize has substantial renewable potential, particularly in hydro, biomass, and solar. Yet progress is constrained by limited domestic generation, dependency on Mexican electricity, and underdeveloped financing mechanisms. Efforts by civil society, local cooperatives, and innovation labs show promise for bottom-up adoption of community energy solutions.

Barbados has committed to installing 590 MW of new renewable and balancing capacity by 2040—including 180 MW of solar PV and 160 MW of onshore wind—while electrifying transport and deploying battery storage systems. These efforts are central to its Net Zero 2035 pathway.

By contrast, Haiti's renewable integration remains limited to donor-supported pilot mini-grids and solar home systems, such as those implemented under the PHARES and ERAF initiatives. While promising, these projects remain largely isolated from the national grid, underscoring the need for a comprehensive framework to scale renewable access.

Regionally, there is scope to expand cross-border energy cooperation, including interconnection projects, harmonized technical standards, and regional energy market integration. The Caribbean Centre for Renewable Energy and Energy Efficiency (CCREEE) and CARICOM Energy provide platforms to support collaborative planning and capacity-building[3].

Key Takeaways:

[3] The visual data supporting this section and the following are available in the technical document OLADE energy outlook 2025, for Caribbean countries (Siroit et al., 2025), which includes graphs on installed capacity, energy intensity, and renewable share.

- Renewable energy deployment is accelerating, but unevenly: countries with integrated planning and strong institutions (e.g., Jamaica, Dominican Republic) are progressing faster.
- Decentralized and hybrid models dominate in countries with large underserved territories (e.g., Guyana, Suriname).
- Infrastructure modernization — particularly for transmission and storage — is essential to increase renewable penetration.
- Regional cooperation is underutilized but holds transformative potential for shared infrastructure, interconnection, and financing.
- Linking renewable investments with social inclusion, local innovation, and climate resilience will improve long-term sustainability and legitimacy.

4.4 Institutional, Regulatory, and Financial Barriers

Despite increasing ambition, countries across the region face institutional, regulatory, and financial bottlenecks that limit the pace and scale of energy transformation. These include fragmented governance structures, inconsistent policy signals, and limited access to concessional finance.

In Trinidad and Tobago, regulatory complexity rooted in its petroleum economy has delayed renewable adoption. Overlapping mandates, lack of clear accountability, and weak data systems hamper execution. The electricity regulator has limited autonomy, and long-term planning remains misaligned with climate goals.

Suriname's Electricity Law (2016) enables private sector participation in principle, but market dominance by the state-owned utility (EBS) and partial legal implementation create uncertainty for investors. Limited public capacity further delays project development.

Belize suffers from underdeveloped financial systems for energy investment. The absence of dedicated credit lines or green finance instruments has constrained scaling of solar and micro-hydro initiatives. Institutional turnover and fragmented coordination among ministries complicate energy governance.

The Dominican Republic, despite progress, faces administrative barriers and regulatory delays. Permitting processes are lengthy, and inconsistencies in contract enforcement deter new entrants. Transmission infrastructure has lagged behind generation growth.

In contrast, Jamaica offers a case study in effective institutional reform. Through its IRP process and proactive utility regulation, it has improved transparency, investor confidence, and planning. Still, implementation speed and regulatory certainty require ongoing attention.

Across the region, national development banks and sovereign investment vehicles remain underutilized for energy transition. Project readiness, pipeline development, and capacity to

absorb concessional finance are recurring limitations. Institutionalizing climate finance readiness — including MRV systems, energy statistics, and pipeline management — is crucial.

Key Takeaways:

- Weak institutions and regulatory uncertainty are major impediments to energy transition.
- Implementation delays and legal ambiguity undermine investor confidence and financing.
- Countries with stronger planning and regulatory frameworks attract more investment (e.g., Jamaica).
- Expanding regional policy alignment and knowledge sharing on regulation, permitting, and finance can accelerate transformation.
- National finance ecosystems — including banks and funds — must be empowered to support energy investments.

4.5 Digitalization and Innovation in the Energy Sector

Digital technologies are emerging as essential tools for energy modernization in the Caribbean. From smart meters to AI-based forecasting and satellite monitoring, innovation is reshaping how electricity is managed — improving reliability, efficiency, and access.

Jamaica leads in grid digitalization, deploying smart meters, automation tools, and predictive analytics to enhance resilience and manage demand. Regulatory support has facilitated pilot programs, particularly for hurricane-prone regions.

Suriname uses digital remote monitoring for mini-grids in interior communities. Satellite internet (e.g., Starlink) is being tested to ensure maintenance of systems in areas with no road access, reducing downtime and enabling predictive servicing.

In the Dominican Republic, smart grid technologies are being rolled out alongside energy efficiency programs. Digital data is used to identify energy-intensive zones, optimize loads, and inform regulatory decisions.

Belize has seen innovation emerge from youth-led initiatives and community hubs. Mobile platforms monitor solar system performance, and educational apps raise awareness on energy efficiency and rights.

However, digital gaps persist — especially in broadband coverage, workforce skills, and alignment between energy and telecom regulators. National digital strategies often overlook energy sector needs.

Key Takeaways:

- Digitalization enhances system efficiency, reliability, and inclusion, but remains uneven across the region.
- Rural digital connectivity is crucial for decentralized system monitoring and maintenance.
- Regulatory alignment and investment in digital infrastructure must keep pace with energy ambitions.
- Youth and local innovation ecosystems are key enablers of energy-tech adoption.
- Data Collection: Collecting data in a structured and consistent manner that allows us to formulate effective, evidence-based energy policy.

4.6 Climate Resilience and Transition Strategies

As climate impacts intensify, the energy transition must be not only decarbonizing but also socially inclusive and climate-resilient. Coastal exposure, hurricanes, and supply chain fragility make resilience a top priority.

Guyana's LCDS 2030 exemplifies a development-centered, just transition. Energy access for Indigenous communities is framed as environmental justice. International cooperation and climate finance are vital to sustaining this dual approach.

Cuba links energy independence with climate resilience, expanding renewables to reduce vulnerability to fuel shortages. Community involvement and national energy education campaigns underpin this strategy.

The Dominican Republic is integrating resilience into energy planning, strengthening transmission systems, and exploring regional interconnections. Plans increasingly reflect risk scenarios and adaptation costs.

Trinidad and Tobago, highly dependent on gas exports, is beginning to explore transition pathways. A just transition will require policies for fossil fuel workers, new skills programs, and phased reforms in public finance.

Barbados links its energy transition directly to climate resilience, aiming to reduce fossil import dependence while modernizing its transport system and grid to withstand intensifying hurricanes and coastal threats. In Haiti, however, systemic fragility and governance instability limit resilience planning. The persistence of reliance on biomass and diesel not only accelerates deforestation and emissions but also leaves vulnerable communities with little protection against future shocks

The region must also address social equity, ensuring that marginalized groups benefit from the transition. Participatory planning, social protection, and gender-sensitive programs can ensure that vulnerable communities are not left behind.

Key Takeaways:

- The energy transition must be resilient and inclusive, reflecting exposure to climate shocks.
- Just transition strategies require economic diversification, workforce planning, and public investment.
- Climate finance, adaptation planning, and social dialogue are essential pillars of a successful transition.
- Countries must mainstream resilience into infrastructure, policy, and financing frameworks.

Table 1 Thematic Summary Table: Caribbean Energy Transition

Country	Energy Access and Equity	Fossil Dependence / Import Vulnerability	Renewables and Infrastructure	Institutional and Financial	Digitalization and Innovation	Climate Resilience and Just Transition
Guyana	Severe geographic inequities and population sparsity; solar mini-grids for hinterlands	Diesel use in rural areas; pursuing gas and hydro integration	LCDS 2030 promotes solar/hydro mix; decentralized and central projects	Limited local capacity; LCDS framework aligns climate-energy	Remote monitoring via digital tools in rural solar	LCDS frames energy access as environmental justice
Jamaica	Generally good access; high cost remains a barrier	High fossil imports; price-sensitive; IRP to reduce dependence	1,500 MW RE planned; strong IRP; implementation delays	Mature regulation; slow permitting and investment challenges	Smart grid, AI forecasting, and automation in progress	Resilience integrated in IRP; focus on hurricane readiness
Trinidad and Tobago	Full coverage, but urban-centralized; equity not prioritized	100% natural gas reliance; high carbon intensity	98 MW solar project underway; very early-stage renewables	Regulatory fragmentation; oil legacy hinders reform	Minimal progress; early data improvements needed	Just transition framework emerging; reliant on gas exports
Belize	Rural and Indigenous access gaps; youth-led solutions emerging	Dependent on imports from Mexico; sovereignty concerns	Exploring solar/micro-hydro; limited domestic generation	Weak financial systems; inconsistent policy signals	Youth-driven mobile apps and innovation hubs	Dual challenge: access + decarbonization; youth innovation
Cuba	General access, but infrastructure is fragile	95% fossil use; supply affected by sanctions	There will be 547 MW of new PV capacity, with an additional 568 MW currently under construction and scheduled for synchronization in December 2025, along with 1,000 MW of PV in the	State-led; sanctions restrict finance; high technical skill	Solar-linked education; universities support R&D	Focus on sovereignty + resilience; energy efficiency campaigns

			pipeline to be developed over the next six years.			
Dominican Republic	Improved access; rural disparities persist	Oil and gas imports; exposure to volatility remains high	Solar/wind expansion; infrastructure loss remains a barrier	Clear vision; bureaucratic delays; private entry difficult	Smart grid rollout in urban areas; data use improving	Adaptation plans in energy policy; infrastructure upgrades
Suriname	Coast well-served; interior underserved; universal access by 2030	Emerging fossil exporter; diversification underway	By the end of this year, 60 villages will be connected to mini-grids. ; RE target of 35% by 2030	Law under-implemented; utility dominance; small market	It is planned to use Starlink to connect the mini-grids.	The plan is currently in development. The country is in the discussion phase, and the planning is underway to transition to fully green energy.

5. CONCLUSIONS AND RECOMMENDATIONS

The Caribbean energy transition presents both urgent challenges and transformative opportunities. The findings of this report highlight the need for structural reforms, targeted investments, and inclusive policies to build a more secure, sustainable, and climate-resilient energy future for the region.

Key Conclusions

- Persistent dependence on fossil fuels represents a core vulnerability, with more than 70% of the region's primary energy supply still sourced from petroleum products. This dependence increases exposure to global market shocks and undermines long-term energy security.

- Electricity access is high, averaging over 95%, but significant disparities persist for remote, coastal, and low-income communities. Reliability and quality of service remain uneven, particularly in isolated areas.

- The renewable energy share in final consumption remains limited, increasing only modestly from 13% in 2018 to 16% in 2022, despite falling technology costs and growing investment appetite. Current deployment rates remain insufficient to meet climate and energy security objectives.

- Efficiency and electrification emerge as key transition pillars. Under the NET0 scenario, final energy consumption in 2050 would be 20% lower than in BAU, with electricity making up 22% of final demand, compared to 13% today. These gains require both demand-side management and infrastructure modernization.

- Climate vulnerability is structurally embedded in Caribbean energy systems. Frequent hurricanes, coastal flooding, and sea-level rise continue to threaten generation and grid infrastructure, underscoring the need for climate-resilient planning.

- Institutional capacity, regulatory consistency, and financing mechanisms remain insufficient to fully scale the energy transition. Stronger enabling environments are needed to de-risk investment and ensure long-term policy coherence.

Strategic Recommendations

1. **Accelerate Renewable Energy Deployment**
    - Establish country-level renewable energy targets aligned with regional goals.
    - Strengthen regulatory frameworks to streamline permitting, procurement, and interconnection processes.
    - Expand investment in utility-scale solar, wind, and storage, alongside decentralized systems for remote areas.
    - Stakeholders have highlighted the importance of integrating petroleum

industry capacity into a gradual transition strategy, ensuring that economic stability is maintained while renewables expand.

- Explore models for regional energy auctions in order to aggregate scale and volume, thereby enhancing market attractiveness and unlocking the participation of competitive private developers across Latin America and the Caribbean.

2. **Enhance Regional Cooperation and Grid Integration**

   - Reinforce institutional mechanisms through OLADE, CARICOM Energy, CCREEE, and the CDB to coordinate planning, financing, and policy alignment.

   - Explore cross-border grid integration opportunities and joint investment in shared infrastructure.

   - Countries emphasized that short-term resilience actions should prioritize energy security, particularly in island states and remote communities where supply disruptions have immediate social impacts.

3. **Modernize and Digitize Energy Infrastructure**

   - Prioritize upgrades to aging transmission and distribution systems to reduce technical losses and improve reliability.

   - Integrate digital technologies (e.g., smart meters, remote monitoring, grid analytics) to enhance system performance and consumer engagement.

4. **Ensure Energy Inclusion and Social Equity**

   - Expand access to modern energy services in underserved communities through targeted public investment and inclusive business models.

   - Mainstream gender equity, Indigenous rights, and youth participation in energy planning and workforce development.

5. **Promote Climate Resilience and Just Transition Strategies**

   - Embed climate risk assessment and adaptation planning in all national energy strategies.

   - Design just transition frameworks that support fossil fuel phaseout while protecting workers and vulnerable communities.

6. **Develop Strong Monitoring and Evaluation Systems and Capacity Building**

   - Build national and regional capacity to monitor transition progress using harmonized indicators and transparent reporting.

- Leverage open data platforms and digital tools to foster accountability and stakeholder engagement.

- Capacity building programs should include follow-up mechanisms to ensure that skills acquired through training are transferred to new staff within ministries and utilities, preventing knowledge loss due to turnover. Public inventories of ongoing energy projects across OLADE and CARICOM member states could serve as benchmarking tools to identify common conditions, replicate best practices, and foster collaboration.

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ANNEX: Countries Energy Profiles

This annex presents a series of country energy profiles for selected Caribbean nations, developed based on the Panorama Energético de América Latina y el Caribe 2024 published by OLADE (Latin American Energy Organization). The profiles provide a concise overview of each country's energy system, covering supply and demand structures, electricity generation, renewable energy penetration, emissions, and policy frameworks.

1. BARBADOS

Barbados is leading the way with its ambitious decarbonization efforts, even as it continues to rely on imported hydrocarbons during its transition to a more sustainable energy future. Energy sector maintains a highly fossil fuel-dependent energy matrix, with petroleum products representing 94.4% of its Total Primary Energy Supply (TPES), equivalent to 558 kilotonnes of oil equivalent (ktoe) in 2022. Domestic energy production remains marginal (13 ktoe), positioning Barbados as a net energy importer with minimal native energy resources. Renewable sources, primarily solar and biomass, account for less than 4% of supply.

The power sector is predominantly thermal-based, with 90.4% of the 1,037 GWh of electricity generated in 2022 coming from diesel and heavy fuel oil plants. Renewable generation—led by grid-connected solar PV—accounts for 9.5%, with 39 MW of installed solar capacity contributing to the total 334 MW installed base. Biogas contributes an additional 1.2% to the electricity mix. Despite the fossil-heavy generation, Barbados has achieved 100% electricity access across both urban and rural areas.

Final energy consumption reached 379 ktoe in 2022, with transport being the dominant sector (47%), followed by residential (19%), commercial (18%), and industrial use (14%). Energy intensity remains low at 0.06 toe per thousand USD (PPP), indicating relatively efficient energy use per unit of economic output.

Barbados has set ambitious targets to transition to 100% renewable electricity by 2030. The government has implemented fiscal incentives, net metering, and streamlined regulatory frameworks to scale up distributed solar PV adoption. Storage solutions and grid modernization are also prioritized to enhance system reliability and enable variable renewable integration.

Although carbon emissions from the energy sector totaled 1.31 $MtCO_2$ in 2022—mainly from electricity generation and transport—the country's decarbonization trajectory aligns with its broader climate commitments under the Paris Agreement. The energy transition in Barbados reflects a strategic shift toward sustainability and energy security in a small island context with high climate vulnerability.

Table Key Energy Indicators for Barbados, 2022–2025

Category	Value / Description
Population (2023 est.)	281,600
Electricity Access	100% (universal access)
Total Primary Energy Supply (TPES)	558 ktoe (94.4% petroleum-based)
Final Energy Consumption (FEC)	379 ktoe
Renewable Share in Electricity	9.5% (mainly solar PV; 39 MW installed)
Installed Capacity	334 MW (295 MW thermal, 39 MW solar PV)
Main Power Utility	Barbados Light & Power Company (BLPC) – Regulated by FTC
Main Hydrocarbon Entity	Barbados National Oil Company Limited (BNOCL)
Energy Intensity	0.06 toe per thousand USD (PPP)
CO_2 Emissions (Energy sector)	1.31 $MtCO_2$ (2022)
Energy Transition Priorities	100% renewable electricity by 2030; Net Zero 2035; solar PV, storage, e-mobility
Main Challenges Identified	High fossil fuel dependency; need for grid modernization and financing mechanisms
Vision to 2035	Diversified and resilient energy system; reduced fossil dependency; climate-resilient infrastructure

2. CUBA

Cuba is progressing in diversifying its energy supply, even as it continues to rely heavily on imported hydrocarbons during its transition to a more sustainable energy future. The energy sector maintains a predominantly fossil fuel-based matrix, with petroleum products representing 84% of its Total Primary Energy Supply (TPES), equivalent to 9,482 kilotonnes of oil equivalent (ktoe) in 2022. Domestic energy production, mainly biomass from the sugar industry, covered about one third of demand. Renewable sources, primarily solar, wind, and hydro, accounted for 4% of supply.

The power sector remains largely thermal-based, with 86% of the 18,213 GWh of electricity generated in 2022 coming from fuel oil and diesel plants. Renewable generation—led by hydro and solar PV—accounts for 14%, supported by gradual expansion of solar farms. Installed capacity reached 6,200 MW. Despite challenges, Cuba provides nearly universal electricity access across the country.

Final energy consumption reached 6,915 ktoe in 2022, with transport as the dominant sector (40%), followed by residential (28%), industrial (20%), and commercial use (12%). Energy intensity remains moderate, reflecting efficiency gains despite structural limitations.

Cuba has set ambitious targets to reach 37% renewable electricity by 2030. The government is prioritizing solar PV expansion, biomass cogeneration, and efficiency measures, supported by international cooperation.

Although carbon emissions from the energy sector totaled 25 $MtCO_2$ in 2022—mainly from power generation and transport—the country's decarbonization trajectory is aligned with its commitments under the Paris Agreement, aiming to strengthen resilience while reducing dependence on imported fuels.

Table Key Energy Indicators for Cuba, 2022–2025

Category	Value / Description
Population (2023 est.)	≈11.3 million
Electricity Access	~99%
Total Primary Energy Supply (TPES)	9,482 ktoe (84% petroleum)
Final Energy Consumption (FEC)	6,915 ktoe
Renewable Share in Electricity	14% (solar, hydro, biomass)
Installed Capacity	6,200 MW (75% thermal, 22% renewables)
Main Power Utility	Unión Eléctrica (UNE) – State-owned
Main Hydrocarbon Entity	CUPET
Energy Intensity	Moderate
CO_2 Emissions (Energy sector)	25 $MtCO_2$ (2022)
Energy Transition Priorities	2,000 MW solar; biomass cogeneration; resilient grid
Main Challenges Identified	Aging thermal plants; sanctions limit technology access
Vision to 2035	37% renewable electricity; resilient and modernized grid

3. DOMINICAN REPUBLIC

The Dominican Republic is advancing its energy transition, even as it continues to depend heavily on fossil fuels during its pathway to greater sustainability. The energy sector remains fossil fuel-dominated, with petroleum products representing 68% of Total Primary Energy Supply (TPES), equivalent to 9,015 ktoe in 2022. Natural gas accounted for 22%, while renewable sources such as solar, hydro, and wind contributed 10%.

The power sector has diversified, with 21,418 GWh of electricity generated in 2022. Thermal generation remains dominant, but renewable sources—led by solar and wind—provided 16%. Installed capacity stood at 5,200 MW. Modern plants, including the SIBA Energy facility, have enhanced reliability and efficiency. Universal electricity access has been maintained.

Final energy consumption reached 6,723 ktoe in 2022, with transport leading (45%), followed by residential (22%), commercial (18%), and industrial (15%). Energy intensity remains relatively efficient compared to regional peers.

The Dominican Republic has set strong targets to expand renewable energy and enhance grid reliability. Government policies include fiscal incentives and private investment partnerships, with the goal of achieving a more balanced and resilient energy system.

Carbon emissions totaled 23 $MtCO_2$ in 2022—primarily from the transport and electricity sectors. The country's energy transition strategy is in line with its Paris Agreement commitments, with continued emphasis on reducing dependency on oil imports and expanding clean generation.

Table Key Energy Indicators for Dominican Republic, 2022–2025

Category	Value / Description
Population (2023 est.)	≈11.1 million
Electricity Access	~99%
Total Primary Energy Supply (TPES)	9,015 ktoe (68% petroleum, 22% natural gas)
Final Energy Consumption (FEC)	6,723 ktoe
Renewable Share in Electricity	16% (solar, wind, hydro)
Installed Capacity	5,200 MW
Main Power Utility	CDEEE – Regulated by Superintendencia de Electricidad
Main Hydrocarbon Entity	Imports oil and LNG; no domestic production
Energy Intensity	Relatively efficient
CO_2 Emissions (Energy sector)	23 $MtCO_2$ (2022)
Energy Transition Priorities	Expand solar/wind; efficiency programs
Main Challenges Identified	High fossil imports; grid losses
Vision to 2035	Balanced energy system; 30% RE target

4. GUYANA

Guyana is reshaping its energy landscape with newfound petroleum resources, even as it continues to plan for a sustainable low-carbon future. The energy matrix remains dominated by fossil fuels, with hydrocarbons representing 94% of Total Primary Energy Supply (TPES), equivalent to 1,563 ktoe in 2022. Renewable sources, primarily hydropower and distributed solar, accounted for 6%.

The power sector remains mainly thermal, with 1,762 GWh of electricity generated in 2022. Installed capacity was 400 MW, with diesel plants providing the majority. Hydropower and solar have begun to contribute, though at modest levels. Electricity access is nearly universal.

Final energy consumption reached 1,124 ktoe in 2022, with transport the leading sector (55%), followed by residential (25%), commercial (12%), and industrial use (8%). Energy intensity is relatively high, reflecting growing demand.

Guyana's Low Carbon Development Strategy 2030 prioritizes the development of hydropower projects such as Amaila Falls and expansion of community solar systems, aiming to reduce fossil dependence while leveraging petroleum revenues for sustainable development.

Carbon emissions reached 4.7 $MtCO_2$ in 2022, largely from transport and electricity. The country's decarbonization pathway reflects a dual approach: sustaining economic growth through petroleum exports while advancing renewable integration and climate resilience domestically.

Table Key Energy Indicators for Guyana, 2022–2025

Category	Value / Description
Population (2023 est.)	≈808,700
Electricity Access	~95%
Total Primary Energy Supply (TPES)	1,563 ktoe (94% hydrocarbons)
Final Energy Consumption (FEC)	1,124 ktoe
Renewable Share in Electricity	6% (hydro, solar)
Installed Capacity	400 MW (diesel-dominated)
Main Power Utility	Guyana Power & Light (GPL)
Main Hydrocarbon Entity	Significant offshore oil production; export-focused
Energy Intensity	High; growing demand
CO_2 Emissions (Energy sector)	4.7 $MtCO_2$ (2022)
Energy Transition Priorities	Amaila Falls hydro; solar mini-grids
Main Challenges Identified	Reliance on diesel domestically; hinterland access gaps
Vision to 2035	Low Carbon Development Strategy 2030

5. SURINAME

Suriname continues to balance fossil fuel dependence with significant hydropower contributions. Petroleum products represented 79% of its Total Primary Energy Supply (TPES), equivalent to 2,034 ktoe in 2022, while hydropower contributed 20% and solar 1%. Domestic oil production reduces reliance on imports.

The power sector generated 2,350 GWh in 2022, with 550 MW of installed capacity, around 40% from hydropower. Solar contributions remain small but are increasing. Electricity access is nearly universal, supported by national and community-level projects.

Final energy consumption was 1,567 ktoe in 2022, distributed mainly across residential (35%) and transport (30%) sectors, followed by commercial and industrial uses. Energy intensity has remained stable.

Government plans prioritize further hydropower expansion and rural mini-grid solar projects, with a national target of 50% renewable electricity by 2030.

Carbon emissions were 5.1 $MtCO_2$ in 2022, primarily from transport and fossil-based electricity. The national energy transition aims to balance economic growth from oil production with commitments to renewable energy and climate resilience.

Table Key Energy Indicators for Suriname, 2022–2025

Category	Value / Description
Population (2023 est.)	≈623,200
Electricity Access	~97%
Total Primary Energy Supply (TPES)	2,034 ktoe (79% petroleum, 20% hydro)
Final Energy Consumption (FEC)	1,567 ktoe
Renewable Share in Electricity	40% hydro
Installed Capacity	550 MW
Main Power Utility	Energiebedrijven Suriname (EBS)
Main Hydrocarbon Entity	Domestic oil production; reduces import needs
Energy Intensity	Stable
CO_2 Emissions (Energy sector)	5.1 $MtCO_2$ (2022)
Energy Transition Priorities	Expand hydro & rural solar mini-grids
Main Challenges Identified	Rural access; weak institutional capacity
Vision to 2035	50% RE target; improved rural electrification

6. BELIZE

Belize stands out in the Caribbean for its strong renewable integration, even as it remains partially reliant on imported fuels. In 2022, Total Primary Energy Supply (TPES) was 490 ktoe, with biomass contributing 42%, hydropower 30%, petroleum 25%, and solar 3%. Local production covered over 60% of domestic demand.

The power sector produced 613 GWh in 2022, with over 70% from renewable sources. Hydropower, biomass, and solar collectively underpin the majority of generation. Cross-border electricity imports from Mexico strengthen supply security.

Final energy consumption reached 320 ktoe in 2022, with residential use (38%) leading, followed by transport (35%), commercial (17%), and industrial use (10%). Energy intensity remains low compared to regional averages.

Belize's Sustainable Energy Master Plan emphasizes expanding solar PV capacity, enhancing energy efficiency, and integrating storage technologies to reinforce system resilience.

Carbon emissions were 0.9 $MtCO_2$ in 2022, reflecting the country's high share of renewable generation. Belize's trajectory positions it as a regional model for small-island renewable integration and climate-aligned energy development.

Table Key Energy Indicators for Belize, 2022–2025

Category	Value / Description
Population (2023 est.)	≈441,500
Electricity Access	~95%
Total Primary Energy Supply (TPES)	490 ktoe (>70% renewables)
Final Energy Consumption (FEC)	320 ktoe
Renewable Share in Electricity	>70% (hydro, biomass, solar)
Installed Capacity	≈180 MW
Main Power Utility	Belize Electricity Ltd. (BEL)
Main Hydrocarbon Entity	No production; net importer
Energy Intensity	Low
CO_2 Emissions (Energy sector)	0.9 $MtCO_2$ (2022)
Energy Transition Priorities	Solar PV expansion; storage integration
Main Challenges Identified	Dependence on Mexican imports; financing constraints
Vision to 2035	Sustainable Energy Master Plan; resilience focus

7. GRENADA

Grenada is making strides toward energy diversification, even as it continues to depend heavily on imported petroleum. In 2022, Total Primary Energy Supply (TPES) was 231 ktoe, with petroleum products representing 95% and renewables, mainly solar and wind, contributing 5%. Domestic energy production remains negligible.

The power sector generated 270 GWh in 2022, with 70 MW of installed capacity dominated by diesel. Solar PV is gradually increasing but still represents a small portion of the mix. Electricity access is universal.

Final energy consumption reached 150 ktoe in 2022, with transport as the leading sector (50%), followed by residential (30%), commercial (12%), and industrial use (8%).

Grenada aims to achieve 100% renewable electricity by 2035, prioritizing solar PV deployment and exploring geothermal potential.

Carbon emissions totaled 0.6 $MtCO_2$ in 2022, mainly from transport and power generation. The national decarbonization pathway is designed to enhance energy security and climate resilience for this small island state.

Table Key Energy Indicators for Grenada, 2022–2025

Category	Value / Description
Population (2023 est.)	≈125,000
Electricity Access	100%
Total Primary Energy Supply (TPES)	231 ktoe (95% petroleum)
Final Energy Consumption (FEC)	150 ktoe
Renewable Share in Electricity	5% (solar, wind)
Installed Capacity	70 MW
Main Power Utility	Grenlec
Main Hydrocarbon Entity	No production; fully import-dependent
Energy Intensity	Moderate
CO_2 Emissions (Energy sector)	0.6 $MtCO_2$ (2022)
Energy Transition Priorities	Utility-scale solar; geothermal prospects
Main Challenges Identified	High import dependency
Vision to 2035	100% RE by 2035

8. HAITI

Haiti continues to face major challenges in energy access and sustainability. In 2022, Total Primary Energy Supply (TPES) was 3,260 ktoe, with biomass—mainly wood and charcoal—accounting for 71%, petroleum 27%, and modern renewables just 2%.

The power sector produced 1,350 GWh in 2022, with 270 MW of installed capacity, mainly diesel and hydro. National electricity access remains limited at around 45%, the lowest in the Caribbean.

Final energy consumption was 2,780 ktoe in 2022, with the residential sector dominant at 65%, reflecting high reliance on traditional biomass. Transport accounted for 20%, and other uses the remainder.

Haiti's strategy includes rural electrification programs and expansion of mini-grid solar systems, supported by international development partners such as the World Bank and IDB.

Carbon emissions were 8.2 $MtCO_2$ in 2022, despite low per capita electricity consumption, due to heavy biomass use and inefficient diesel generation. The country's transition efforts aim to gradually expand clean energy access while addressing severe infrastructure challenges.

Table Key Energy Indicators for Haiti, 2022–2025

Category	Value / Description
Population (2023 est.)	≈11.6 million
Electricity Access	~45% (lowest in the Caribbean)
Total Primary Energy Supply (TPES)	3,260 ktoe (71% biomass, 27% petroleum)
Final Energy Consumption (FEC)	2,780 ktoe
Renewable Share in Electricity	2% (mini-grid solar)
Installed Capacity	270 MW (diesel + hydro)
Main Power Utility	Électricité d'Haïti (EDH) – regulated by ANARSE
Main Hydrocarbon Entity	No production; fully import-dependent
Energy Intensity	Low; biomass-dominated
CO_2 Emissions (Energy sector)	8.2 $MtCO_2$ (2022)
Energy Transition Priorities	Mini-grids; donor-led solar electrification
Main Challenges Identified	Infrastructure collapse; reliance on biomass & diesel
Vision to 2035	Universal access; decentralized renewable growth

9. JAMAICA

Jamaica is advancing its renewable energy agenda, even as petroleum remains the backbone of its energy supply. In 2022, Total Primary Energy Supply (TPES) was 4,913 ktoe, with petroleum products providing 76%, renewables 18% (wind, hydro, and solar), and coal 6%.

The power sector generated 4,513 GWh in 2022, with 1,050 MW of installed capacity. Renewables accounted for 20% of electricity generation, led by wind and hydro. Universal access to electricity has been achieved.

Final energy consumption reached 3,650 ktoe in 2022, with transport dominating at 43%, followed by residential (28%), commercial (18%), and industrial (11%).

The government targets 30% renewable electricity by 2030, supported by policies to expand electromobility and efficiency programs.

Carbon emissions totaled 12 $MtCO_2$ in 2022, mainly from petroleum-based electricity and transport. Jamaica's energy transition reflects a steady shift toward sustainability and climate-aligned development.

Table Key Energy Indicators for Jamaica, 2022–2025

Category	Value / Description
Population (2023 est.)	≈2.8 million
Electricity Access	100%
Total Primary Energy Supply (TPES)	4,913 ktoe (76% petroleum, 18% renewables)
Final Energy Consumption (FEC)	3,650 ktoe
Renewable Share in Electricity	20% (wind, hydro, solar)
Installed Capacity	1,050 MW
Main Power Utility	Jamaica Public Service (JPS) – Regulated by OUR
Main Hydrocarbon Entity	No production; fully import-dependent
Energy Intensity	Moderate
CO_2 Emissions (Energy sector)	12 $MtCO_2$ (2022)
Energy Transition Priorities	30% RE by 2030; electromobility
Main Challenges Identified	High fuel costs; dependency on imports
Vision to 2035	Smart grids; diversified RE system

10. TRINIDAD AND TOBAGO

Trinidad and Tobago remains heavily reliant on natural gas, even as it begins to explore diversification toward cleaner sources. In 2022, Total Primary Energy Supply (TPES) was 25,800 ktoe, with natural gas accounting for 84%, petroleum 15%, and renewables just 1%.

The power sector generated 9,680 GWh in 2022, almost entirely gas-fired. Installed capacity reached 2,100 MW, with negligible renewable penetration. Despite the fossil-based mix, the country maintains universal electricity access.

Final energy consumption was 16,340 ktoe in 2022, led by industrial use (60%), followed by transport (25%), commercial (10%), and residential (5%). Energy intensity remains among the highest in the region.

Trinidad and Tobago is advancing large-scale solar projects totaling 112 MW, while promoting efficiency and gradually diversifying its generation base.

Carbon emissions reached 38 $MtCO_2$ in 2022, among the highest per capita in the hemisphere. The country's energy transition strategy aims to balance its role as a major LNG exporter with domestic commitments to cleaner energy and sustainability goals.

Table Key Energy Indicators for Trinidad and Tobago, 2022–2025

Category	Value / Description
Population (2023 est.)	≈1.4 million
Electricity Access	100%
Total Primary Energy Supply (TPES)	25,800 ktoe (84% natural gas, 15% oil)
Final Energy Consumption (FEC)	16,340 ktoe
Renewable Share in Electricity	<1% (early-stage solar)
Installed Capacity	2,100 MW (gas-fired)
Main Power Utility	T&TEC – state-owned; generation by IPPs
Main Hydrocarbon Entity	Heritage Petroleum; NGC; Paria Fuel Trading
Energy Intensity	Highest in Caribbean
CO_2 Emissions (Energy sector)	38 $MtCO_2$ (2022)
Energy Transition Priorities	112 MW solar; hydrogen roadmap
Main Challenges Identified	Heavy reliance on natural gas; high emissions
Vision to 2035	Gradual diversification; just transition while keeping LNG leadership


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